

THE POLITICS OF SPACE LAW IN A POST COLD WAR ERA:  
UNDERSTANDING REGIME CHANGE

by Edythe Weeks

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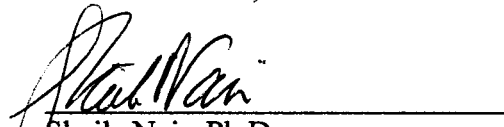
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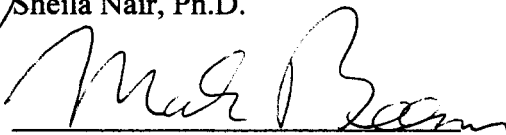
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## ABSTRACT

### THE POLITICS OF SPACE LAW IN A POST COLD WAR ERA: UNDERSTANDING REGIME CHANGE

EDYTHE WEEKS

Outer space development has experienced three distinct periods of regime change. This dissertation discusses the distinct political and ideological characteristics of each historical epoch. It demonstrates how the United States has been a trendsetter in each epochal change. However, it focuses on the most recent epoch, the third epoch, occurring in the post-Cold War era. A Gramscian analysis is used to examine political actions, key actors and mechanisms influencing change within the outer space development regime across three epochs. An emphasis is placed on the third epoch because it involves new actors, new debates, new policies and new industries, such as space tourism, space settlement and space mining. Gramscian concepts such as hegemony, historic bloc, organic intellectuals and consent are used to explain the politics of space law involved with each period of outer space development regime change. I argue that a Gramscian analysis provides a more adequate explanatory framework to explain outer space development regime change than the mainstream theories international relations theories since a Gramscian analysis best describes the influence of new private-sector actors and private capital on outer space development regime change. This dissertation also explains the historical circumstances existing in the post-Cold War, including the rise in dominance of free market ideology and globalization, and how these factors have further influenced the hyper-privatization of outer space development in the third epoch.

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## **CHAPTER ONE**

### **Introducing the Outer Space Development Regime**

Political activities regarding outer space have occurred across three distinct historical epochs. The United States has been a trendsetter during each epoch - influencing periods of change within the outer space development regime.<sup>1</sup> New U.S. laws and policies have been put into place to influence the hyper-privatization<sup>2</sup> of outer space. This is occurring today at a historical epoch where globalization, capitalism and free market ideology are dominant operators in the global arena. Historically the U.S., as a state actor, has led the process of change in the outer space development regime. Today private-sector interest groups and business moguls have taken political action to secure laws and policies to hyper-privatize outer space development.

In addition, there is a new interest in outer space involving private entrepreneurs and global corporations. For example, in 2001, Dennis Tito, a multi-millionaire and former NASA engineer was highly publicized for paying \$20,000,000 to be the world's first private space tourist. Few people are aware that Dennis Tito is the founder and CEO of Wilshire Associates, a multi-trillion dollar global investment firm. During the same year of Tito's mass publicity surrounding this first private trip to space, he was testifying before both the U.S. Congress and the Senate to secure laws to facilitate the hyper-privatization of outer space. Other influential members of the private-sector have also lobbied the U.S. Congress and the Senate for legislation to hyper-privatize outer space, and to thereby influence the outer space development regime change. A few years later the U.S. initiated policies and laws to trigger the hyper-privatization process. In addition, both the U.S. government and the private-sector began offering incentives to encourage

further commercialization and privatization of outer space development with a greater role being played by the private-sector. Prizes and incentives include the \$10,000,000 annual Ansari X Prize, the \$100,000,000 NASA Centennial Challenges Prizes program, the \$50,000,000 America's Space Prize, the \$500,000 Heinlein Prize for Practical Accomplishments in Commercial Space Activities, and the \$1,000,000 NASA Ralph Steckler/Space Grant Space Colonization Research and Technology Opportunity program. Famous business moguls from other industries have also started to form for-profit space companies. For example in 2004 Sir Richard Branson of Virgin Airlines and Virgin Records formed Virgin Galactic – a private space tourism company. Also in 2004, Robert Bigelow founder of Budget Suites of America, recently announced the “America's Space Prize” to award \$50,000,000 million for the first company to develop a commercial space hotel by the end of the decade. Given the influence of free market ideology and globalization in the post Cold War era, these empirical realities are new and distinct from commercialization and privatization activities during the first and second epochs.

