



The Space Congress® Proceedings

1992 (29th) Space - Quest For New Frontiers

Apr 22nd, 2:00 PM

Paper Session II-C - Legal Challenges in Realizing Interstellar Initiatives

Suzanne M. Hodge
Rockwell International Space Systems Division

Elizabeth B. Osmond
Attorney at Law Asst. State Attorney

Manuel C. Urrutia
Rockwell International Space Systems Division

Follow this and additional works at: <https://commons.erau.edu/space-congress-proceedings>

Scholarly Commons Citation

Hodge, Suzanne M.; Osmond, Elizabeth B.; and Urrutia, Manuel C., "Paper Session II-C - Legal Challenges in Realizing Interstellar Initiatives" (1992). *The Space Congress® Proceedings*. 18.

<https://commons.erau.edu/space-congress-proceedings/proceedings-1992-29th/april-22-1992/18>

This Event is brought to you for free and open access by the Conferences at Scholarly Commons. It has been accepted for inclusion in The Space Congress® Proceedings by an authorized administrator of Scholarly Commons. For more information, please contact commons@erau.edu.

EMBRY-RIDDLE
Aeronautical University™
SCHOLARLY COMMONS

LEGAL CHALLENGES IN REALIZING INTERSTELLAR INITIATIVES

by

Suzanne M. Hodge
Rockwell International
Space Systems Division

Elizabeth B. Osmond
Attorney at Law
Asst. State Attorney

Manuel C. Urrutia
Rockwell International
Space Systems Division

ABSTRACT

Exploration of our solar system and beyond has barely begun. The challenges of space are limitless, and each addition to our ability to operate there opens new legal concerns between ourselves and our international partners. We are in fact living at the very beginning of time. Our descendants of far-off ages will use the legal framework we put in place to reach unimaginable opportunities. In the past our forefathers never envisioned the United States Constitution to be such a strong source of power for the government. Consequently "*We the people of the United States*" have the Bill of Rights. Will the legal framework we establish provide the guidance to extend beyond the solar system and journey to other stars?

In taking the logical steps in space to realize Space Exploration Initiative and beyond we must consider the legalities associated with birth, life, and death. Thus, the issue of birth on another planet is discussed. Would a lunar or Mars born space traveler obtain citizenship through the United Nations registry? To what earth bound land would this traveler be sovereign? The time of the birth, the day, and even the calendar year must be described in such a manner that when man does go beyond the solar system to other stars the legal framework established goes as well. Will the framework provide for genetic engineering to be realized in other worlds and not be suppressed by social and political earthbound ways?

During life, man must realize benefits associated with working on another planet. Monetarily speaking, should his income be taxed by this great land of ours or any other land or council? Should the institution of marriage as we know it today apply on other planets or in other galaxies? Social prejudices must be controlled by law in order to minimize risk to man's psychological well-being in space. Constitutional law must provide that products produced on other terrestrial bodies should not harm or increase risk to area residents. Who will be responsible for space debris now and in the future?

Thus, how effectively can man establish a space bill of rights that attaches to the earth bound United States bill of rights? Additionally, this bill must be accepted by all international partners and be compatible with their own governing law of their land.

Where there is life, there is death. Will laws be established to preclude earth bound citizens from paying to fly back bodies? Social customs and political values must be governed by law and agreed upon by all international partners. The laws and guidelines established for colonization of the moon and Mars will also be used by interstellar travellers. Interstellar travelers will need to bring these laws and a broad economic and vocational base with them to pioneer successfully on a new planet.

The Beginning of Law

Wherever men have lived together, they have found it necessary to develop rules of conduct. Hammurabi, a Babylonian ruler, Moses, the Greeks, and the Romans set forth customary ways of behavior based on religion. **LAW** as we know it today is the set of rules which the government enforces through its police, its courts, and its other agencies. Law makes it possible for men to live together peaceably in a community. Interstellar travelers will use a vast combination of laws that represent unique pieces to the puzzle of maintaining order. If man is to grow, thrive, and economically survive in interstellar space, examination of these existing pieces of law and the new challenges is the key to providing the solution for his orderly existence in the universe.

