

A Moon With a View:

Some Thoughts on Lunar Colonization

By Alan B. Wasser, MR'94

If we have long been technologically capable of exploring the Moon, and even of establishing a permanent settlement there, why has it been more than a quarter of a century since any human has been there? If we are almost ready to send human explorers to Mars, why are we making no efforts to do so?

Everyone knows the "answer" to those questions: because the government, and especially the taxpayers, aren't willing to pay for it absent an incentive like a space race with the Communists. But is taxpayer money really the only way the habitat of humanity can ever be expanded beyond the Earth?

Private enterprise could easily raise the kind of money needed, and build space transports cheaper, better, and faster than any government, if there were sufficient profit in it. It is private enterprise, not government, that has quietly raised the multi-billion-dollar cost of filling the sky with competing constellations of communications satellites. Several small firms have recently raised large amounts of capital to begin developing privately funded satellite launch vehicles, some reusable. Unfortunately, there is currently no product we could bring back that could possibly produce enough profit to justify the cost of sending people to the Moon, Mars, or the asteroids. But there is a way we could "create" such a "product."

Throughout history, the value of newly claimed land has often been the justification for the cost of human expansion, and settlement has been the basis for making such land claims. Land claims could have been the economic justification for humanity's expansion into space, and could still be. All it would take is the passage of a rather simple law that is currently being debated in key congressional offices and NASA headquarters, officially called an "Act for the Promotion of Privately Funded Space Settlement" and more commonly known as the land grant law.

The biggest hurdle for such a law to overcome is the 1967 "Outer Space Treaty," which prohibits national appropriation or claims of national sovereignty on the Moon, Mars, or other celestial bodies. That treaty was designed to, "defuse the space race" so that money could be diverted to the cost of the escalating Vietnam war, as an only recently declassified State Department document put it. United States government funding for space went up every year until that treaty was ratified, but has gone down every year since then, despite the fact that, in a grimly ironic touch, the Senate ratified it just hours before the *Apollo 1* fire.

Fortunately, the U.S. and most spacefaring nations refused to ratify a subsequent treaty, usually called the "Moon Treaty," which would have gone on to ban private property. Therefore, while nations cannot claim land on the Moon, private entities can, if they base the claim on something other than national sovereignty. While the U.S. cannot grant land ownership in space, it could grant recognition to a claim, made by a privately funded settlement of private land ownership around its base.

The proposed law would disavow any claim of U.S. sovereignty but direct all U.S. courts and agencies to immediately grant full legal recognition to a land claim of up to a specified size made by any private entity which has established a genuine permanent human space settlement that meets the specified conditions. Of course, to maintain a permanently inhabited settlement would require at least one ship going back and forth between the Earth and the settlement. The most important condition in the law would be that the settlement, and passage on that ship, must be open to any peaceful person who is willing to pay for it.

With U.S. recognition of land ownership, investors who pay to establish a settlement—most likely to be a consortium of multinational companies—could start recovering their investment by selling sections of their land, back on Earth, just as soon as the settlement was established. If the land grant is made large enough, that could represent a very big incentive, even if the value of each acre of land was not great.

The proposed law calls for recognition of a lunar claim of up to 600,000 square miles, approximately the size of Alaska, about 4 percent of the Moon's surface. At even a very conservative ten dollars per acre, that would be worth \$4 billion. Because of the added cost of getting to Mars, and its greater size, a Martian claim could be up to 3,600,000 square miles, roughly the size of the United States, worth \$23 billion at even ten dollars per acre. If that proves insufficient to promote the development of a privately funded settlement, there is plenty of room to enlarge the grants.

Of course, once a true settlement is established, with regular transport open to any paying passenger, lunar or Martian land will be worth much more than it would be now, when there is no way to reach it.

Once established, a privately funded settlement will have many ways of producing income, such as selling transport and services to scientists, explorers, and tourists and exporting raw materials and manufactured products. None of those could justify the cost of developing affordable human access to space

in the first place, but once that is done to win the prize of the land grant, they will pay the settlement's operating costs and eventually make a profit. A dozen teams are competing for the \$10 million X Prize. How many will try for a prize worth at least \$4 billion?