This dissertation seeks to address the hyper-privatization of outer space in the post Cold War era, also referred to as the third epoch in this dissertation. It uses a Gramscian analysis to examine political actions, key actors and mechanisms influencing change within the outer space development regime across three epochs. An emphasis is placed on the third epoch because it involves new actors, new debates, new policies and new industries, such as space tourism, space settlement and space mining. In the post Cold War era outer space development is taking on a new image – a place for joyrides for the wealthy, thrill seeking, fortune making and colony building. This new image is increasingly being popularized at the cultural level through new space related educational

initiatives, prizes, employment opportunities and new movies. These cultural and other space related hyper-privatization strategies are detailed in President George W. Bush's January 2004 New Vision for U.S. Space Exploration Policy. This policy also includes a mandate for establishing a moon base and sending manned missions to Mars by 2020. It is important to note that this "New Vision" calls for the private-sector to play a key role in space colonization, and for NASA to be "transformed". These may appear to be random unrelated acts with no collective meaning, however, this dissertation suggests these events are part of a distinct pattern of hyper-privatization of the outer space development regime in a post Cold War era.

## **BACKGROUND**

### **The Three Epochs**

Periods of regime change are contextualized into three epochs: the first epoch (1957-1979), the second epoch (1980-1991) and the third epoch (1992-2005). The first epoch of outer space development was seen in terms of the Cold War balance of power, as a matter of national competition, and space activities were purely a governmental enterprise. Space law focused on fears raised due to the launching of Sputnik by the Russians in 1957. Then, a noticeable shift occurred leading to the second epoch.

During the second epoch, space lawmaking shifted from the international arena into the domestic arena and was marked by the drastic increase in U.S. domestic space laws and policies triggering an increase in space commercialization and participation by private corporations. This shift marks a significant period of regime change. Space law had been shaped through the United Nations from 1957 until 1979. Around 1980, the Reagan era ushered in profound changes. In addition to causing the space lawmaking

forum to shift to the domestic sphere, the Reagan Administration took a series of actions which caused a global pattern of space privatization and commercialization. As a result of these activities space became perceived as a new marketplace where new products and services could be produced at a lower cost, more efficiently, by private industry than by the government. Joint cooperation between business entities and governments to pool resources and cut costs, was a common pattern. During the second epoch, new actors and new activities became involved in outer space development. In addition, this epoch was marked by a strange combination between a rise in Cold War nationalism, and a rise in interdependence within the outer space development regime. All space faring nations cooperated in this new pattern of partnering. Even former political adversaries formed joint ventures for the purpose of conducting space business (Aldrin 1998). At the same time however during this epoch there was a shift from the international to the domestic lawmaking arena. Many domestic laws were created following the logic of cutting cost and maximizing profit. Within the domestic arena, laws were created to facilitate the commercial success of certain space industries - telecommunications, direct television broadcasting, remote sensing, and space transportation and launch services. This shift resulted in today's widespread use of cell phones, cable television, the Internet and many other products and services. These actions in the second epoch paved the way for the acceptance of further commercialization and privatization during the third epoch.

The third epoch is marked by activities that promote the hyper-privatization of outer space. For example, outer space is being discussed in the U.S. Congress, the Senate and the President's Commission as a vast untapped new territory which promises wealth for those who are able to go out and develop the final frontier. These government

institutions have held numerous hearings where private-sector actors have testified that they should be granted the legal right to possess space resources, territories in space and NASA's assets in order to encourage the further development of outer space. In this dissertation I argue that as the result of political lobbying activities by the private-sector, the Commercial Space Launch Amendments Act of 2004, the NASA Authorization Act of 2005 and the New Vision for U.S. Space Exploration Policy were created in order to facilitate the hyper-privatization of outer space in the third epoch.

