Astronauts and a Unique Jurisprudence: A Treaty for Spacekind

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Space law can be separated into two fairly broad categories. The first is an evolving body of traditional and essentially earth-oriented law dealing with the somewhat amorphous and precatory principles of international treaties and conventions, as well as more detailed matters such as the establishment of communication satellites, remote sensing platforms, private investment, products liability, intellectual property rights, radio frequency assignments and insurance/risk management activities. The second category has heretofore been considered by the legal profession to be exotic, futuristic and undisciplined. This embryonic body of law, often referred to as "astrolaw," relates to the overall social order of manned missions in both long-duration and permanent habitats.¹

Astrolaw is perhaps the more important of the two branches of space law because humankind is on the technological and economic threshold of building long-duration, and even permanent, inhabited space laboratories, manufacturing facilities, military enclaves and other forms of productive space habitats.² These growing capabilities demand attention be focused on questions of how habitats will be governed, and how to structure legal regimes to reflect relations both between habitat

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2. Although numerous planning studies for different types of long-duration manned space platforms have been undertaken by the National Aeronautics and Space Administration (NASA) and the United States Department of Defense, the almost daily changes in United States national space policy make those studies relatively unreliable. However, for an excellent review of the more likely habitats and objectives, see generally T. HEPPENHEIMER, COLONIES IN SPACE (1977); see also J. OBERG, RED STAR IN ORBIT (1981) (discussing the Soviet Union's likely options in its manned space programs).
societies and their financial underwriters, and among the different habitat societies themselves. Regardless of the respect and affinity we may have for the sources, methodologies and institutions of traditional law, biomedical research on humans functioning in the totally synthetic and alien life-support environment of space clearly suggests that we cannot effectively apply many of those traditions beyond the Earth’s atmosphere.

II. Astrolaw Reflects the Evolution of Human Biotechnological Integration in Space

The laws that will govern space habitats must in large part derive from the unique bioecological demands of those who will live in space. Perhaps this principle is obvious to some jurists and to those involved in the basic life sciences of space habitation, but there is little evidence that today’s lawmakers and statesmen understand it. Earth-indigenous laws, as cultural institutions, have evolved hand in glove with human biological evolution and, regardless of the cultural trappings in which they are embodied, reflect principles of the physical survival of the species.

If one accepts that laws and legal regimes are cultural institutions derived from the dictates of natural law which represent intellectually articulated requirements for the physical survival of human societies, then one can isolate and evaluate the principal standards of conduct expected of the members of those societies. In most legal systems the standard is what a reasonable person would or could have done under a given set of circumstances. The definition of a “reasonable person,” whether embodied in legislation or applied by “twelve good men tried and true,” is influenced in large part by the biocultural nature of humans and the reasonably anticipated behavior of the biological person resulting from interactions with his or her environment.

We are beginning to see in the evolving values and behavior patterns


of astronauts a growing differentiation between the reasonable person in space and the reasonable person on Earth. The following discussion focuses on the biophysical changes experienced by astronauts in space habitats that might well contribute to a reformulation of a reasonable person standard to fit the value-forming processes, judgments and consequent behavior patterns unique to space community participants. Toward this end, a treaty is proposed at the conclusion of this article that suggests that only space inhabitants should be permitted to formulate the reasonable person standard for social order in their societies.

Let us assume, for the moment, that certain critical components of the biosystems of each individual living in a space station or habitat community are significantly affected by the ambient life-support technology and alien physical characteristics of space. Assume also that these influences on the biochemical, bioelectrical, endocrinological, hematological, psychoneurophysiological and morphological systems result in significantly different value-forming processes, judgments and behavior patterns. Finally, assume that all of these influences, representing a high degree of continuous biotechnological integration for survival purposes, begin to mold each such individual into a biological and cultural entity which is measurably distinct from other representatives of *Homo sapiens* functioning on the Earth's surface. For the sake of easy reference, we can call such an individual *Homo spatialis* or *Homo alterios*. What makes the astronaut *Homo alterios* sufficiently different to warrant crea-

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5. Robert A. Frosch, former Administrator of NASA and currently Vice President of General Motors Corp., discusses some of the advances and attendant problems relating to high technology as an extension of human biology, with applications to space existence, in Frosch, *Robots and People*, 21 ASTRO. & AERO. 34-41 (1983).

