LUNAR ETHICS AND SPACE COMMERCIALIZATION

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Abstract

As the twenty-first century progresses, more and more people will be working somewhere other than on Earth, perhaps on the Moon, in low Earth orbit (LEO), or in a Mars settlement. Now, as ambitious new space industries are in the planning stages, we have a chance to formulate a blueprint of moral behavior for corporations, entrepreneurs, and those operating businesses in LEO, on the Moon, and beyond. In this presentation we will consider practical and workable business practices, as well as what philosophies, procedures, and attitudes are appropriate for lunar and outer-space commerce. The business practices initially projected from Earth and established on the first lunar settlements or in orbit will set important long-term precedents. Regardless of who will decide them, now is the time to begin the debate. As space activists and proponents of lunar economic development, we are among the first to envision the implications. Our conscious participation, or benign neglect, in influencing ethical standards for lunar development and the commercialization of space may shape the character of business for a long time to come.

Introduction

As we start this new century, we note that many of our successful business models are based on greed and are excessively competitive, often to the exclusion of basic human needs and a reasonable distribution of resources. Although they usually operate within the law, these actual businesses do not always value their moral and ethical responsibilities to the consumers, let alone the public in general. In the not-too-distant future, expanding our economy to LEO and the Moon will begin a new era of industrialization in space. Many questions remain as to what this LEO-and-beyond economy will look like, especially the lunar and Martian settlements which are sure to follow.

One of the most important concerns that we can resolve before this era of space industrialization is in full swing involves the standards that our LEO and lunar-based businesses will project. All of us, not just the businesses that will be operating in LEO and on the Moon, can contribute to the debate. The standards that we export to outer space will be with us for many years to come as our new space economy develops, expands, and eventually seeks independence from its source here on Earth. To have a say in the moral component of a new space economy, we need to be addressing these issues now, and even more important, we need to get the business community involved.

Reasons for Concern

Some comments from entrepreneurs interested in outer space have negative implications for the character of or settlements that will exist off Earth. For example, it is not unusual to hear settlements proposed in space referred to as 'boomtowns." These boomtowns in space, which may very well become the blueprint for extraterrestrial commerce, are described as having no planning, existing only to produce profits for the parent company. In the extreme this portrayal of outer-space colonies resembles the setting of the 1981 movie Outland, in which workers at a mining company were given drugs to increase their work performance and to enable them to earn higher wages. Prostitutes were also provided by the company for worker enjoyment. Crime was rampant on this asteroid mining camp.

When an investigation of these practices opened as a result of a higher than usual worker death rate, even murder became commonplace.

Private property rights are already an issue for outer-space commerce. Single-minded space commerce advocates often believe that because the venture is privately financed and because the company managed to land on a planetary body or initiate operations from a planetary body, the business owns the celestial body in question. Proponents of private property rights believe that since the company or the investors took the risk by paying the money to get to the celestial body, as well has having incurred the ground-based infrastructure costs associated with the space venture, the celestial body is the property of the business venture.

This type of thinking divides the commercial space industry. Not all proponents of space commerce believe that putting human settlements in outer space must resemble frontier boomtowns. Many believe that humans can undertake space commerce in a way that represents the best of human qualities, not the worst. All, however, understand that as humans go to space, what we take with us and establish as our foundation is a matter of choice.

One does not have to look far to see alarming business practices here on Earth. Cigarette company advertising designed to target teen and youth markets may be legal but involves questionable ethics. Mergers and acquisitions within industries segments make financial sense and are often essential for a company's prosperity, if not survival, but all too often these policies carry with them a costly human toll. HMOs making cost-oriented decisions about our health care may be good for the bottom line of the insurance companies and the investors backing them but certainly strain the limits of customer care. Movies that glorify violence and spark real-life re-enactment of certain scenes are perfectly legal and all too often profitable, but, again, they challenge the ethical fabric of any moral-based society. We see over and over that businesses prosper when they make decisions that serve their bottom line and satisfy investors, stockholders, executives, and the financial community in particular.

When businesses are established on the first lunar settlement, will they be based on the models that go for the bottom line and disregard the human or ethical side of the equation? Or will we be able to make a different choice and still see the venture become a commercial success?

Whose Ethics Anyway?

Part of the difficulty in developing moral and ethical models for space commercialization, including lunar settlements and orbital habitations, is figuring out whose, or even which, ethical standards to accept. Do we accept moral and ethical standards provided us by American politicians, governments, religions, corporate leaders, scientists, ethics professors, authors, Hollywood screenwriters, family members, a good friend, or a personal mentor? As much as it is a challenge to design moral and ethical rules concerning corporate and commercial behavior in space, it is just as difficult to determine an appropriate value system here on Earth.