### **STATEMENT OF THE PROBLEM**

It is clear that space law has undergone a noticeable shift in the post Cold War era. Although the commercialization of space was initiated during the 1980s, recent years have witnessed an increasing infiltration of free market ideology within the outer space development regime. Business moguls and the private-sector have become main actors in influencing regime change, yet key actors like the United Nations, the International Institute of Space law and the International Astronautical Federation do not appear to take U.S. efforts to hyper-privatize space seriously. These efforts by the U.S. may be in violation of international space law treaties passed during the first epoch. Without the substantial resistance to the privatization of space posed by the Soviet Union in the first and second epochs, there seems to be a growing acceptance of market-based principles for outer space development and new space industries. With the decline of the Soviet Union, this issue concerning private property rights regarding outer space has gained new fervor and is gathering momentum along with the rise in neoliberal free market ideology. These trends suggest that there is a relationship between neoliberal ideology, private capital, law, institutions, state power and the hyper-privatization of space.

There is a scarcity of scholarship in regime theory that explores this relationship. The literature on the outer space regime in a post Cold War era is mostly focused on describing specific domestic and international space law and does not interrogate the hyper-privatization of space. This dissertation seeks to address the ways in which the third epoch in the outer space regime is marked by hyper-privatization.

Why and how is the hyper-privatization of outer space occurring in the third epoch? Who are the old and new actors influencing this hyper-privatization? What mechanisms are being used by these actors to influence hyper-privatization? What are the cultural practices being used to gain legitimacy and consent in public discourse? This dissertation will address these and related questions to analyze the hyper-privatization of the outer space development regime in the third epoch.

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

Krasner's (1995) foundational work, *International Regimes* explains the basic causal factors such as power, interests, values, regimes, the relationship between regimes and related outcome, and behavior of nation states. According to Krasner, regime theory literature focuses on questions such as: How and why are international regimes formed? How do regimes affect state behavior and collective outcomes in particular issue areas? How and why do regimes evolve or dissolve? Highlighting the regime literature, Krasner groups existing schools of thought on international regimes into three categories – the "modal", "modified structural" and "Grotian" perspectives. These perspectives on regime theory correspond with the realist, neorealist and neoliberal institutionalist perspectives respectively which are discussed later in this chapter.

Similar to Krasner's overview of the regime theory literature, Hasenclever, Mayer and Rittberger (1997: 1) suggest that international regimes have been a main focal point of research in international relations for several decades. They treat the literature on international regimes as falling within three schools of thought: "power based approaches" which focus on the agenda of strong states dominating international regimes and weak nations participating in regimes as a result of power patronage, fear, censure, and covert or overt attacks; "interest based" approaches which suggest that regimes reflect a global harmony of interests, cooperation, complex interdependence and that international institutions serve as mechanisms of governance – resolving conflicts and facilitating cooperation; and "knowledge based" approaches which focus on knowledge dynamics, communications and identities. These categories are also referred to as realism/neorealism, neoliberal institutionalism, and cognitivist/constructivist approaches. The following sections utilize the classifications provided by Krasner and Hasenclever et al to discuss the regime literature and its significance to the study outer space. In this discussion I suggest that while realism/neorealism, neoliberal institutionalism, and cognitivist/constructivist approaches provide useful insights regarding the first epoch and some elements of the second epoch of outer space development, they are limited in their ability to explain the hyper-privatization of outer space in the third epoch. In contrast, a Gramscian approach provides a more comprehensive understanding of the outer space development regime and the changes which have occurred across the three epochs.

### **Power-Based Approaches: Realism/Neorealism**

Power based approaches to the study of regimes include realism and neorealism and correspond to Krasner's modal and modified structural approaches. In spite of the



various terms used, these approaches draw upon the core classical realist assumptions in which states are the most important actors in world politics. In these approaches state actors are assumed to be unitary, rational and motivated by self-interest (Bull, 1977; Morgenthau, 1978; Viotti & Kauppi, 1993).

For classical realists like Morgenthau (1948) who follow the tradition of ancient thinkers such as Thucydides and Machiavelli, the proclivity of nation states towards self-interest flows from Hobbesian assumptions about the “state of nature”. In the state of nature life is “nasty, brutish and short” leaving individuals no choice but to pursue self-interest. Although structural realists or neorealists share most of these common assumptions with classical realists they differ from them in that structural realists seek to understand world politics by focusing on the structure of the international system.