6. The rules of systematics and taxonomy, or the methodology for identifying and naming plants and animals, are premised in large part on perpetuation of biological and behavioral characteristics through genetic coding and germ plasm. The distinction between *Homo sapiens* functioning within the normal life-support environment of Earth and humankind existing in the synthetic life-support ambience of space as *Homo alterios* or *Homo spatialis* is used here only for ease of reference in discussion and is not intended to assert grounds for species variation and taxonomic changes.

7. For purposes of this discussion, the distinguishing term *Homo spatialis* refers to humans existing in the unique life-support ambience of space. The term *Homo alterios* has historical and functional differences. *Homo alterios* was first used by Dr. Ernst Fasan to describe possible extraterrestrial life forms as "manlike." In the present context, it is used to describe or distinguish astronauts who exist in long-duration or permanent space habitats and who exhibit the altered biological characteristics and consequent behavior patterns of permanent space existence. See E. FASAN, *RELATIONS WITH ALIEN INTELLIGENCES: THE SCIENTIFIC BASIS OF METALAW* (1970). For a more general distinction of cultures with origins on Earth and those originating strictly within a space habitat, the terms Earthkind and Spacekind are used.
tion of distinctly dissimilar principles of social order and consequent legal regimes is discussed below.

Biomedical data from United States and Soviet manned missions have shown a constant decrease in red cell mass during space flight.\(^8\) Hemoglobin circulates through the entire vascular system, carrying oxygen to the body's cells and removing carbon dioxide. The impact of diminished hemoglobin on vital endocrinological and neurological tissue functions can be seen in the various aberrant biological facets of what constitutes the reasonable man functioning in space amidst a deprivation of oxygen and an overload of carbon dioxide.\(^9\)

Numerous experiments have confirmed the effects of space existence on the plasma and vascular systems of astronauts. These effects, along with consequent variations in the functioning of the central nervous system, the sympathetic/parasympathetic nervous system and the endocrine system, make for an individual who, very likely, should not be judged in his or her space habitat behavior by the reasonable man criteria established for Earth inhabitants.

Weightlessness causes numerous aberrant physiological characteristics in astronauts. For example, zero gravity causes a negative pressure in body extremities and a movement of fluid toward the head, which in turn creates dizziness and pronounced slowness in physical and intellectual reactions.\(^10\) The normal flow of the endocrine system is also altered and the otherwise stable body condition, including normal chemical composition and temperature, becomes unstable.

Weightlessness also has a pooling effect in vascular and other fluid systems of astronauts. It tends to create an unequal volume distribution of plasma and certain other fluids which are responsible for normal neurophysiological functions including those triggered by certain hormone concentrations. Many of an individual's value-forming processes

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8. For an excellent grounding in the basic biomedical experiments characterizing the biological/systematic abnormalities in manned spaceflight, see the joint United States/U.S.S.R. publication, FOUNDATIONS OF SPACE BIOLOGY AND MEDICINE (M. Calvin and O. Gazenko eds. 1975).


10. For a more complex biomedical description of the effects of lower body negative pressure in the third manned Skylab mission, see the report of B.L. Johnson, G.W. Hoffer, A.E. Nicogossian, S.A. Bergman and W.M. Jackson in NASATMX-58154, supra note 9, at 545.
and consequent judgments, *i.e.*, "whole-body thinking," depend on the relative homeostasis established by the vascular and autonomic systems. Even the slightest change or abnormality in their functions caused by the stress of a weightless and otherwise alien life-support environment tends to alter the physiology underlying the formulation of those values, judgments and consequent behavior patterns. Although the consequences of these abnormal physiological functions can be somewhat stabilized through controlled exercise and pharmaceuticals, particularly for short-duration missions such as presently undertaken by the Space Shuttle, they are not adequately controlled for long-duration or permanent space existence.

Another biomedical problem that has an impact on the formulation of legal regimes for the unique requirements of space habitation involves the different refractive indices of the habitat atmosphere. Nonnormative gas mixtures that bend light cause objects to be visually perceived differently than if seen in the Earth's atmosphere. This phenomenon would, of course, significantly influence the vast body of Anglo-American evidentiary law that relies on visually-derived evidence relating, say, to a tortious or criminal act.