How does the interstellar traveler differ in *profile* from the early colonist of the moon or our perception of what the early Mars colonist will be? Who is this man who will be using the legal framework established in today's time? He is a man who is educated quite differently and challenged beyond our comprehension with technology. Early space missions to the moon and Mars will consist of skeleton crews. They will survive by drawing upon broader educational backgrounds. Universities will require engineering curricula quite different than today's requirements. An engineering degree encompassing a combination of civil, mechanical, industrial, and electrical disciplines will be required. The interstellar traveler has a broader understanding over various disciplines. However, in interstellar times specialists will become quite useful again to minimize risk. Due to successful commercialization of the universe, cost will not be a factor in determining crew size. Education will be fine tuned to meet the needs of survival.

In interstellar times, most sovereignties have been resolved. Man is in constant movement through the universe. He accepts this as a way of life, the norm, and moves out with the belief he is there to stay. **Figure 1** illustrates the distances and vastness of the universe. The thoughts of placing stepping stones in the universe seems archaic to his way of thinking. He has immeasurable respect for his surroundings and accepts his existence as small. He may ponder over why man went to low earth orbit, then to the moon when he was really trying to get to Mars.

In early times of exploration, man's ability to travel into interstellar space became dependent upon commercialization. Once the gold of the universe was defined, man became willing to accept the risk to go after it. The interstellar traveler works with an atomic table unlike the one we know today. In the past, Apollo missions provided the analysis of lunar regolith and many new elements & minerals were discovered. Helium III and lunar glass one hundred times stronger than earth glass were found. As man moved outward to explore new planets he established production to meet the needs of human existence, hence, commercialization. Intercommunicating relay and resource stations have become commercially owned.

The interstellar traveler could be considered an alien life form to us today. He lives with scientific discovery on a daily basis and approaches problems with a new way of thinking. For example, if just a few scientific discoveries were made such as fusion, or changing the energy band for expedited photosynthesis, his way of life would be greatly affected. Recognizing at this point in time in the universe that all professions would be advanced including medicine, engineering, and law, it is difficult to conceive man's daily strife in interstellar times. Is he advanced beyond the challenges we face today with crime, drugs, extortion? the list goes on. The interstellar traveler may not be faced with these challenges because his very existence is challenged beyond these influences. It seems to be a matter of *survival*.

Current Legal Framework

The first critical piece of the puzzle and most basic piece used to establish laws for interstellar space comes from the Constitution. Constitutional law for space is an expansion of the legal framework that exists today. Primarily it is expanded to address the issue of not having international boundaries in space.

Its constitution is the basic set of rules that governs a country. The constitution of a country usually provides for the form of the government, for limits on the government's powers, and for assurances of the rights and liberties of the citizens. The constitution is the basic law of the land. Which earthbound constitution must be adopted for interstellar space to assure the rights and

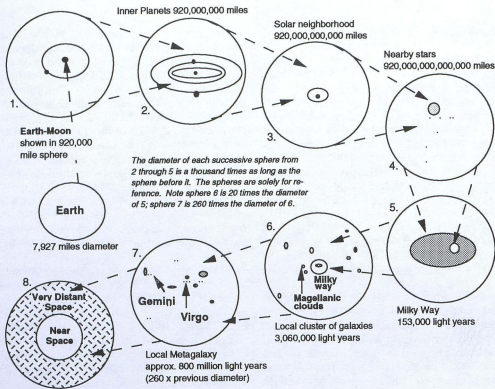


Figure 1. Interstellar Space

liberties of all the earthbound citizens? Is it the United States, Great Britain, Canada or some other land's constitution?

Although Great Britain has the Magna Carta, their constitutional law is unwritten. The basic rules that make up the British constitution are the tradition of freedom, justice, and human rights under which the British people have lived for hundreds of years. Conceptually these are the beliefs of the United States citizens. Across the world other constitutions can be dissected and found to hold similar principles. In Canada, the constitution is in the British North America Act, passed by the British Parliament. Again the goal of protecting human rights and liberties has been established. Each constitution must be looked at individually to insure that each nation's constitutional law has not been violated by newly established space constitutional law. Most importantly in the next decade as man starts to move out and establish himself on other planets some adopted and agreed upon form of constitutional law must be in place for space. Constitutional law for space will provide

protection and guidelines by which commercialization in space can evolve without endangering the planet earth or each nation within. Constitutional law will provide a basic legal framework on which to build a space bill of rights that takes into account for the first time the rights of those that dwell on other planets. The interstellar travelers must have the freedom to explore, acquire and produce products for their own personal gain but not at the expense of earthbound citizens. The freedom of choice, to make economical decisions in the best interest of those planet inhabitants must be insured. As a lunar base is realized and established those inhabitants must be governed under constitutional law to respect the rights and liberties of all and the constitutions of all the nations must provide appendices to insure that the rights of other space inhabitants are equal in nature.

