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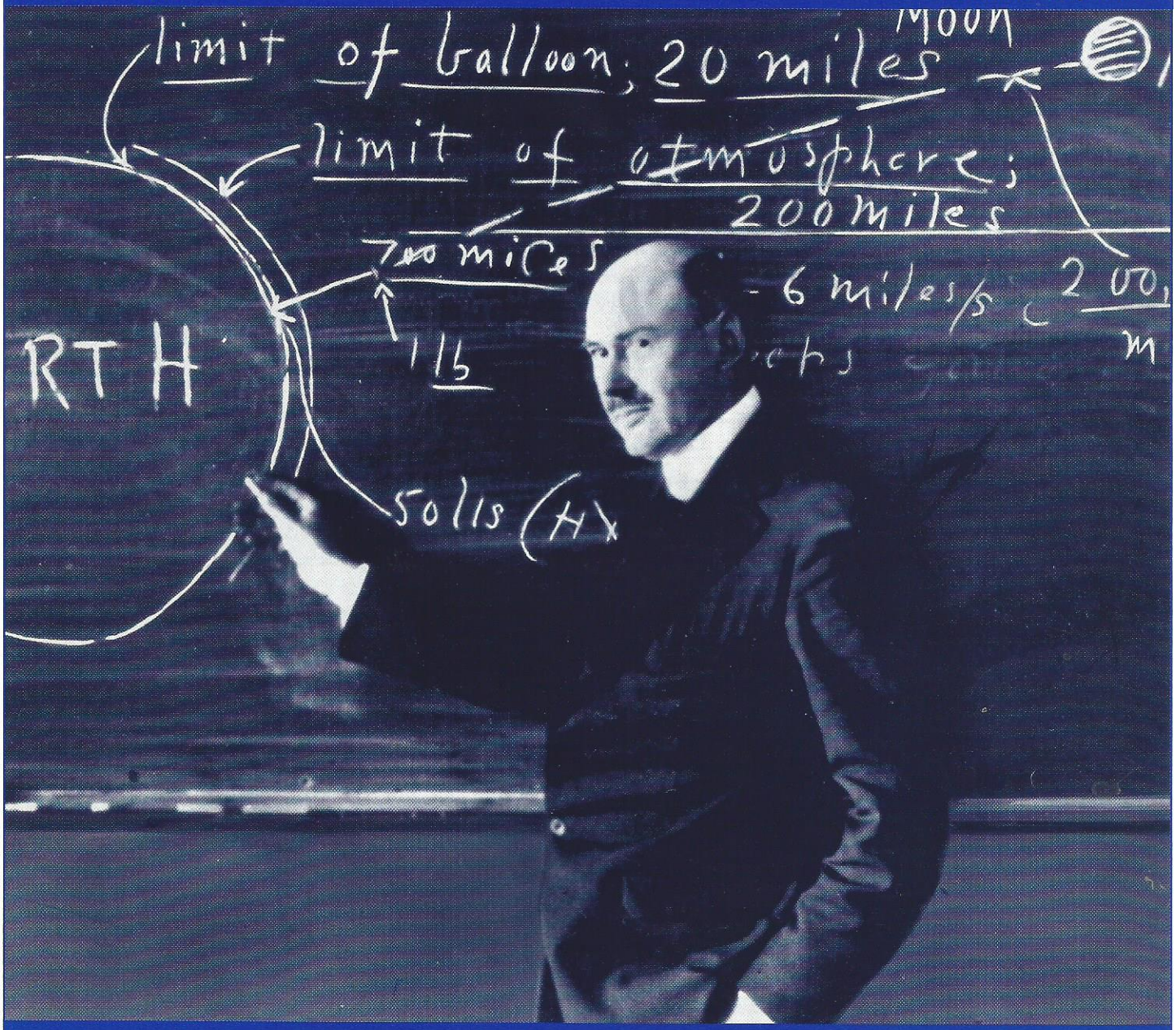



In This Issue: First Goddard Memorial Lecture

# How We Could Make Space Settlement Profitable

by Alan Wasser

Is taxpayer's money the only way to get to Mars, or back to the Moon? If governments won't pay for it, is there no chance for human settlements in space? I think there is a way to provide an incentive for privately funded settlement. Let me explain.

In the 1960's many assumed that by the end of the century, humankind would be well established on the Moon, and perhaps even exploring Mars. Few people today remember or understand just what went wrong.

On 3 February 1966, the Soviet Union's Luna 9 made the first "soft" landing on the Moon. The U.S. was still trailing in the "space race" and wouldn't make its first soft landing for four more months.