Furthermore, the totally artificial electromagnetic fields in which astronauts live cause a deprivation of radiation frequencies necessary for vitamin D, or calciferol, production. Vitamin D not only ensures a strong skeletal structure and development of immunological defenses,

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11. Lay people have a tendency to think of decisionmaking and resulting behavior patterns as a function solely of the body's brain stem. They frequently do not see the functions of the brain stem as a culmination of all the internal and external influences within and on the body, occasionally referred to among psychologists as "whole body thinking."

12. See Leach and Rambault, Biochemical Responses of the Skylab Crewmen, NASATMX-58154, *supra* note 9, at 427. For helpful baseline data studies on the psychophysical characteristics giving rise to judgments and behavior patterns of individuals in a confined and stressful environment, see The TEKTITE-II Human Behavior Program, 1 Tech. Rept. No. 14, in Human Reactions to Psychological Stress, Social Psychology Laboratory Report, Univ. of Texas at Austin (March 1971); *see also* Grumman Aerospace Corp., Use of the Ben Franklin Submersible as a Space Station Analog, 1 Summary Tech. Rept. OSR-70-4, NASA/Marshall Space Flight Center (May 1970).

13. Light bends according to the composition and density of the medium through which it passes and distorts the images to varying degrees for the viewer if the medium is other than the Earth's normal atmosphere at sea level. The distortion is much like what occurs when a diver opens his eyes underwater. To straighten out these bent light rays and correct the distorted images, divers use a face mask that focuses the images by passing the bent, or refracted, light once again through sea-level air trapped between the glass viewing plate and the diver's eyes. The images still appear somewhat closer than they actually are. The ambient breathing mixtures of gases in a space habitat also cause light to bend in a way that is different from an Earth-normal atmosphere. Of course, the distortion is not as intense as one finds in the dense medium of water.
but it also works to maintain whole-body homeostasis including the stabilizing of muscle induced hypertension. In other words, it helps the body to accommodate changing demands of the environment with a minimum of physiological and psychological penalties.¹⁴

Sea level solar radiation helps stabilize production of a blood component called serotonin, which has been determined to be closely related to certain behavioral disorders. Some endocrinologists believe that solar radiation stimulates neurohormone secretions that help establish hormonal balance.¹⁵ Both cellular biorhythms and whole organism biorhythms and biochemical functions are affected by deprivation of sea level solar radiation properties. Neurophysiological abnormalities caused by deprivation of sunlight and gravity have been recorded over the years.¹⁶ A short-term experiment on the recent United States/European Spacelab I Mission suggests, however, that cellular biorhythms may not be susceptible to the influence of the Earth's electromagnetic energy field as previously suspected.¹⁷

Both by design and through trial and error, astronauts selected for missions are in part chosen for certain genetic traits tending to stabilize the body's interaction with the technological life-support constraints of a space habitat.¹⁸ For example, consideration is given to the labile characteristics of an astronaut, i.e., the speed of physiological excitation and restorative processes. Neurological dynamism, or the comparative ease with which biochemical processes of the nervous system are initiated, is directly related to learning faculties.¹⁹ These faculties have a bearing not

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¹⁵. For a helpful discussion of this view, see Wurtman, supra note 14, at 40-51. See also F. Ellinger, MEDICAL RADIATION BIOLOGY 34-35 (1957).
¹⁷. Professor Frank M. Sulzman conducted an experiment on Spacelab I involving the biorhythmic spore production cycle of a bread mold called Neurospora. His preliminary view was that the results "appeared to verify that the regular biological rhythms of organisms are internally controlled and not affected by such forces as gravity or the [E]arth's electromagnetic field. . . ." See Spacelab Tests Cast Doubt on Theory About Workings of the Inner Ear, Chron. of Higher Educ. (Dec. 14, 1983) at 7, 9, col. 2. The final report of this experiment has not yet been published by NASA's Office of Life Sciences.
¹⁹. See B.M. Teplov, The Problem of Types of Human Higher Nervous Activity and Methods of Determining Them (paper delivered at the XII Int'l Cong., Anthropo. & Ethnog. Sci., Moscow 1967), where a certain structure of the properties of the nervous system was
only on the astronaut's ability to learn his or her tasks in the operation of a space habitat, but also on the ease with which traditional cultural prejudices and values, which may well be dysfunctional in a space habitat, are discarded and new social values successfully adopted. Other biomedical considerations in the selection criteria are low and high pain thresholds, vigilance dynamics (the psychological and physical capacity to recognize and react to stimuli in a timely fashion in the context of sensory deprivation/overload characteristics unique to a space habitat) and evoked potentials (electrical expressions of the process and speed whereby information from stimulus impulses is transmitted to the brain).