Recent reports from the *Clementine* and *Lunar Prospector* missions finally put to rest one of the most common arguments against land grants—that there is no such thing as "valuable property" on the Moon. Think of private ownership, officially recognized by the U.S. government centered on the south pole's crater of permanently frozen water and the mountain on its shore with the almost permanently sunlit top—which Ben Bova, in his wonderful new book *Moonrise* was kind enough to call "Mt. Wasser." That would be worth a fortune even now, with no way to get there. How many times more than that would such a claim be worth, once there really is a permanent settlement on the mountain?

The consortium that wins that grant can immediately start producing significant income by selling off parcels of a few acres each, down in the crater with water-mining rights, or on the mountaintop near the tower that gathers full-time solar power. If the buyers are the kind who want to visit or use their land, they become paying passengers on the consortium's space line. If whatever they do with it produces freight, in either direction, or brings in customers or tourists, even better. The space line may set appropriate standards of behavior and safety for passengers and cargo and the use of its facilities, but it may not act in an anti-competitive manner. It may not unreasonably deny landing rights, and the right to transport passengers and cargo, to any other safe and peaceful vehicle willing to pay a reasonable fee for landing rights.

Of course, most of the early buyers of the consortium's land will be speculators and investors just looking to make a profit reselling the land when the price rises, sooner or later. That's almost as good for the consortium. The primary sales bring in money quickly, and the resale market increases the value of the land the consortium still owns. Land is one thing people buy, hold, and sell even when there is no current way for them to "use it" because they can make a tremendous profit buying and holding it either until a use arises, or a "greater fool" is willing to pay even more for it.

Clearly, an internationally recognized private property regime is urgently needed as soon as possible, but it will be much easier if the U.S. initiates and administers the process until an international body is formed to do it, rather than trying to get a new international agreement first. The legislation urges other countries to adopt similar laws and guarantees U.S. recognition of claims by citizens of all countries which agree to reciprocity. It instructs the State Department to try to negotiate new treaties making the same rules international law. It automatically defers to any such international agreements as soon as they are ratified by the U.S. It pledges to defend extra-terrestrial properties by imposing sanctions against aggressors. If need be to secure international agreement, the State Department is authorized to agree to treaties which require that all claimants must be consortia

of companies or citizens from several different countries. It could even be required that at least one of the partners in each consortium be from a developing country.

Land grants attracted private funding for the building of the trans-continental railroads in the last century, thus minimizing the cost to taxpayers. In that case, the grants were given in advance, in return for promises to build the railroads, which led to graft, favoritism, and expensive bailouts. In space, nothing need be awarded until an actual settlement has been established. That will lead to a competitive race to design and build affordable human transport as soon as possible. Those interested will fear that, if they don't rush to establish a settlement soon, someone else (perhaps from another country) will get there first, cutting them out.

When I first began promoting the idea of land grants a decade ago, the main problem was convincing skeptics 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 key people in NASA and Congress have begun to accept that once-radical idea. Now, a new problem has arisen with the urge to squander that value for the quickest possible gratification, by awarding it for easy missions like robotic surveys, instead of saving it to pay for true privately funded space settlements.

Several people have proposed claim registries, mining patents, and other mini-awards that aren't 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 and allow them to do nothing more for the next 20 years except stop anyone else who is ready to settle and develop the land? The existence of permanently inhabited settlements is the economic point-of-no-return for development. Only then is it easier to justify going forward rather than delaying expenditures.

Under most plans, the mini-claims based on robotic surveys would not confer enough rights to make them saleable. They would not bring even enough to repay the cost of the survey. Therefore, they would do the recipient little good, and reinforce the idea that the land is basically worthless. Worse, they would detract from the psychological value of a real claim; the ego-boost that investors could get by being able to look up and say "I own a piece of that," which might tip the scales and get them to risk investing in a settlement effort.

Some people object to the idea of anyone "owning" land beyond the Earth because they want it all to be "the common heritage of mankind." This feeling was much stronger in the days before socialism was proven to achieve only uniform poverty. In space, too, what no one owns, no one cares for or develops. Clearly, mankind as a whole would benefit greatly if private enterprise developed cheap human access to space and offered it to any peaceful person willing to pay a fair price for it, regardless of nationality. It is well worth making ownership of a mere four percent of the Moon's surface a prize for doing that. •

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