

Re: Space Travel will save the world

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The fundamental cost driver for space travel is the cost of momentum. Investment in improved engines that reduce the cost of imparting momentum, results in lower cost, more capable space travel. Since the velocity change to travel from the surface of the Earth to anywhere in the solar system is relatively fixed, the effect of lowering the cost of momentum, has the impact of lowering the cost of maintaining a mass flow rate between the surface of the Earth and points across the solar system.

Previously I detailed some of the rich history of space travel development by humanity. In the first decade of the 20th century, far ranging thinkers showed how humanity could tap into the unlimited energy of matter, and achieve travel beyond the Earth. Experimentalists in the first half of the 20th century reduced these ideas to practice. The result was a series of innovations that impacted all the peoples of Earth equally – this isn't surprising since any technology that transcends the Earth, affects everyone on the Earth equally.

The development arc from 1950 through 1964 was;

- 1) small – suborbital payloads – which resulted in nuclear tipped ICBMs
this brought about a change in warfare, and the end of modern industrial warfare
- 2) moderate – orbiting ayloads – which resulted in communications satellites
this brought about global communications, global sensing, global navigation
- 3) large – cislunar payloads –which resulted in Apollo lunar travel
this brought images of Earth from space, and the concepts of Earth as a single place
giving rise to the environmental movement, and other similar ideas

Since 1964 development of fundamental imrprovements were halted. This

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came in part due to the ambivalence the US government and other governments have toward rocket and nuclear development. On the one hand all pay large lip service to research and development and exploration of frontiers, on the other hand all fear the development of low cost ICBMs and widespread use of advanced nuclear weapons. As a result, all schemes to halt the spread of nuclear and missile proliferation are at odds with schemes to advance low cost high performance rocketry and space travel. All efforts to bring peace by the ability to threaten with invasion or destruction, are at odds with all efforts to establish independent colonies using advanced nuclear and rocket technology far removed from any control regime. The USA after