One of the most important though virtually ignored factors influencing astronaut behavior is nutrition. Nutritional requirements and characteristics are critical for the survival of the human/machine interface in an extended period or permanent space habitat. Careful consideration is being given to nutritional requirements in the nearly closed ecosystem proposed for purposes of identification: (1) strength (endurance), (2) dynamism (the ease of generation of the nervous process), (3) mobility (the speed of transformation), and (4) lability (the speed of initiation and termination of the nervous process). Id at 8-9. See also C. Voicu and T. Olteanu, Study of the Correlation Between Flexibility of Attention and Dynamism of Nervous Processes, in BIOLOGICAL BASES OF INDIVIDUAL BEHAVIOR 325-332 (V.D. Nebylitsyn and J.A. Gray eds. 1972).

20. For discussions of potentially unique social values evolving in space societies, see Robinson, supra note 16, at 52-95; Operational Performance Requirements and General Living Conditions, in HUMAN BEHAVIOR IN SPACE ENVIRONMENTS: A RESEARCH AGENDA 15-20 (Johns Hopkins University Monogram 1980) [hereinafter cited as HUMAN BEHAVIOR].

21. See generally D.R. Haslam, Experimental Pain, in BIOLOGICAL BASES OF INDIVIDUAL BEHAVIOR, supra note 19, at 252.

22. See Voicu and Olteanu, in id. at 325-33.

23. For a brief explanation of the potential role of "evoked potentials" on the "reasonable man" functioning in a space environment, see Robinson, supra note 16, at 34-35; N.I. Aleksandova, The Correlation Between Background Alpha Activity and the Characteristics of the Components of Evoked Potentials, in BIOLOGICAL BASES OF INDIVIDUAL BEHAVIOR, supra note 19, at 86. An excellent series of papers describing the physiological, neurological and psychological characteristics underlying astronaut behavior patterns was presented by a group of distinguished behavioral and biological scientists at Williamsburg, Virginia, in November 1980. The conference was sponsored by the Life Sciences Division of NASA. The papers appear in HUMAN BEHAVIOR, supra note 20.


necessary for a permanently inhabited habitat with minimal outside resupply, as well as the multi-year manned deep space probes that have just begun to reach the drawing boards in the United States and the Soviet Union, beginning with the coveted two-year manned expedition to Mars. At present, however, the focus is on production of high-energy food for relatively short-duration Space Shuttle missions.

From a psychological perspective, the preparation and ritualistic sharing of food are important facets of social ordering. While food is a focal point of much social symbolism, this is particularly true in a confined, relatively isolated and sensorily deprived space habitat. The availability of food and the willingness to share in its collection, preparation and consumption have been elements affecting the social order of Homo sapiens since time immemorial. In a space habitat food is a critical and limited resource, and for astronauts its preparation and sharing are singularly critical focal points of distraction from routine scientific and navigation duties.

It is the actual nutrient content that by and large has dictated the type of food selected for the long-duration manned missions of both the United States and the Soviet Union. The issue is how best to energize the human biosystem in space in terms of cost, weight and efficiency. Only incidental consideration has been given to the effects of the nutrients on the behavior of astronauts. Seemingly aberrant behavior patterns caused by macro- and micro-nutrients have been evaluated on the basis of their biochemical characteristics, not in terms of whether they produce acceptable aberrations within a social or juridical context.

In 1978 Robinson and Hughes raised the issue of astronaut nutrition in the context of civil and criminal behavior. After exploring the data available on nutrients—the common elements, trace elements, allergens and the like which influence human behavior patterns—they concluded that “[t]here . . . must be changes in perspectives and attitudes of the traditional lawyer/jurisprudent in order to prepare for the ultimate ‘Restatements of Criminal and Civil Space Law’ when Shuttle operations and manufacturing communities become the realities we now anticipate.”