Newspapers ran serious articles about whether the Russians would use their landing to claim ownership of the Moon. Government officials worried about the supposedly overwhelming military advantage the U.S.S.R. would gain by seizing the "ultimate high ground." Reassuringly, the articles concluded that under traditional international law, no one could really claim the Moon until they had at least made a manned landing!

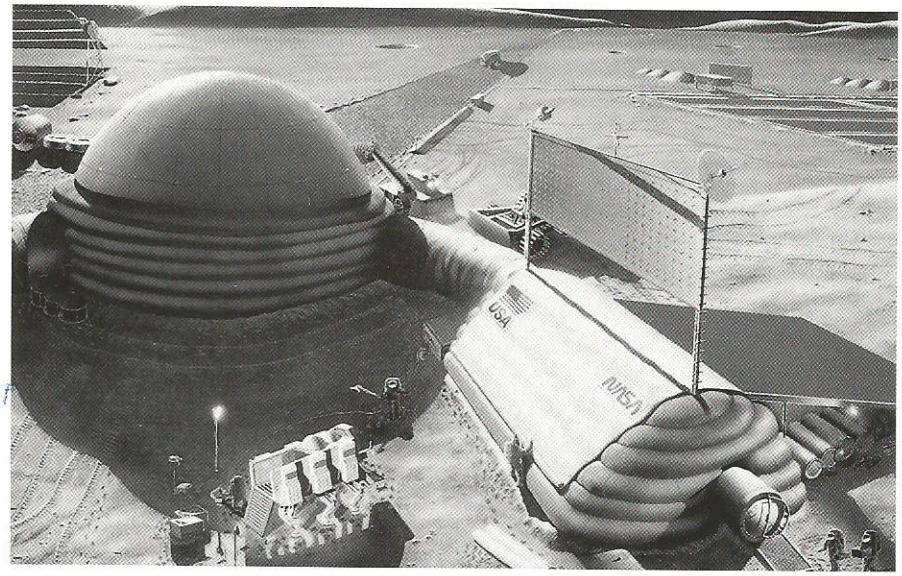
Those articles are an excellent reminder that fear of a Russian victory in the race to the Moon, leading to a Russian claim to the Moon, was a major reason Congress kept increasing the funding for Apollo. No congress would ever have spent 100 Billion Dollars (in 1994 dollars) just for some nebulous "prestige" benefit.

To be able to divert more money to the escalating Viet Nam war, Lyndon Johnson had to send Arthur Goldberg to the Russians to negotiate a quick truce in the space race. The result was the 1967 Outer Space Treaty which, among other things, barred claims of "national sovereignty" in space.

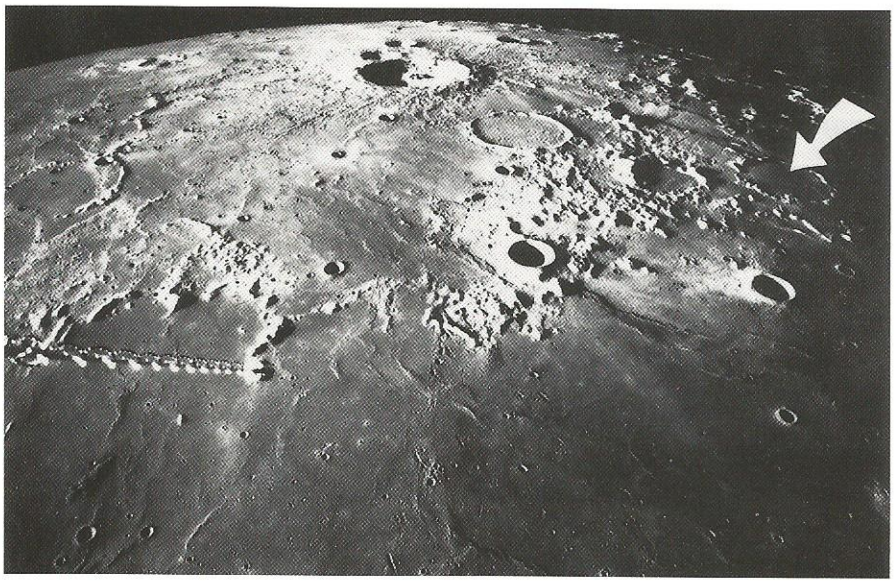
The treaty doesn't actually bar private ownership of land beyond the Earth, but since national sovereignty has traditionally been the legal basis for private property rights in Anglo-Saxon law, the treaty is often assumed to have that effect.

I am convinced that treaty provision is the real reason the space race ended, and space development has slowed to a crawl for the last quarter century. Significantly, space funding increased every year, in both the U.S. and U.S.S.R., until the passage of the 1967 treaty, and then decreased every year thereafter.