A Business Code of Ethics

One way to approach the issue of defining moral and ethical corporate behavior is to leave behind emotionally charged words, such as *moral* and *ethical*, in favor of more easily recognizable business terminology. I suggest referring to these efforts as a Business Code of Ethics for businesses operating in space. Individuals and businesses familiar with government licensing requirements know that there is almost always a written code of ethics that they are to adhere to in carrying out the duties and obligations permitted them by their license. Professional organizations also have standards that the members are to meet and violations can result in serious disciplinary action, including the loss of the license and criminal charges. In many instances, the organizations self-police their membership for adherence to these behavioral codes. In other instances, such as in the real estate industry, the codes are legally enforceable.

Executives, employees, customers, and people in general are already accustomed to having an enforceable ethical code for conduct in the workplace. Standards of dress, sexual harassment policies, illness and employee rules—these are all common codes in most businesses. A Business Code of Ethics for outer-space commerce would not create the kind of controversies that might exist if *moral* and *ethical* standards were couched in a political or religious context. Acceptable codes that are already in place in our terrestrial businesses could simply be exported to space-based businesses and settlements

Why the Concern about Lunar Development?

There is a difference between environmentalism and ethics with regard to lunar development. The classic environmental issue here involves the right to disrupt or, for all practical purposes, permanently change the character of the Moon's surface. The example usually cited is the footprints left behind by NASA astronauts on their lunar missions. NASA itself says that "the footprints left by the astronauts in the Sea of Tranquility are more permanent than most solid structures on Earth. Barring a chance meteorite impact, these impressions in the lunar soil will probably last for millions of years."[1] It is important to consider the impact on the lunar soil of construction, vehicular traffic, mining, or other operations that humans will routinely carry out in a lunar settlement. On the other hand, the ethics of lunar development involves the values that dictate corporate behavior, property rights, and ways of living and working in outer space.

It is very important to realize that we on Earth have the choice of exporting legal and corporate values to the Moon and beyond. We can export our current business models that support profits and high returns above all other values, or we can export business models that are more balanced in their objectives. The standards that are adopted by the early commercial space developments will form the foundation for future settlements.

Lunar settlements are most likely to be our first human settlements off this planet. While humans will no doubt inhabit space stations in LEO, lunar settlements will reflect a more permanent presence, a wider range of commercial activity, and eventually a more village-or-town-like support system for the residents choosing to live and work on the Moon. The Business Code of Ethics for the lunar residents and their business ventures becomes increasingly important as the settlement develops.

An Interim Solution

Resolving potential moral and ethical conflicts of businesses operating in outer space and on the Moon may prove to be a long-term evolutionary process. In general, the awareness of moral and ethical issues in corporate behavior is not very high. In the space business community, the awareness of these issues is even lower. The difficulty in determining what is moral or ethical is part of the problem. The attempt to refocus the issue in terms of behavioral or ethical codes of conduct is only at an initial stage and may not even be applicable to resolving the broader issues that are being discussed in this paper.

Waiting for a resolution on how to design, apply, and administer moral and ethical standards to space-oriented businesses before engaging in space commerce is neither practical nor is it recommended. Until this happens, a series of suggestions exists for conducting business in space and on the Moon.

Dr. Margaret McLean, the director of the Markkula Center for Applied Ethics at Santa Clara University in Santa Clara, California, is interested in the ethical commercialization of outer space. In her paper "Who Owns the Moon?" which appeared in *Ethics Connection,* published by her department in the spring of 1998, Dr. McLean suggests three guidelines upon which space commercialization and settlements can be modeled. Her guidelines can readily be extended to include lunar economic development and settlement.

1. Space preservation. This means that space is valued for its own sake, regardless of any benefits that may be derived from it.

2. Space conservation. This suggests that we protect and care for the universe's resources for the sake of others and avoid exploiting it to benefit only a few.

3. Space stewardship. This guideline demands that we hold ourselves accountable for managing space resources. This approach would require that we consider how our actions affect others, our environment, and the future.

These guidelines, if adopted and successfully implemented, can provide a workable resolution to resolving conflicts caused by the lack of moral and ethical standards for businesses operating in space and on the Moon. Unfortunately, however, they may not be sufficient to provide a resolution to problems stemming from the United Nations Moon Treaty.