Neorealism also known as structural realism is a theory of international relations, which was developed and outlined by Kenneth Waltz (1979) in *Theory of International Politics*. Waltz’s theory sought to improve classical realism, which had been the dominant way of viewing international relations particularly after World War II. Neorealist theory uses a systemic approach where the international structure acts as a constraint on the behavior of states, causing states to act rationally. This approach rejects classical realists’ use of concepts such as “human nature”. For example Gilpin (1981) in *War and Change in World Politics* outlines the key factors which explain the rise and fall of state power through an examination of anarchy and power within the international system. Jervis (1998) in *System Effects: Complexity in Political Science and Social Life* argues that the international system shapes political behavior and that actors anticipate and strategize actions based upon the nature of the international structure. Thus, for

structural realist, the anarchical international structure shapes state behavior causing prudent states to pursue policies that maximize their power where possible and ensure their own survival. This perspective assumes that an anarchical state structure limits possibilities for state cooperation and promotes self-interested behavior in pursuit of national interest.

Classical realist and neorealist approaches to regimes, which Krasner calls “modal” and “modified structural perspectives”, take the standard view that the key actors are nation states, which are assumed to be rational, self-interested power-maximizers, focused primarily on national security and military issues. According to scholars subscribing to this view, regimes do not matter in international relations since the regime concept “obscures the basic economic and power relationships” between states in the international environment (Krasner, 1995: 1). For example, Susan Strange in “Cave! Hic dragones: a critique of regime analysis” objects to the regime concept on five grounds: 1) it is a passing fad 2) it is imprecise and woolly 3) it is value-biased 4) it distorts by overemphasizing the static and underemphasizing the dynamic element of change in world politics, and 5) it is “rooted in a state-centric paradigm that limits vision of a wider reality” (Krasner, 1995: 337).

Similar to the modal perspective, Krasner’s modified structural category assumes that states are the relevant key actors in international relations. Distinct from the modal perspective, these scholars argue that regimes can matter in two situations. For example, Stein (1982) argues that regimes can become important if rational self-interested states make a calculation that working within a regime can lead to either a mutually beneficial outcome, or regimes can also become important if states decide that a regime can prevent

a mutually undesirable outcome. Examples of this type of situation include the prisoner's dilemma and the game of chicken allegories (Krasner 1995: 11). According to this perspective, regimes may arise but only when individual state decision making has failed to produce the desired result (Krasner 1995).

These power-based theories of international relations offer useful explanatory tools for understanding the outer space regime. For example, the realists and neorealists view in which states are the key actors in international relations helps us understand the role of the United States and the Soviet Union in the first epoch of the outer space regime. In addition, Structural realists insights are helpful in explaining how the Cold War environment shaped state behavior vis a vis outer space development. However, these perspectives do not explain why the initial key actors in the outer space development regime, the United States and the Soviet Union and about 100 other states, were willing to forego self-interest and perform extensive trade-offs during the space law negotiations as they worked through the United Nations. These actions may be explained using neoliberal institutionalist approaches to regimes. However, as discussed later, even neoliberal institutionalism does not account for the influence of capital and economic interests triggering outer space development regime *change* during the second and third epoch.

By focusing on periods of regime change, this dissertation demonstrates the limits of a realist analysis for outer space development in a post Cold War era. A fuller explanation of the outer space regime dynamic requires more than realism's focus on international structure as a constant, or the relative distribution of power between states. Realism is strong in explaining the relevance of focusing on national interest and the

distribution of power between the United States and the Soviet Union during the first epoch. However, realist assumptions do not explain periods of change within the outer space development regime, nor the significant role played by private capital's ability to influence through *institutional* or *symbolic coercion*, and how this produces the *consent* of the international community to regime change.