26. For detailed evaluations and discussions of nutrition quantity and quality requirements during long-term and permanent space habitat missions, including manned probes to Mars, see Rambault, Nutritional Criteria for Closed-Loop Space Food Systems, in HUMAN FACTORS OF OUTER SPACE PRODUCTION, supra note 18, at 118; Phillips, Controlled-Environment Agricultural Systems for Large Space Habitats, in id. at 169.
27. See Rambault, supra note 26, at 113-31.
28. See infra note 29.
29. Robinson and Hughes, supra note 24, at 69. For the “business as usual” approach to
These are but a few examples of the little recognized biological variations encountered by humans in the alien and synthetic life-support environment of space. There are very definite limits to the flexibility of humankind in adjusting to extremes of environmental changes. Collectively, all of these changes in earth-oriented norms will probably mold space societies into ones which are progressively insensitive and unresponsive to the underlying values of legal principles developed on Earth. The premise of this view is that there are biological foundations to human social order in space. Justice in a space habitat—not simply the law—derives more from the biological realities of Homo alterios than from abstract concepts of morality originating in the bioecological dictates of Homo sapiens. In short, empirical reasons exist for believing that space inhabitants think differently, touch differently, taste differently, perceive differently, evaluate differently and react differently from their earthbound counterparts. Jurists must be sensitive to these differences as they attempt to formulate principles of social order for space habitat societies, particularly as they assist Spacekind in evolving its own principles of social order.30

III. THE ROLE OF SPACE PSYCHOLOGY IN ASTROLAW

Many of the unusual behavioral characteristics of astronauts have been described and recorded in more subjective terms than those of the biomedical empiricist. The unexpected findings have given birth to a burgeoning subdiscipline called “space psychology.”

Various types of psychological adjustment problems have occurred as astronauts adjust to life support and operational requirements of space existence. These problems have a direct impact on social order factors such as line-of-command structures,31 food-sharing rituals, property

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extending United States criminal jurisdiction to astronauts, see 18 U.S.C. § 7 (Supp. 1984), which provides that “[t]he term ‘special maritime and territorial jurisdiction of the United States’ . . . includes . . . (6) Any vehicle used or designed for flight or navigation in space and on the registry of the United States pursuant to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies and the Convention on Registration of Objects Launched into Outer Space, while that vehicle is in flight, which is from the moment when all external doors are closed on Earth following embarkation until the moment when one such door is opened on Earth for disembarkation or in the case of a forced landing, until the competent authorities take over the responsibility for the vehicle and for persons and property aboard.”


31. ROBINSON, supra note 16, at 21-24, 83-86. For a discussion of space mission authority
ownership and privacy,32 survival homicide,33 sexual relations34 and competitive games.35 Life science researchers for the United States manned space programs believe that psychological problems will create critical adjustment difficulties on forthcoming longer missions unless effective preventive practices are formulated.36 The Soviet Union has considerable experience in exceptionally long-duration manned missions. Alexei Yeliseyev, long involved in directing Soviet space flights, was reported to have said that the only real barriers to long-duration manned missions are primarily psychological.37 With the increasing trend toward multicultural crews of both sexes and less reliance on crew members with test pilot and military backgrounds who more easily integrate into a man/machine systems approach, more complex psychological adjustments are anticipated.

structure problems and issues, see Helmreich, Wilhelm and Runge, Psychological Considerations in Future Space Missions, in HUMAN FACTORS OF OUTER SPACE PRODUCTION, supra note 18, at 14-16.

32. For current discussions of the role of privacy and private ownership in microhabitats, see H. SELYE, STRESS WITHOUT DISTRESS (1976), and ROBINSON, supra note 16, at 37-51.