Although it is now often forgotten, the international law created by the 1967 treaty is not the norm in human history. The right to claim newly settled property has always provided the economic incentive for human expansion. (Would Europeans have ever settled America if they couldn't claim ownership of the land they settled?) In this case, immediately



*A possible lunar base scenario, but in this conception, one operated by the United States. Perhaps private bases, subsidized through land grants, will open the space frontier. (Photo courtesy of NASA)*



*The Moon holds opportunity untold. When will it be realized. (Photo courtesy of NASA)*

re-saleable property deeds are the only possible "product" that can be profitably brought back from space at current launch costs.

Space settlement will not occur until we get the historically normal condition restored. To really "enable the space frontier," we will have to re-establish a rule of law something like this: Any private entity (presumably a consortium of companies) which establishes a permanently inhabited base on the Moon or Mars, (or any planet or asteroid), with guaranteed regular transportation shuttling between the base and the Earth, open to any paying passenger, immediately acquires full legally recognized and saleable title to hundreds of thousands of square miles around the base.

The land grant for the first such base on the moon would need to be at least the size of Alaska, which would be worth almost four billion dollars at even $10 an acre. That's big enough to allow the winning consortium to begin earning back their expenditure immediately by selling off pieces of it, but still less than four percent of the Moon's surface. On Mars the land grant would have to be more like the size of the United States, worth about 23 billion dollars at $10 an acre. If that is still not enough, there is plenty of room to enlarge the grants.

Of course, the establishment of their space transport service, which enabled the consortium to win the land grant in the first place, will dramatically increase the value of their land over what it is worth today, when it is inaccessible. As with the land grants that paid for building America's transcontinental railroads, vast wealth would be created (out of thin vacuum, so to speak) by giving formerly worthless land real value and an owner.

Although neither has realized it yet, it would be a huge plum Congress could give to the aerospace companies, without costing the taxpayers anything! Suddenly there would be a market for moon rockets. Imagine if a consortium of respected companies, led by, say, KKR or Mitsubishi, decided to try for the prize, and asked for bids on a rocket capable of shuttling back and forth to the Moon.

If we could get something like this enacted into U.S., and preferably international, law the space race would quickly resume, this time among consortia of private companies. After the first announcement of an attempt to set up a lunar base, others, all over the world, would say, "we can't let THEM claim the Moon, WE must get there first." Fear of competitors is still the best motivator.

Once competition gets going, companies all around the world will seek their governments' help and investment, perhaps re-establishing a healthy spirit of national competitiveness in space, despite the ban on national sovereignty.

There are six or seven common arguments against property rights as an incentive for space settlement, but there is a good answer to each. There is the "giggle factor" problem. After 30 years the current strange no-ownership system has come to seem normal, and what had always been normal throughout history, now seems funny somehow. Actual passage of such legislation would cure the giggle factor fast. There is the feeling, left over from the socialist value system, that property ownership in space is somehow immoral...that space development should be a case of "from each according to his ability, to each according to his need." Of course, that doesn't work in space, either.

Then there are those who feel that a "space race" would be undignified and untidy and therefore should be avoided, even if that meant there would be no space development. But a "space

race" certainly would be the fastest way to open the frontier. There are those who consider the 1967 treaty untouchable because of its other provisions, (some of which, even I agree are worth keeping). Others say there is no need to do anything since the treaty did not actually prohibit the acquisition of private property in space. The answer to both is that, although that provision doesn't actually prohibit it, it certainly does have a "chilling effect" on any attempt to use private property as an incentive for space development, because it removes the most common basis for establishing private property. Thus, under that treaty, we both can and must establish a new basis for recognition of private property. The recent report from the Clementine team finally put to rest one of the most common arguments against the use of land grants as an incentive for privately funded space settlement; the argument that there is no such thing as "valuable property" on the Moon.