### **Interest-Based Approaches: Neoliberal Institutionalism and the Grotian Perspective**

Neoliberal institutionalism corresponds with Krasner's third category, the "Grotian" perspective and with Hasenclever, Mayer & Ritterberger's "interest-based approach". This tradition posits the view that "regimes are a pervasive characteristic of the international system; and no patterned behavior can sustain itself for any length of time without generating a congruent regime" (Krasner, 1995: 1). According to Crawford, neoliberal institutionalists tend to be more interested in investigating institutional dynamics than realists (1996: 138). For example, Keohane and Nye's (1977; 1989) foundational piece, *Power and Interdependence*, contributes the understanding that "we live in an era of interdependence", and that the best way to "grasp the reality of interdependence in contemporary world politics" is by developing "potentially complementary models, or intellectual tools, for grasping the reality of interdependence in contemporary world politics" (Keohane and Nye, 1989: 4). Keohane and Nye (1989) argue that institutions are relevant nonstate actors in IR since they "provide information, can reduce transaction costs, make commitments more credible, establish focal points for coordination, and aid in the operation of reciprocity and multilateralism among states" (Viotti & Kauppi, 1999: 488).

Despite neoliberal institutionalists' adherence to a focus on international institutions and law, their assumptions about anarchy of the international state system are similar to neorealists'. Both believe that the anarchy of the international state system shapes the behavior of states, causing them to act in accordance with national interest defined as power (Keohane, 1986). However, unlike realists and neorealists, neoliberal institutionalists see regimes as intervening variables having the power to institute cooperation among states (Aceves, 1997; Keohane & Nye, 1977; Haas, Keohane & Levy, 1993; Suhr, 1997; Weiss & Jacobson, 1998).

Essentially, neoliberal institutionalists focus on the complexities of change and tend to argue that institutions have the power to influence international relations (Keohane & Nye, 1977 & 1989; Keohane, 1989, 1990 & 1993; Young, 1986, 1989 & 1992; and Young & Osherenko, 1993). For example, Weiss and Jacobson argue that “international agreements orient and coordinate the behavior of states and ultimately of enterprises, nongovernmental organizations, and individuals, steering behavior away from activities that are environmentally destructive and toward those that are environmentally benign” (1998: 1). Similarly, Levy, Keohane, and Haas (1993) make the argument that international cooperation is the key to the international regime’s ability to solve international environmental problems. They believe that successful cooperation requires effective “international institutions to guide international behavior along a path of sustainable development” (1993: 4).

According to the neoliberal institutionalist/interest-based/Grotian perspectives, regimes and the way nations behave are so intertwined that they cannot be disentangled. This view assumes that "no patterned behavior can sustain itself for any length of time

without generating some sort of congruent regime" (Krasner, 1995). Thus, neoliberal institutionalist theories have been perceived as central for understanding regimes in international relations. Indeed, they provide a more adequate explanation than realism by accounting for the relevance of nonstate actors and the processes through which nonstate actors operate. Using neoliberal institutionalism, one could argue that during the second and third epochs, economic, social and environmental issues were treated as being as important as matters of state power and national security. Also nonstate actors such as international institutions, corporations and organizations were relevant focal points for understanding international politics of the outer space development regime during the second epoch. However, as with realism, neoliberal institutionalism does not provide a framework for explaining the privileged position of private-sector business or the influence of free market ideology in a neoliberal economic order, or capital's role in influencing outer space development regime change. Although neoliberal institutionalists provide us with a framework to include multiple actors and multiple issues, this framework doesn't provide an explanation of the hegemonic influence of neoliberal free market ideology and globalization on space law or on outer space development regime change – specifically the hyper-privatization of outer space in the third epoch.

### **Knowledge-Based Approaches: Cognitivism and Constructivism<sup>3</sup>**

In their analysis of the literature on international regimes, Hasenclever, Mayer, Rittberger's (1997) third category the "knowledge-based" approaches, include *cognitivists* such as Adler and Haas (1992), P. Haas (1992), and Jönsson (1993) along with *constructivists* such as Wendt (1995, 1994 & 1992) and Wendt and Duvall (1989). Hasenclever, Mayer and Rittberger explain that the cognitivist school provides important