Attached to the constitution for space could be a quite elaborate *bill of rights*. In the United States, after the completion of the constitution, our fore fathers recognized that an extreme amount of power was given to the government and some

other form of document that describes the fundamental liberties of the people needed to be established. This document would need to forbid the government to violate these rights. Many countries have established bills of rights. Canada, France and Great Britain have bills of rights that are conceptually similar and quite adequate on which to base a space bill of rights. It is through the English bill of rights that certain rights that were the "true, ancient, and indubitable rights and liberties of the people" of the English kingdom were established. It settled the succession to the throne, and limited the powers of the king in such matters as taxation and keeping up a standing army. Through examination of the English, it is evident that those who reside on other planets will need protection from triple taxation. Taxation will become a key issue once the productivity of mining other surfaces is increased and risk to space travel is minimized. Control of all forms of taxation must be established and it is through the bill of rights that those guidelines can be established. Do products made on other planets fall under any nation's current import ruling? If a product is produced on the lunar surface due to Japan's investment, is it imported under the same guidelines as earthbound products? If so, does that make commercialization of space economically unattractive? Economic uncertainty and initial cost of establishing the universe will be the drivers forcing an extensive bill of rights to be developed. It will be imperative to insure initial space pioneers take with them their basic freedoms and existing right to "life, liberty, and the pursuit of happiness". For example, the rights of one planet must be compared to the others through a federation.

A third piece of the puzzle, *maritime law*, regulates commerce and navigation on the high seas or other navigable waters, including inland lakes and rivers on earth. It involves all vessels and covers such matters as contracts, insurance, property damage and personal injuries. Although a general maritime law has developed internationally on earth, it operates in any nation according to the laws and usages of that country. Each nation bases its modifications and qualifications on what it thinks are necessary and proper. It becomes evident that maritime law must be coupled with law that addresses the major issue of having no international boundaries in interstellar space. Maritime law, in general, does not have any legal force of its own. There

is no international court to enforce maritime decisions. However, *All* nations that have vessels on the sea set up national maritime courts and they do serve a vital purpose of maintaining law and order. These courts consider maritime cases in much the same way that civil courts hear other kinds of complaints. Using this philosophy, *all* nations that have space vehicles (stations) on orbit or in the depths of interstellar space have the right and responsibility to set up national maritime courts in their earthbound nation. With each nation taking this right and operating according to the laws and usages of that country, how can the people of all nations combined be assured that their rights in space won't be violated? In the case where an accidental spill occurs or a satellite is lost, laws must govern the resolution of these scenarios. In the case where a billion dollar satellite is retrieved by a party that is not the original creator should that satellite become the property of the original party, the new owner, both, or none of the above? Those parties holding the technological edge for satellite retrieval may be the only people with the ability to acquire ownership of lost debris. Maritime law provided a timeline by which the original creator had "a limited" amount of time to reacquire the property lost. In space, due to solar flare activities and many of the unknowns a defined timeline to reacquire property (flotsam, jetsam, and lagan) may not be just and may in fact deter humans from taking a chance and moving out into space. Also, nations cannot afford the risk of economic loss.

Approach to Settlement

Key to a successful development of space exploration and settlement is the continuing resolution of problems which would disrupt peaceful existence on Earth; a peaceful, cooperative approach to space efforts is essential. The space program must not only be perceived as an instrument for improving life on earth but on other settlements as well. We now start with the high level description of the concept of a space management and legal infrastructure.