33. Essentially, survival homicide involves the concept of knowingly taking the life of another to ensure survival of at least one or a greater number of individuals under circumstances in which the normal benefits of a society cannot be applied. The unsettling odyssey of the Apollo 13 mission focused attention on the designed expendability of crew members in order to ensure survival of those crew members essential to the safe return of the spacecraft. This consideration tries to prepare for fortuitous circumstances in which life-support systems or resources are unexpectedly diminished. For an incisive, as well as entertaining, exploration of the jurisprudential concept of “survival homicide,” see Fuller, The Case of the Speluncean Explorers, 62 HARV. L. REV. 616 (1949). For a consideration of related issues with implications for manned space missions, see Mallin, In Warm Blood: Some Historical and Procedural Aspects of Regina v. Dudley and Stephens, 34 U. CHIC. L. REV. 387 (1967). Two cases in Anglo-American jurisprudence serve as the guideposts of sociological rationale in survival homicide situations: United States v. Holmes, 26 F. Cas. 360 (D. Pa. 1842) (No. 15,383); Regina v. Dudley and Stephens, 14 Q.B.D. 273 (1884).

34. For a rather unique consideration of important sexual differences to be evaluated in selecting astronauts, see Helmreich, Wilhelm and Runge, supra note 31, at 9-14. See also J. SPENCE and R. HELMREICH, MASCULINITY AND FEMININITY: THEIR PSYCHOLOGICAL DIMENSIONS, CORRELATES AND ANTECEDENTS (1978).

35. See ROBINSON, supra note 23, at 88-91, which discusses the role of open-ended, no-win competition in recognizing the potential for violence as an acceptable principle of law for space communities.


IV. THE EVOLUTION OF ASTROLAW AS IT REFLECTS CULTURAL DIFFERENCES

Differences in cultural values, social status, education and avocation may well give rise to social conflicts within multinational and mixed-sex space crews. The early astronaut groups were chosen based on the individual's desire to succeed and general physiological/psychological well being, resulting in the selection of a relatively homogenous group. The longer Shuttle missions and larger permanent habitats, however, will require a much more heterogeneous crew. "Individual idiosyncrasies and group dynamics can be expected to assume a much larger role in determining the emotional climate during a flight." 38

The current disintegration of crew homogeneity, which characterized the original groups of astronauts, is caused by the need for greater diversity in skills and personalities among crew members of the Space Shuttle and the anticipated Space Station announced by President Ronald Reagan in his 1984 State of the Union message. There is a growing need to divide mission responsibilities between the flight crew and the scientists or technicians responsible for scientific research and commercially exploitable activities. Moreover, the costs of establishing a permanent manufacturing facility or inhabited space laboratory in near-earth orbit will require a high density population that may accentuate the psychological adjustment problems common to crowded cities on Earth. The complex matrix of communication among space inhabitants in a confined environment is likely to require some innovative and perhaps bizarre adjustments that come with varying expectation levels in such practices as speech sequencing (acutely abbreviated speech), whole-body communications, 39 privacy needs (special care not to interrupt an individual's scheduled mental or physical withdrawal from the society) 40 and leisure preferences (e.g., electronic entertainment and pharmaceutically induced distractions).

Many of these idiosyncrasies will be valuable contributions to the social dynamics of what are painful constraints on a space habitat's technology. One of the major problems experienced to date in long-duration space missions is the absence of sufficient diversity in crew personalities and interests to minimize the boredom. Lawyers must, however, work very closely with life scientists, engineers, businesspersons and statespersons to ensure (1) a full and complete understanding of the unique re-

38. See Helmreich, Wilhelm and Runge, supra note 34, at 9-10.
quirements and biocultural expressions of space inhabitants, and (2) a sensitively engineered sociopolitical and economic environment to accommodate these unique characteristics. Perhaps most important of all, the development of truly functional astrolaw will require a willingness on the part of Earthkind to recognize a measurable difference in these extraterrestrials as they evolve their own indicia of social order. The juridical ties to Earth must be cut so that they can evolve their own values peculiar to life in space.41

Toward this end, effort must be made to formulate a legal framework which will assist in establishing an acceptable social order within space communities, among inhabitants and astronauts in transition between Earth and space habitats and among space societies interacting with earthdwelling cultures. At a minimum, this framework is necessary to break historical cycles of imperialism, colonialism and war.42 The imposition in space of cultural institutions that have evolved in response to the Earth's environment could well suppress the very necessary and natural evolution of legal regimes peculiar to Homo alterios, or Spacekind. As at least a partial recognition of the biological foundations of astrolaw which should apply to the formulation of a "reasonable person" standard for long-duration or permanent inhabitants in space, the following treaty is proposed.

