

## Re: Space Exploitation

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In article <[anPuc.15286\\$Yf6.3677@bignews1.bellsouth.net](mailto:anPuc.15286$Yf6.3677@bignews1.bellsouth.net)>, terry@csmgdesign.com says...

>

> *I think most will agree that getting the price per pound to orbit down to something reasonable is the most important thing that's got to happen*

OK.

> *This is*

> *not going to happen until a space resource can be exploited and there is money to be made.*

Perhaps that's one way to help defray the cost of launches. But it won't actually reduce the cost of launch itself. Only better technology will do that.

>

> *My question is, what resources are there that will support space industry and development?*

It depends on what you mean by supporting space industry. If we could find convenient sources of water ice on the moon, for example, then these would be very valuable for use in a lunar outpost. Otherwise we would have to carry the water all the way from Earth which can be expensive. Likewise, if we can get metals and other raw materials from asteroids then we don't have to spend money orbiting them from earth. I've seen people talk about various resources that you might economically mine from the moon, for example, but I'm not sure that any of the resources, including He3 or gem quality diamonds, would be worth carrying back to earth.

One thing you might look into is selling futures in resources and real estate that might be available when the technology improves. If you can convince people to give you money now for resources which have yet to be developed then you could invest that money in developing the technologies needed to accomplish things like cheap space launch. Of course, a lot of people would probably be rightly skeptical about investing good money in stuff that is literally "pie in the sky".

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- > *I know there is the telecommunication industry but it*
- > *seems that it would be rather limited.*

Yeah, if anything telecommunication satellites will probably be phased out as the role is taken over by high altitude balloons and fiber optics.

- > *I've heard of experiements in*
- > *material science and pharmaceutical developement on board ISS and the*
- > *shuttle, but nothing has been developed that would come even close to paying*
- > *for the development cost.*

Most features of a "weightless" environment can be simulated on earth for a fraction of the cost of doing it in space.

- > *We all have heard of placing solar power stations*
- > *and such in orbit, but if electric power grows in price to justify the cost*
- > *of that, we've got a whole lot bigger problem the power.*

I'm not sure that the price of electricity would have to grow. Rather, Space Solar Power will have to be offered at low enough costs to be competitive with other terrestrial sources.

- > *Tourism and*
- > *advertising pop up as two means of making money, at least for the Russians,*
- > *although I suspect that it will never pay for the whole thing.*

Advertising and promotionals could always pay something, though it will pay less as space flight becomes more routine.

- > *Where should we be investing our money?*

In terrestrial technologies that allow us to save money on launches. Specifically we probably want to look at various types of accelerators, from magnetic to electrostatic and ballistic that can cheaply contribute delta v to orbit our payloads.

- >
- > *Small automated laboritories to grow silicone crystals that could be*
- > *launched from a regular booster?*

Nope. We could most likely simulate the conditions on earth for less money.

- > *The same with pharmaceuticals?*

See above. Space manufacturing is largely an urban legend invented by the Reagan administration to justify their profligate spending on things like SDI.

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> *Could titanium be mined from the moon for cheaper than produced from earth?*

Probably not. It's even less likely that the titanium could be transported to the surface of the Earth for less than the cost of mining it here.

> *Is a resort hotel in orbit a possibility?*

Yeah, it's possible. Then again, look up how much the ISS cost to build. Do you think that you could generate enough paying customers to offset those kinds of costs? If you can come up with much cheaper ways of building living accommodations in orbit then I'm sure NASA would love to hear about it. Perhaps you can use lightweight, inflatable habitation modules or other technologies that reduce the expense. BTW, please don't tell me about converting main shuttle tanks into living accommodations. As the song says, "That don't impress me much".

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"It is fashionable to wax apocalyptic about the threat to humanity posed by the AIDS virus, 'mad cow' disease, and many others, but I think a case can be made that faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate." -- Richard Dawkins