Lunar colonization will require extensive development of laws for space. Although these first lunar steps towards space law are quite monumental, lunar colonization is near-term thinking in respect to interstellar space. Historically speaking, the Greeks were among

the first to introduce the idea that laws are made by men and can therefore be changed by men whenever the need arises. This idea marked a great step forward in human thought. We must recognize that lunar and Mars colonization laws will change as man moves out farther in the universe. Therefore laws must be written to accommodate changes without affecting the order of life significantly. James Madison, one of the founders of our government, said, "in framing a system which we wish to last for ages, we should not lose sight of the changes which age will produce" (ref. World Book Encyclopedia, Volume U, U. S. Constitution, pg. 130). The founders of a space organization and set of laws must take this kind of approach. We must not only accept the concept that laws will be changed but must write them with interstellar travelers in mind. Our belief in interstellar realization must move us to develop law flexible enough to accommodate the unknown in the universe.

There are two kinds of approaches to organization for space endeavors: 1) **Single Nation**, and 2) **Multi-Nation** programs. Why a Multi-Nation approach to space exploration and settlement? One unified thrust by an assembly of nations will have a positive effect on progress. All nations involved would share the following benefits: economic, scientific, environmental, and responsibility. A unified and harmonious approach will protect new frontiers from the propagation of some of our destructive attributes. One regulating space council over cooperating nations minimizes the opportunity for conflict within the legal framework of the space organization and perhaps the nations themselves. In regard to contact with advanced alien life, Earth's unified and peaceful stature will be looked upon as an acceptable virtue for a space partner, and not as a threat to their existence.

Looking at a Multi-Nation program, the United Nations is the logical place to add an assembly of the nations to establish a space charter which would establish long and near-time goals for space, including exploration, and peaceful extension of mankind into the solar system and beyond. Through its representation of the peoples of Earth, it would also coordinate the resources and provide for the establishment of a body of Space Law. Space Law will be similar to International Law with the exception that this new organization, "*International Space*

Council," will possess the authority to enforce as well as legislate with the agreement of its membership. An analysis of ages of history and lessons learned applied to foresee situations in near and interstellar space will be administered. The governing laws will regulate space operations to and from colonies and the activities on the colonies themselves. As previously stated, law will preserve the rights of the individual to *life, liberty, freedom of religion, speech, and the pursuit of happiness* as is guaranteed by our U.S. Constitution Bill of Rights. In other words, there will be a Constitution for Space which will ensure these rights are protected. Laws must protect the life of the space traveler and colonist and respect all life in the Universe and protection of the same rights as mankind. The law shall regulate commerce and protection of the environments of space. The law shall provide for trial, protecting the rights of the accused, and justice. These are just a few examples of required law.

The possibility of contact with other advanced life forms exists and provision for representation on the International Space Council should be considered. Such contact most probably will result in treaty and diplomatic relations.

Alternatively, Single Nation programs will direct their efforts strictly toward their own interests. There are economic problems in the financing of this type of program. Individual technology efforts produce results but are shared with other nations only on a limited basis. There is the potential of disputes between nations regarding access, and territorial rights, which can result in hostilities. The shifting of national identities can be an issue and there is also the possibility that contact with advanced alien life could categorize the Earth as a non-unified people struggling towards its own ends and therefore a threat to other worlds.

Exploration, Colonization and the Law

Establishment of space stations, lunar and Mars colonization, and interstellar operations to and from these outposts, will constitute the proving ground for Space Law. This model of law will be the basis for operations and settlement beyond the solar system.

Today, the United States plans on meeting an objective by the early 21st century; to have an

Earth orbiting space station and settlements on the Moon and Mars. Initially, the lunar and Mars colonies will be established by highly trained teams of astronauts. They will be the first to exercise law based on their mission to initiate life support facilities on these unfriendly bodies. It is from these beginnings that each colony will grow. Worker families will be introduced eventually, and new life on these colonies will occur. These societies will need and exercise more Space Law. With growth will come increasingly more autonomy under the established regulations of space law. The requirements of colony life will dictate activities reflecting respect for *life, liberty and the pursuit of individual happiness*, even in these environmentally hostile places.

Some wonder what the space traveler and space colonist will hold as valued in their society. For many, faith in a creator God will remain important. Social customs are vital amongst the people of every nation but of common importance are marriage, the family and respect for all life. These attitudes must not change to keep pace with technology and space endeavors. Attempts to change these basic traditions and values have caused disastrous consequences in Earth's history. The family is the basic unit of stability for the race of mankind. It provides strength and nurture for the development of men and women of strong moral character. The family is the basic unit of strength for any society and nation. Where the family unit crumbles, so goes the nation. History tells us of the powerful Roman Empire and its collapse through moral decay. Societies have completely vanished. In the Pacific, a tribe ceased to practice marriage and fidelity. There is no longer any trace of that tribe. Respect and compassion for all life is a strength of a free culture and is reflected in the 1st amendment to the United States Bill of Rights.