V. (PROPOSED) TREATY GOVERNING SOCIAL ORDER OF LONG-DURATION OR PERMANENT INHABITANTS OF NEAR AND DEEP SPACE

States Party to this treaty, encouraged by the increasing international commitment of valuable resources to the advancement of human occupation of space, and inspired by expanding long-duration human habitation of near-earth orbit facilities; and

Recognizing the empirical distinctions between value forming processes of humans functioning in an earth-indigenous environment and


those occurring in a biotechnically integrated, alien and synthetic life-support system of an extraterrestrial habitat; and

Believing that exploration, exploitation and occupation of near and deep space by humankind should be conducted with a recognition and understanding of the breadth of biological variations upon which humankind’s cultures are premised; and

Desiring to contribute to the unfolding knowledge of human values and behavior patterns reflected in the broad spectrum of personal and social relationships encountered while occupying near and deep space; and

Believing that such recognition and understanding of the distinguishing biological underpinnings of human activities in space will contribute to, and help strengthen, compatible relations among people and civilizations on Earth; and

Recalling the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, signed at Washington, London and Moscow on January 27, 1967, and entered into force October 10, 1967; and

Taking into particular account the United Nations Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space; and

Being convinced that a Treaty Governing Social Order of Long-Duration or Permanent Inhabitants of Near and Deep Space will further the purposes and principles essential to the transition of an earth-bound culture to a bioculture reflecting the uniqueness of outer space existence, have agreed to the following:

ARTICLE I

The exploration and use of near and deep space, including all celestial bodies accessible by humankind, shall be carried out for the benefit and in the interest not only of Earth inhabitants, who shall be called Earthkind, but of inhabitants of near and deep space as well, who shall be called Spacekind. Such areas of habitation shall be considered the province of Spacekind in the first instance, and of Earthkind in the second. There shall be free access by both Earthkind and Spacekind to all areas of space and celestial bodies, consistent with the best interests of the mental and physical welfare of Spacekind and its existing habitats, regardless of their political or earth-sovereign origins.
ARTICLE II

Space habitats, including orbiting platforms and those existing on or beneath the surface of celestial bodies, shall not be subject to claims of national sovereignty or citizenship deriving from or exercised by nation-states or regional jurisdictions located or originating on Earth. Spacekind occupying such habitats shall exercise independent cultural and political sovereignty and in no manner shall space habitat sovereignty or inhabitant citizenship be related to any territory or geographical boundaries on Earth. Subject to certain provisions set forth below relating to jurisdictional transitions between space habitats and Earth, the conduct and activities of Earth-space travelers shall be subject to the Outer Space Treaty of 1967, the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, the Convention on Registration of Objects Launched into Outer Space, and all other applicable international and space law.

ARTICLE III

States Party to this Treaty shall conduct their relationships among each other and severally and collectively with Spacekind in a manner consistent with international law, the Charter of the United Nations or any successor organization and consistent with developing law among Spacekind, in the interest of maintaining peace and security, and promoting cooperation and understanding not only among earth cultures but also between earth cultures and cultures unique to space.

ARTICLE IV

The use of military personnel for scientific research or for any other nonhostile and peaceful purposes requiring interaction with space habitats, communities and inhabitants shall not be prohibited: Provided, however, that there shall be no bilateral or regional military relationships or alliances whatsoever established between any one or more States Party to this Treaty and any space habitat and its inhabitants. A military alliance may be established between space habitat communities and the United Nations or its successor organization only for the protection of Earth or space habitats and their inhabitants against threats or hostile action originating from cultures, civilizations or political entities not deriving ultimately from Earthkind or earth-indigenous public or private organizations or consortia.
ARTICLE V

States Party to this Treaty shall regard Spacekind as envoys of a culture or civilization different from those of Earthkind. In the event of accident, distress, emergency landing on the territory of any State Party hereto, or on the High Seas of Earth, or in the event of any unforeseen or fortuitous situations experienced by representatives of Spacekind on Earth or in Space, all reasonable steps shall be undertaken by Parties to this Treaty to assist such representatives and return them to appropriate authorities and jurisdictions on Earth or in space, as hereinafter described.