The Moon Treaty Problem

The United Nations treaty known specifically as the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, has not been widely accepted by UN members, but this particular twenty-one article treaty has been ratified or acceded to by nine states: Australia, Austria, Chile, Mexico, Morocco, the Netherlands, Pakistan, Philippines, and Uruguay. In addition, the agreement has been signed, but not ratified, by five states: France, Guatemala, India, Peru, and Romania. The treaty carries with it a controversial school of legal thought that is potentially applicable to all nations, even those that are not signatories to this treaty. It provides specifics relating to the Moon and to celestial bodies that are not part of the Outer Space Treaty, and sets the basis for the future regulation, exploitation, and exploration of these bodies. The provisions requiring benefit sharing for the "common heritage of mankind" add to the controversy surrounding this treaty. While the treaty is legally effective, it is unknown if the United States is bound by any of its terms. The treaty contains sensitive language indicating that a country has to have signed it to be bound by it, but, also, when a country follows some of the treaty's provisions there is the potential of construing acceptance to the treaty. Since the United States and other spacefaring nations are part of the United Nations itself, some believe that the provisions of the treaty apply to all member countries of the UN, whether or not those countries have formally signed the specific treaty.

The problem caused by this treaty pertains to its language about benefit sharing for the "common heritage of mankind." Such claims have been asserted in both international law and in the United Nations, where Third World nations often argue that the benefits derived from outer-space commerce are to be equally distributed to all nations. This concept is contradictory to private-sector economic development, and is seen as a significant hurdle to overcome if there is to be any lunar economic development by private-sector businesses. The ethical issues arise when profits are earned by these businesses and supporters of the "common heritage of mankind" principle demand distribution of the benefits and profits from commercial lunar development.

According to the Moon Treaty, an international agency is to be created which will be responsible for and capable of distributing lunar resources equitably. However, the political and economic tensions between developing nations and developed nations are well known, making any attempt to enforce the "common heritage of mankind" principle a questionable proposition. Even if an international organization could be created to distribute benefits equally and fairly among nations, how would such a program affect the willingness of an investor to place capital in a business on the Moon? In reality, the "common heritage of mankind" principle is a serious roadblock for the private sector in creating lunar-based businesses.

The Federal Lease Royalty Model

There is, however, a model that works quite well with regard to mineral exploitation on

federal as well as Native American lands in the United States. Typically in oil and gas exploration, the oil and gas operator signs a lease that gives a 1/8 (.125) percentage royalty to the federal government or Native American tribal government owning the land. This is an acceptable royalty payment that does not hinder mineral exploration, development, or ongoing production. If a worldwide political process determines that the benefit sharing implied in the "common heritage of mankind" principle is the only way in which lunar development will be permitted, then lunar-based businesses could also pay a 1/8th royalty on their revenue stream to a designated party. The only obligation of the business would be to pay the royalty off the top end of their revenue stream (not from profits). The business would not be involved in creating the organization to receive the royalty, how the royalty money is used, or how it is distributed. As long as the royalty payments are made to this organization, the business would hold the rights to its operations indefinitely, as is the case with a mineral lease on Earth.

If a plan modeled on this approach were adopted, issues would still exist as to the type and nature of the organization receiving the royalty payment, what would be done with the money, and what type of distribution would be made regarding these payments. These issues, however, would be decided by agreement among nations and would not hinder businesses from taking risks or making investments in lunar ventures. The moral and ethical issues surrounding the "common heritage for mankind" principle would be of concern to the nations participating in the royalty collection organization, not the businesses operating ventures on the Moon. By adopting the royalty-type arrangement, businesses would be operating within a familiar framework that has been proven successful in Earth-based businesses. The move to establish private property rights for Moon-based businesses is not affected by the royalty plan, thus eliminating a roadblock to building settlements and businesses on the Moon.

The United States generally considers certain values to be extremely important in the development of its international space policy. Those values, as summarized by Kim Alaine Rathman in her doctoral dissertation, *The Common Heritage Principle and the United States Commercialization of Outer Space* are
"(1) the basic human rights of freedom and open access, and freedom of information;
(2) the free market values of efficiency, competition, private property rights, and the minimal state;
and (3) the priorities of leadership and national security in world affairs."[2]

In any free-enterprise economic system such as in the U.S., inequalities exist in the distribution of economic benefits and profits, yet it is assumed that in the long term everyone benefits from the economic development of space resources. The free-enterprise model as expressed by the U.S. does conflict with the Third World model and the developing world's interpretation of the "common heritage for mankind" principle. However, with the proposed royalty plan the differences between industrialized spacefaring nations and the Third World would eventually be mitigated. The debate would center around who receives the royalty payments and how the money is used or distributed. Everyone benefits with this type of program.