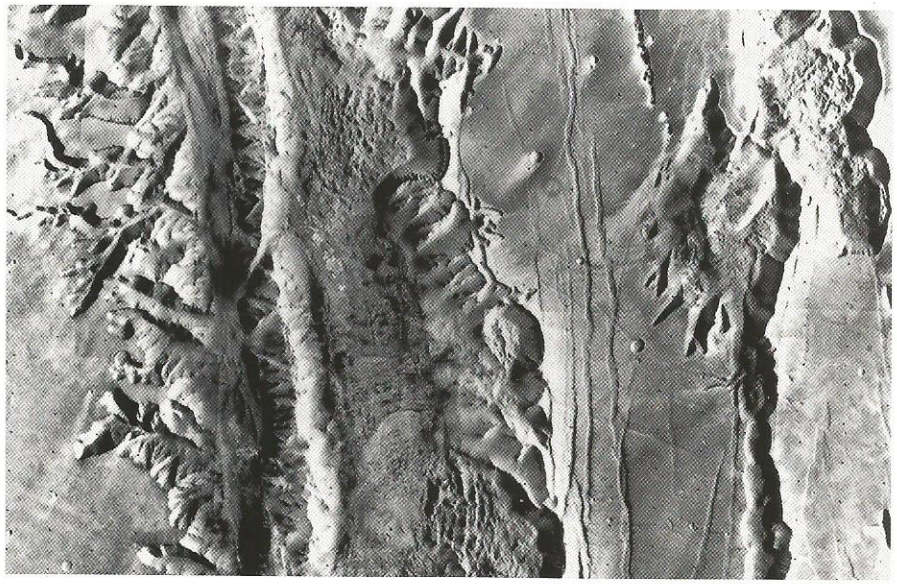
Think of private ownership, officially recognized by the United States government, of a Lunar Land Grant the size of Alaska, including that crater of permanently frozen water and the mountain on its shore with the almost permanently sunlit top, (which Ben Bova, in his wonderful new book "Moonrise" was kind enough to call "Mt. Wasser"). Such a land grant would be worth a fortune right now, with no way to get there. How many times more than that would such a land grant be worth once there really was a privately owned settlement on the mountain, with a space line going back and forth open to any paying passenger.

Another argument is that since there is no currently profitable use for lunar land, it is "worthless." But land is one thing people buy, hold and sell even when there is no current way to "use it" because they can make a tremendous profit buying such land and holding it either until a use arises, or a "greater fool" is willing to pay even more for it. My favorite example is some Florida swamp land in the center of the state, with no roads and nothing but alligators for miles. That "useless" land was bought and sold numerous times for a century or more, for a few more pennies an acre each time, until the next to last owner sold it to Walt Disney, who'd finally thought of a use for it. There is still plenty of "useless" swamp land being traded in central Florida, (or desert land in the southwest), and people are getting rich on it without ever thinking up a use for it that would pay for the airboat needed to get to it. Would you pay ten dollars an acre for some of it? How about a piece on the best route for another super highway between Tampa and Orlando, which might be built in 25 or 50 years?

Right now, there is a drive on to promote a taxpayer funded humans to Mars program. I sincerely hope it succeeds. But, in case we fail to get the government to put up those tens of Billions of dollars, I think we should hedge our bets by simultaneously trying to get a space land grant law enacted.

We need to find a Congressional representative to introduce legislation saying that, while the U.S. makes no claim of national sovereignty, until and unless a new treaty on outer space property rights is adopted, all U.S. courts are to recognize and defend the validity of a land claim by any private company (or group of companies) which met the specified conditions.

The legislation should urge other countries to adopt similar laws and instruct the State Department to try to negotiate a new treaty making the same rules international law. The U.S. law could encourage other nations to pass similar laws by limiting the recognition of claims to entities based in countries which offer reciprocity to U.S. companies. The



*This enormous canyon—Valles Marineris—on Mars might be ideal for a land grant to a corporation for mining. (Photo courtesy of NASA)*

law could pledge to defend extraterrestrial properties by imposing sanctions against aggressors.

Since it would not cost anything, or need any appropriations, such legislation might pass as a minor revision of property law, without much publicity, which is probably best considering the "giggle factor" problem. After it was enacted we could start publicizing it, probably by getting someone to announce an attempt to meet the conditions and make a claim.

The framers of the 1967 treaty may have understood that it should not be a permanent situation; they allowed any signatory to opt out, on one year's notice. Some suggest the U.S. should exercise that right, for the whole treaty or just the "national sovereignty" provision. While I would personally like to see that happen, it is unnecessary and not worth the fight. A better alternative would be the opposite approach; to accommodate the provision by requiring that claimants be consortia of companies (or citizens) from several different countries. To bring the UN on board, it could even be required that at least one of the partners in each consortium be from a developing country.

Some who agree with the need for property rights and land grants have objected that technical and financial issues should take a higher priority than this legal issue. But space activists are not qualified to solve the technical issues. We can't raise the financing for a space mission, or find any other product which would make space settlement pay. The only thing we can do is influence governmental actions to restore an environment in which opening the frontier really will make someone a healthy profit fast. After many years of studying the question, I'm convinced this is the best way to do that, and the only way activists could make a real difference.

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Alan Wasser is a member of the Board of Directors of the National Space Society (NSS), having previously been Chairman of the NSS Executive Committee.

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