States Party to this Treaty shall immediately inform the other States Party to this Treaty of any phenomena they discover in near or deep space or on the Earth’s surface which could constitute a danger to the life or welfare of representatives of Spacekind.

ARTICLE VI

States Party to this Treaty shall bear international and interspace responsibility for its own national activities in space that may adversely affect any space habitat or its inhabitants. All commercial activities shall be conducted in strict accord with the principles set forth herein. Regardless of whether such activities are carried out by governmental agencies or nongovernmental entities, each Party to this Treaty shall assure severally that such national or regional activities in near and deep space in which it is involved are conducted in conformity with existing international and prevailing interspace law, including the provisions set forth herein. When activities which substantially affect the sociopolitical independence and general welfare of space habitat communities and Spacekind are conducted in space by an earth-indigenous international organization, responsibility for compliance with this Treaty shall be borne both by such international organization and by the States Party to this Treaty which are participating in such organization.

ARTICLE VII

In the conduct of all space related activities directly involving space habitats and Spacekind representatives, States Party to this Treaty shall be guided by the principles of cooperation and mutual assistance, and shall temper their relationships with due regard for the cultural independence of Spacekind.

States Party to this Treaty shall pursue studies of near and deep space in such a manner as to avoid harmful interference and adverse
changes in the ecosystems and cultural integrity of Spacekind habitats which might result from the introduction of harmful alien material, or the imposition of insensitive and harmful alien cultural characteristics that are not consistent with individual freedom and the cultural independence of the habitat society. If a State Party to this Treaty has any reason to believe that an activity or experiment planned by it or its nationals in near or deep space might cause potentially harmful interference with space habitats or Spacekind cultures, it shall undertake effective international consultations among other States Party hereto, as well as with the Spacekind cultures which may be affected by such activity or experiment. Any State Party may demand reasonable consultation with any other State Party to this Treaty and any Spacekind community regarding an activity or experiment suspected of being potentially harmful to Earth, the space community or to Earthkind or Spacekind generally.

ARTICLE VIII

In order to ensure the integrity of the peaceful purposes and intents embodied in this Treaty, all States Party hereto that establish space habitats of a long-duration or permanent nature shall establish them in such a manner that they shall be open for cultural examinations and military investigation by representatives of other States Party to this Treaty on the basis of reciprocity. Such examination and investigation shall not occur as a matter of right hereunder beyond the second generation of Spacekind born to any subject space habitat community. States Party to this Treaty shall give the subject space habitat community and its founding State reasonable advance notice of any examination, investigation or attendant visit to the space habitat community in order that appropriate consultations may be held and that maximum precaution may be taken to assure safety and to avoid unnecessary interference with normal operations of the space habitat and culture to be examined, investigated or visited.

ARTICLE IX

States Party to this Treaty agree that an expert organization shall be established under the aegis of the United Nations or its successor entity, to be called the International Organization for Sentient Space Activities (IOSSA). The principal purposes of this organization, to be established under separate charter, shall be twofold: (1) to provide an international academy of behavioral scientists to constantly review all aspects of interactions between Earthkind and Spacekind which occur in near or deep
space; and (2) to refer case situations to the International Court of Justice wherein the propriety and compatibility of such interactions are at issue among expert representatives of States Party to this Treaty, as well as those representing Spacekind habitats and cultures. The academy shall serve as the sole expert advisory body to the court in such matters.

The International Academy shall establish jurisdictional frameworks and legal regimes to encompass activities involving interactions among Spacekind and Earthkind, regardless of the physical location(s) of the interactions.

VI. CONCLUSION

Although the principles embodied in this proposed treaty should be considered self-executing in certain respects, the substantive issues would be implemented through legislation by each ratifying country. The treaty is meant to be transitional in nature, i.e., to accommodate realistically the functional social order requirements of space inhabitants which may be alien to the values underlying earth cultures. The parochial earth-oriented attitudes of space jurists and scholars have blinded the legal profession to the quantifiable biocultural distinctions between Earthkind and Spacekind. This fact, coupled with the growing body of biomedical evidence tending to support the likely cultural distinctions, will provide a dilemma and a challenge for the next generation of interdisciplinary space jurists.