The birth of a child in our country is documented with all the vital essentials including gender, foot prints, hand prints, weight, name if known, time of birth, and name of the parents for the hospital, city and county records. The parents usually receive a Birth Certificate as a form of legal proof. In my life, I have had to produce a birth certificate several times for qualification to different programs or activities. Colony births will require the same type of documentation tracking. The question of recording the time of birth at a lunar or Mars colony takes on an

interesting twist. Do all these colonies as well as space vehicles operate on earth time? Greenwich Mean Time (GMT) perhaps? This would be impractical and confusing during space travel and on celestial bodies with different solar cycles or perpetual light or darkness. First, a new standard measure of Space Time should be developed for space travelers analogous to the use of GMT for earth air navigation. Each colony will devise its own Local Time standards with a conversion to Space Time. It may sound complicated but is manageable and quite necessary.

Citizenship of a colony is automatic, all colonists share the same rights and protection of the law. It is expected that Earth citizenship issues will be simply a matter of inheritance. The child becomes a national of the parent's country. If the parents are not from the same country, then the child should retain citizenship rights to both its' parents countries until it reaches the age of choice defined by law. The parents and the child's rights should be guaranteed by Space Law.

The right to protect one's property and life through insurance is expected to carry the availability of insurance to the colonist. Since risks are calculated by the insurance provider, it is not expected that such benefits will be located on the edge of the space frontier. But wherever colony growth is such that life is almost routine, insurance providers and other service organizations are sure to be established.

Ownership of property is difficult to speculate. People may eventually acquire property depending on the situation, risk or nature of the settlement. Normally, when we discuss ownership, inference is made to assets such as home, and land. Squatters rights may in fact be applied to establish space. Hostile barren land across the United States was developed using these squatter principles or rather "guarantees for land ownership". Depending on colony conditions, mankind will continue to enjoy personal possessions and the freedom to purchase and sell these possessions. This is based on the 5th amendment right to "due compensation". Purchase of a colonial home on the Moon or Mars may not be necessary. These colonists may occupy their duty posts for a short term or long term. Commercialization efforts on the Moon and Mars may require some land lease or purchase

agreements. Moon resort projects have already been discussed by the Japanese. Colonies established outside this system may dictate different customs. For instance, a colony on a celestial body similar to earth would most certainly suggest possession of home and land assuming there are no claims by civilizations already present.

Commercial endeavors including mining and manufacturing of needed materials, products, commodities, and their delivery in support of space operations and space trade would be protected by Space Law established by the *International Space Council*.

Colonial government will have its roots in the body of space law developed by the International Space Council and be subject to the authority of that organization. Colonial law or local government will preserve the right for all life and the rights and freedoms of the individual within the framework of colonial life. Early colonial members will be scientists including the possibility of husband and wife teams. With the more complex growth of the colony, the demographics will consist of a society of multinational or national peoples.

Law and order will be upheld by the local government on all outposts. Law enforcement and security forces will be necessary with a system for trial and disciplinary action as appropriate to the crime. Local jurisdiction will process locally committed crimes. Extradition will be the process of returning fugitives to Earth or other colonies seeking justice for a committed crime. In addition, special laws of arbitration may be necessary to administer justice in response to complaints between mankind and extraterrestrial life forms. In such cases, the rights of due process for the individual must not be waived.

Another area of concern of space law is the protection of the environment on Earth, celestial bodies, and in space. **Space debris** has been a threat to Earth orbit missions. The accumulation of debris must not become a menace to any greater degree. Space Law must address this issue. Since the late 1950s, many satellites have been placed in orbit about the earth. *"Most are still circling our planet, even if they're no longer working. At least 80 satellites have broken up*

into fragments. With time, the fragments break up farther. There are now more than 40,000 pieces of debris at least the size of a golf ball circling earth. There are billions of tinier pieces, like small specks of paint" (ref. Issac Asimov's Library of the Universe, "Space Garbage," pg.5). Space law should address this issue and enforce compliance. What is to prevent the dumping of hazardous waste or debris in an uncontrolled fashion? The United Nations General Assembly adopted the **Universal Declaration of Human Rights** in the United States in 1948. The declaration asserts that all persons are equal in dignity and rights, and have the right to life, liberty, and *security*. It also lists certain social and cultural rights. Holding this piece is key to enforcing the rights of all earthbound people.