insights for the study of regimes since cognitivists look at decision makers and the subjective belief systems that they possess. These belief systems are assumed to serve as intervening variables, between actions and outcomes (Haas, 1990). Accordingly, Hasenclever, Mayer & Rittberger (1997) explain Kratochwil & Ruggie's (1986) contribution to the regime theory literature as providing a focus into the intersubjective realm. This is useful in order to figure out why people form certain expectations and why they decide to cooperate, or not. This is an example of cognitivists' belief, provided by the Hasenclever, Mayer & Rittberger framework, that in order to understand choices made by policymakers, we must first understand that policymakers are human beings who already have thoughts on their mind. These people are taking in information, not as clean slates. Rather, their thoughts about how to handle and proceed on issues are processed through their existing belief systems. Other theorists included in this category are Adler & Haas (1992: 367) and Haas (1992). Decision makers within this approach are assumed to possess a knowledge base, which shapes their perception about reality, and this causes them to behave in certain ways with certain issues.

Cognitivists have been criticized for treating ideas as being separate from identities (Laffey & Weldes, 1997), and for placing too much emphasis on empirical analyses of observed behavior. It is argued that this prevents them from explaining the importance of "the structural quality of ideas in the form of intersubjective meanings" (Bieler, 2001: 95; Yee, 1996). Their greatest weakness, in terms of this particular study, is that cognitivists ignore the processes involved with how the ideas become those of policymakers. For example, in the post Cold War era, key decision makers with the United Nation Committee on Peaceful Uses of Outer Space, International Institute on

Space Law and International Astronautical Federation gradually became more accepting of commercialization and privatization processes. Space industry successes, measured in terms of profits and increased GNP is often mentioned as the reason for the global acceptance of free market ideology regarding outer space. Although seldom mentioned, globalization processes and the dominance of free market ideology also influenced these changes in the minds of decision makers.

Constructivism is another useful theory for understanding outer space development regime change. Constructivists are useful in explaining that belief systems are shaped by discourse production. Constructivists look at ideas as "shared forms of practice, sets of capacities with which people can construct meaning about themselves, their world and their activities" (Laffey and Weldes, 1997: 210). Furthermore, Wendt (1992) offers the insight that "anarchy" is socially constructed by ongoing processes such as state interactions and that these processes determine how international phenomena are perceived and reacted to by key actors. Thus, constructivism, offers a framework for analyzing the process by which ideas, identities and interests are adopted by decision makers. *Cognitivist* and *constructivist* approaches provide a few missing links to understanding the regime change regarding outer space development. Both focus on social theories that explain identities and interests and both focus on how social structures shape actor identities, interests and behavior. Therefore, these approaches are useful, for example, to explain divisions within the outer space development regime, and how some actors disagree on issues concerning private property rights. Furthermore both are useful in explaining things like why some political actors accept, yet others reject, for example, the common heritage of mankind concept. Both of these "knowledge-based approaches"



offer further insight into the situation of outer space development regime change. However, neither pays close enough attention to the impact that the structural characteristic of the post Cold War era has had on the third epoch of outer space development and the role played by the dominance of free market ideology.

### **Gramscian Approaches and Regime Change<sup>4</sup>**

Although Gramscian approaches to IR have been relatively recent, there is now a burgeoning literature on the extended state, international civil society, culture, international hegemony, and the role of the U.S. in neoliberal globalization (Steger, 2002). However, the usefulness of Gramscian approaches to the study of international regimes has been largely overlooked. In contrast to the approaches discussed above, a Gramscian analysis enables us to better understand hyper-privatization of outer space in the third epoch, since it includes a broader range of social, economic and political factors in its framework. This dissertation shows that applying a Gramscian analysis to the outer space development regime elucidates the distinct ways in which the hegemonic power of neoliberal ideology has influenced outer space development regime change.

