

Alan Wasser

Staking Claims in Space

In 1991, when *Space News* published my commentary "Open Lunar Era with Land Grants" [June 24-July 7, page 21], the problem was convincing people that there could be land ownership in space and that real estate on the moon and Mars might someday be valuable.

Since then, most space activists and even NASA headquarters and key legislators have begun to accept that once-radical idea.

Now, the problem is the opposite: resisting the urge to squander that value on quick, easy missions like robotic surveys, instead of saving it to pay for privately funded space settlements.

To keep even one human being alive on the moon; Mars or an asteroid requires at least one spacecraft to continually travel between the settlement and Earth. To do that at a profit, you have to develop cheap human access to space. Land ownership reserved for human settlement thus becomes the economic justification for investing in cheap human access to space.

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The primary goal of space activists always has been the establishment of permanently inhabited settlements with transportation open to all paying passengers. If land ownership could buy us our primary goal, it would be very foolish to waste it on lesser accomplishments. At even a very conservative \$10 per acre, a grant of land on the moon the size of the state of Alaska, about 4 percent of the moon's surface, would be worth at least \$4 billion. A grant of land on Mars the size of the United States would be worth at least \$23 billion, so they really could pay for a settlement.

It will be much easier to get a property rights regime started if the United States initiates and administers the process until an international body is formed, rather than trying to get a new international agreement first. But the 1967 Outer Space Treaty prohibits national appropriation or sovereignty over the moon, Mars and other celestial bodies, so the United States does not have the right under international law to confer ownership of land in space.

The way to finesse the treaty is for the United States to pass a law directing American courts to grant recognition to an extra-terrestrial land claim made by

any private entity that has established a true space settlement. Actual settlement is a traditional basis for making land claims, and the United States could set reasonable conditions for its recognition, such as maximum size and the openness of the base. On the other hand, a law in which the United States tries to confer specified incremental rewards for specified incremental steps would be much harder to justify, and probably would require the United States to openly violate the 1967 treaty or negotiate a new one.

Requiring human settlements as the necessary basis for recognizing a claim also makes congressional passage more likely, as settlement seems so far away to potential opponents that support will seem a costless, symbolic statement.

Lunar and Martian land is, of course, worth very little now when potential buyers cannot get to it, but if a true settlement is established the land's value will increase tremendously. The dollar value of a given tract of land will be vastly greater if ownership is awarded only after there is a ship capable of carrying humans back and forth.

Some people have proposed claim registries, mining patents and other small awards that are not real ownership but would, in effect, hold claimants' places in line. But why would we want to give someone a land-grant for some small step toward settlement and allow them to do nothing more for the next 20 years except stop anyone else who is ready to develop the land?

We should start a competitive race to design and build affordable human transport as soon as possible. For that to happen, all competitors must fear that, if they don't rush to establish a settlement soon, someone else (perhaps from another country) will get there first.

The existence of a permanently inhabited settlement is the economic point of no return for development. Only then is it easier to justify going forward.

Settlements will find plenty of ways to make money, including exports of raw materials and manufactured items and services to tourists and scientists. Unfortunately, none of those means can pay for the original development of the transport and settlement. But once those are built to win the land grant, exports will add a great deal to operating income, and eventually provide all of it.

It will cost much more to develop cheap human access to space than to do a robotic survey, but even that has an advantage. It means a consortium that gets a land-grant will need investors from all over the world, giving everyone a chance to buy shares in the settlement enterprise. The consortium also will need the revenue from selling passage on the ship and selling pieces of the land.

The first step in the development and use of any miniature land claim earned by some halfway measure would be to establish an affordable transport system to get to and from the claim. Why not reserve ownership of the land for those who pay to do that in the first place?