Are Space Settlements Colonies?

The controversy still exists over whether to use the world *settlement* or *colony* to describe what will be inhabited places on the Moon. Each word has implications for achieving moral and ethical business practices on the Moon. Those of us on Earth are either establishing colonies on the Moon or establishing settlements. The terminology that is accepted into common usage shapes the perception of people and can ultimately influence how business is conducted on the Moon.

The term *colony* is defined in Merriam-Webster's Collegiate Dictionary, tenth edition, as "a body of people living in a new territory but retaining ties with the parent state." In common everyday usage, a colony implies that its residents are under control of a governing state that is different from

the colony itself. Often the products from the colony are for the benefit of the governing state. Because the word *colony* implies a subservient relationship, this terminology makes it more difficult and more complex to establish moral and ethical guidelines for Earth-based investors and managers who interact with employees on the Moon. That the Moon may be considered a colony is an especially powerful metaphor for those citizens of the United States, which was formerly a colony of Great Britain. Additionally, for the underdeveloped countries that were once under the control of imperialist nations, the concept of being a colony is hardly attractive.

On the other hand, the word settlement is a more benign term that does not normally carry with it the emotional baggage associated with *colony*. In the context of this discussion, *settlement* refers to a legal, independent establishment. When we refer to the Moon inhabitants as living in a settlement, the implication is that they have formed a legally constructed community under an agreeable legal authority, and that they are in charge of managing their own affairs. The fruits of their labor and their production benefit the settlers. In this example, the residents are not exploited by others as implied in the term colony, but diligence must still be pursued to avoid exploitation by a company or other managing entity as settlements can be controlled and manipulated as well.

One might think this is a petty argument and hardly worth mentioning, especially since it has been long discussed among space settlement advocates. But if the goal is to begin the process of encouraging people to understand the need for some type of moral and ethical guidelines for business off planet Earth, then the vocabulary we choose to discuss these issues becomes important. Words are loaded and they impact attitudes and perceptions. Words represent powerful concepts that shape and reshape our thoughts, and our understanding of important concepts. We are better served by making sure that our presence is carried out in the context of establishing settlements rather than colonizing, the Moon, Mars, or even orbiting LEO space stations. Since we are beginning to think about how we will develop businesses in space and on celestial bodies, it behooves us to work with terminology that supports positive human qualities, not those that imply subjugation or control.

The Overview Effect

The Overview Effect comes from the title of a book of the same name written by Frank White. In his book White considers how the permanent presence of humans in space will affect many of our institutions, including those having to do with economics, science, politics, religion, social relations, and psychology. He addresses possible rebellions on space colonies, making it clear that man is responsible for his own fate. While the effects of what happens in space are considered in the context of affecting us on Earth, we on Earth need to consider not only what effect we will have on those living in space settlements, but also how the space settlers will be affected by their own actions. The combination of outcomes is virtually unlimited. It is absolutely essential that we comprehend and act upon the fact that we have an awesome responsibility since we will be transporting our civilization to a barren new world. We will be exporting our businesses, social practices and values to a world completely void of any kind of human imprints, so we must do the best that we can do, just as if we were protecting our own environment right here on Earth. Just as we protected our Earth from possible microbial contamination when our first astronauts visited space and when the Apollo astronauts visited the Moon, we have to protect the cosmic environment and our future civilizations from the potential contamination of the worst that humans can be.

Frank White defines the Overview Effect as "the predicted experience of astronauts and space settlers, who would have a different philosophical point of view as a result of having a different physical perspective."[3] This different point of view is transformative for the person looking back on Earth from LEO. Furthermore, as the person shares his new viewpoint with people back on Earth who have not been to space, a

portion of the transformative effect is passed on to the other people. The effect is well documented by White in his interviews with those having been to space, and it constitutes one of the primary benefits for sending as many people as possible into space. The "different physical perspective" from space seems to alter one's viewpoint for the betterment of mankind and the planet.

The Overview Effect might also incline space settlers and LEO visitors toward moral and ethical business operations in space. If this is the case, then the Overview Effect will certainly facilitate the evolutionary process referred to earlier in this paper. Moon settlers looking back at Earth will develop their own understanding of their origins, mission, future development, family and business values. Just as we take great pains to avoid spreading Earth-based or contaminants into space, we have to make sure that we don't spread our Earth-based, often toxic business contaminants to the Moon and beyond, lest we negate the transformative power of the Overview Effect.

