



Humans in Space

Email exchange

<http://library.thinkquest.org/C003763/index.php?page=whyexplr02>

Adrian Hon wrote this rather length reply to an email he was sent asking why he was an advocate of space exploration when we have not, so far, seen any tangible returns from it.

I would say that people should stop seeing space exploration as a completely separate science, and rather look at it as any other expensive science out there. We spend billions on researching high-energy particle physics, on esoteric branches of mathematics and on the human genome project - it can be argued that none of those has any direct benefits for the man on the street. Even the human genome project, finding out the exact sequence of our DNA, in itself is completely worthless unless we spend even more money - most likely billions of dollars - developing and testing drugs and treatments to improve our lives.

“*Science isn't here to make money*”

However, that completely avoids the whole point of science. Science isn't here to make money - one of the main reasons for conducting science - any kind of science - is that humans like finding things out. It's true that more often than not, science is the driving force for innovation and commercial success - just look at computers - but science isn't here for commercial gain. Science poses challenges to humanity, and we like challenges like going into space.

Often, what we learn from these challenges can help the man on the street. Space exploration is just like any other science; it helps us learn about the universe, about where we came from and about other stars and planets, and in doing so, we learn about our own world.

But - so what? It doesn't help any of the starving people in Africa, right?

“*In the space a of a few decades we'll be able to mine asteroids and generate power from orbiting solar power stations*”

There are two ways to address that question. The first is to say that space exploration is necessarily a very expensive thing - it requires a large amount of money, and it'll require even more, before it starts making any money and making our lives better. I personally don't believe that human space exploration has been of much use to us at all yet. I do think that it has a great deal of potential though - with space exploration, in the space of a few decades, we'll be able to mine asteroids for metals and use solar power stations to generate electricity. This will help the environment on Earth hugely as traditional mining is phased out and the need for frankly dangerous fossil fuel power stations is reduced. It is believed that serious scientific research can be done in space under the correct conditions, such as growing ultra-pure protein crystals whose structure can be analysed far more easily than normal.

This is some way into the future though. But if we want any of this to happen, if we want to gain any of the potentially world-changing benefits that space exploration might provide, we have to sink a lot of money into it. At the moment, we're reaching the stage where commercial space utilisation is taking over from government institutions like NASA. These companies such as Roton and Virgin Intergalactic Airways, and MirCorp, have paying customers who'll fund their research into making space exploration



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cheaper and more efficient. And at that point, the cost to us taxpayers becomes effectively nil.

has only been a force for good on Earth, and in the future I am certain that it will continue to be. And how knows, maybe it'll even make money in a few years...

“ *There is nothing intrinsically wasteful about space exploration* ”

The second way to address the question is - if you're so concerned about the problems of Earth, why don't you do something about it? Why don't you go and sell your TV, or computer, or car and donate it to a charity? It's far easier to shift the blame onto space exploration than to address the problem yourself. There is nothing intrinsically wasteful about space exploration - if you want a target for a field that wastes money, I'd suggest you look at the defense industry. Hundreds of billions of dollars per year - at least a hundred times or more than is spent on space exploration - disappears into finding better and better ways of blowing each other up. At least space exploration is trying to be productive.

I have deliberately left out references to the innumerable benefits of the hundreds of satellites that currently orbit Earth, giving us invaluable information about weather patterns and the global ecology. These satellites are the basis upon which modern communication is made - they allow us to communicate wherever we are in the world, and they now also monitor the solar wind to try and predict damaging solar flares. Our knowledge of when hurricanes will develop and where they will strike almost certainly helps the starving in Africa and the average man in the street.

I leave them out because they are not directly related to human spaceflight although it would be foolish to claim that they are not based on the advances we made while pioneering human spaceflight. Space exploration and utilization so far