For example, if **space debris** continues to be dumped into orbit, doesn't it in fact increase risk of future flights to be free from encountering damage from debris and endanger the lives, the safety of the people within the station or vessel? Security becomes questionable. The rights of those station bound citizens must be protected. Since space is not defined by boundaries, maritime laws for flotsam, jetsam, and lagan simply could not be enforced. Again, establishing a set time limit to retrieve the space debris may not be humanly achievable in some cases although highly desired. Adopting a universal declaration protecting human rights would make it the responsibility of the maker of the vessel, waste, or resulting act to take measures as not to violate the rights of others. Internationally agreed upon risks could be addressed through the legal framework of the already established United Nations Universal Declaration of Human Rights as modified to insure the rights of those earthbound, and those living on other planets, in other orbits and galaxies.

Hazardous wastes, in space, as on earth, must be properly neutralized and/or disposed of so as not to endanger life in the present or future. Launch sites can be dangerous to the colonist. Their careful location and isolation from colony life is essential and must be addressed by Space Law.

As we are painfully aware, where there is life the possibility of death exists. Life in space will probably provide many dangerous situations as well as natural situations which may end in death.

The question of *burial and inheritance* issues must be addressed in Space Law. Will the old standard of burial at sea be applied in space or will morality drive burial issues toward sending the bodies back to Earth? Development of more complex societies at increased distances from Earth will make return impractical. In such cases, burial in space may be performed. For many, the colony *will be home* as was *Earth* for the pioneer in the early settlement of our nation. The use of Last Will and Testament instruments to distribute one's possessions and wishes to his or her beneficiaries should be protected by space law. This process should be simple and at low cost to the estate of the deceased.

Interstellar Travel & Colonization

The establishment of colonies on the Moon & Mars will be the proving ground for Space Law which will accompany interstellar travelers to each future discovery and colonization. Lessons learned, and products developed (*fuel manufacturing, robotic operations, food production, and new technology development*) will support future space travel and will be regulated by space law.

Transportation systems must enable travelers to reach their objectives expeditiously. This is a considerable feat considering the light years of travel between our system and other systems which possibly could support life. Speeds of near or greater than light speed must be accomplished, if possible, utilizing the maximum effects of time dilation theory derived from Einstein's theory of relativity (ref. Andrew G. Haley, *Space Law and Government*, Appleton-Century-Crofts, Division of Meredith Publishing Company, 1963, pg. 400). The theory stated that 'time moves slower for someone who is traveling at a uniform rate, at a speed close to the speed of light, than for someone who is earth-bound'. Many vehicle and life

support issues must be resolved before long deep space probes are successful. Colonist passengers may be numerous with the intent of settlement on an identified distant celestial body. The trip will be long but with controlled excitement, anticipation of the unknown challenges, or the deep sleep of suspended animation. Accompanying the dreams of settlement will be Space Law to support their society with a body of law that protects all rights and liberties.

Rules of contact with alien life forms must be dictated by Space Law and on scene judgement of the senior official involved. There must be recognition of the rights of other life forms. Mutual respect, peaceful council and understanding are important. Successful negotiation is the goal. Non-interference with the harmony and development of other less advanced civilizations must be law. Involvement in the affairs of other developing civilizations must be undertaken only with much consideration of the consequences.

SUMMARY

In summary, interstellar space law will be greatly affected by our near-term goals for space exploration. Our current goals are conservative and reflect our hesitancy to address interstellar challenges. However, there are no known limits to exploring the universe. The average rate of aerospace progress, accomplished over the past eighty-seven years of flight will enable attainment of light speed and distant stars before the next eighty-seven years of flight have passed. It is certainly possible that the galaxy contains other intelligent technical civilizations that must be protected by law. Based upon belief of what man *has accomplished* and what man *can accomplish*, interstellar law should be considered as man moves out to establish the legal framework for space.