Additional Possible Solutions

Unlike other terrestrial territories that were open to exploration, outer space is completely void of any human imprint of any kind. It is a blank slate. Unlike developing new worlds and frontiers on earth that were inhabited by indigenous peoples, space is not inhabited as we know it. As humans begin working, living, and establishing trade routes and businesses off this planet, then the Moon and other celestial bodies will for all time be left with human imprints on their otherwise pristine surfaces. Humanity has yet to face a challenge, opportunity, and responsibility of this magnitude.

There are suggestions, however, for ensuring that the Moon, LEO, Mars, and even beyond is not commercialized solely for the powerful and the rich and that the commercialization of space does not breed a new generation of pirates and robber barons. The suggestions include establishing controls on space businesses and supporting the activities of private and international organizations committed to the fair distribution of space resources. Instigating legal challenges to abuses by businesses operating in space may also encourage the ethical development of space commerce. Governments can also regulate the access to outer space as they do with airspace on Earth.

If a regulatory environment is created, a fundamental challenge for its designers and the regulators will be to create the type of regulatory environment that does not hinder commercial development. For the regulators to do otherwise, despite their well meaning intentions, is to run the risk of stifling commercial space and lunar development for years to come. The same challenge to not hinder commercial development in space or on the Moon also applies to organizations committed to the fair distribution of space resources.

It is less than certain that the implementation of these ideas would assure moral and ethical codes of behavior for those living and working in space or on the Moon. Despite the fact that a completely ethical commercial environment does not exist on Earth, we should continue to strongly advocate the ethical commercialization of space. The most likely scenario is that businesses at least in the short run, will begin operating in space and there will be numerous legal challenges and objections to their plans. Eventually, moral and ethical rules will be established. Ethical issues, though, are seldom equated with legal issues and will most likely not be addressed in a legal forum.

The children of today will probably be the first generation to routinely live and work off this planet. If we work with them now, at all grade levels, they can be directed to look for different solutions to the problems associated with the settlement of space. They will have the ability to change the very context in which we imagine space commerce and our presence off this planet. By educating our children today about a possible future in space, on the Moon, even on Mars, we help to ensure that space and the celestial bodies are developed with more consideration and thought than what was represented by Earth's

periods of Manifest Destiny and imperial colonization.

Similarly, those who actually view Earth from outer space, will probably see the Earth, and their business venture, quite differently from their perspective in their terrestrial office. If the transformative effects of space travel are any indication, perhaps we should make space travel compulsory for businessmen and women interested in outer-space commerce. In doing so, this may be one of our best safeguards for promoting virtuous business practices in space. When considering the spillover effect which has the potential to bring about widespread positive changes in our commerce and society, this may turn out to be an important means of establishing space and lunar development.

Conclusion

Our future generations will be in space, on the Moon, Mars, and even beyond. The initial space residents and pioneers will be from Earth, but as future generations are born in space and on the Moon, their own identity will evolve over time. What springs forth from the seeds that we plant is something that we should all be concerned with today. We must come to understand that we do not own the Moon, space, planets, and celestial bodies. We are not guaranteed these entities. They are not ours for the taking just because we can take it. In “Travelogue for Exiles,” a poem by Karl Jay Shapiro, the relationship with space is explained in a way that appropriately summarizes the need for moral and ethical business practices in space.

Look and remember. Look upon this sky;

Look deep and deep in the sea-clean air,

The unconfined, the terminus of prayer.

Speak now and speak into the hallow

dome.

What do you hear? What does the sky

reply?

The heavens are taken; this is not your

home.

We can use space and prosper from it, but as the poem says, the heavens are already taken and they are not our home. Capturing space without regard to ethical considerations will surely breed significant problems, some of which may be with us for centuries. With sufficient forethought, we can make living and working in space beneficial for all concerned. When we do this, we will find the heavens inviting us in as treasured and most welcomed guests, and perhaps over time we will have earned the right to call the heavens our extended home.

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[1] National Space Science Data Center, http://nssdc.gsfc.nasa.gov/planetary/lunar/apollo_11_30th.html (1 July 2000).

[2] Kim Alaine Rathman, "The 'Common Heritage' Principle and the United States Commercialization of Outer Space" (Ph.D. diss., Graduate Theological Union, 1996), 183-84.

[3] Frank White, *The Overview Effect: Space Exploration and Human Evolution*, 2nd ed. (Reston, Va.: American Institute of Aeronautics and Astronautics, 1998), 4.