Hasenclever, Mayer & Rittberger include Cox (1996, 1992, 1986 & 1983) as part of the *historical-dialectical* category within the “knowledge-based” approaches. However, this downplays the real importance of a Gramscian analysis to international regimes. As discussed in previous sections, the existing literature on international regimes provides only a limited understanding of the key role played by private capital in outer space development regime change. For example, mainstream theories of international relations avoid even mentioning capitalism and imperialism (Rupert & Smith, 2002: 76). Gramscian thinkers treat capitalism as central to understanding key

roles played by states, institutions and the private-sector. As such, a Gramscian inquiry aids us in understanding “globalizing capitalism – its dynamics and trajectory (or, more accurately, its possible trajectories) – and investigates how some of these traditions of thought can be used to help us understand contemporary international relations – or ‘globalization’ ” (Rupert and Smith, 2002: 4). Rupert and Smith demonstrate “the relevance of historical materialist approaches to the study of globalization and international relations” and remind us “of the continuities which related contemporary global processes, and indeed possible future worlds, to the history of capitalism as an expansive form of social organization” (2002: 4).

According to Gill, three main differences can be identified between Gramscian approaches and “the major traditions and prevailing orthodoxy” of international relations (1993: 22). First, a Gramscian approach suggests that “historical change is understood as, to a substantial degree, the consequence of collective human activity” (1993: 22). This fetish with the “abstract structuralism” obfuscates the important role that collective human action and historic blocs play in global societal changes. In such a scenario privileged actors like private capital are made invisible even though they play an active role in bringing forth regime change. Second, historical change results from “ensemble of social relations configured by social structures . . . rather than individual agents, be they consumers, firms, states or interest groups, interacting in a (potentially rule-governed way) in the ‘political market-place’ at a given moment or conjuncture, as in modern public choice theory” (Gill, 1993: 24). Thus a Gramscian approach in which the “extended state” and private capital, are treated as part of an “ensemble of social relations configured by social structures”, play an important role in influencing global international

changes. This is distinct from the actors in a neoliberal institutionist framework who are assumed to act as individual agents bringing about social change. In the neoliberal institutionalist framework, a focus on the collective is neglected in favor of highlighting individual actors and institutional actors.

Third, a Gramscian approach prioritizes questions of equality, “justice, legitimacy and moral credibility” emphasizing “movement” rather than “systemic order and management” (Gill 1993: 25). In contrast to the orthodox approaches whose focus on political order causes them to analyze the global political economy from the vantage point of the wealthy. A Gramscian approach focuses on “the bottom upwards, as well as the top downwards, in a dialectical appraisal of a given historical situation: a concern with movement, rather than management” (Gill, 1993: 25).

A Gramscian analysis highlights the concept of hegemony focusing on the ideological legitimation of norms and consensus in civil society and the vision of an extended state which includes institutions of civil society such as the church, educational system, and the media. In other words, the extended state includes the administrative and coercive institutions of government as well as the institutions in civil society which shape the way people think and act (Cox 1993). The concept of hegemony is useful in understanding relations of domination and subordination in global politics within the context of historic blocs and world order. According to Cox, a historic bloc is “a dialectical concept in the sense that its interacting elements create a larger unity” in which the interacting elements of superstructure (political, ideological, spiritual spheres) interact with the substructure (the economic sphere) to form an “ensemble of social relations of production” (Cox, 1993: 56). The role played by “organic intellectuals” is

important in the formation of a historic bloc as these intellectuals provide the building blocks for the hegemonic discourses of legitimation. In addition, Gramscians argue that ideas build broader systems of thought "which condition the way individuals and groups are able to understand their social situation, and the possibilities of social change" (Gill & Law, 1988: 74). Thus, the role of organic intellectuals is important in counter-hegemonic movements as well.

Gramscian concepts as discussed above provide a unique vantage point from which to analyze the outer space development regime in the third epoch. For example, the concept of "hegemony" is useful in explaining hyper-privatization of outer space in the third epoch. Specifically, this concept provides five features to enable us to better understand how international institutions serve as instruments or "mechanisms of hegemony". Cox (1993: 62) explains these features by suggesting that international organizations 1) embody the rules which facilitate the expansion of hegemonic world orders; 2) are themselves the product of the hegemonic world order; 3) ideologically legitimate the norms of the world order; 4) co-opt the elites from peripheral countries and 5) absorb counter-hegemonic ideas. In so doing, Cox explains that "international institutions embody rules which facilitate the expansion of the dominant economic and social forces but which at the same time permit adjustments to be made by subordinated interests with a minimum of pain" (Cox, 1993: 62).

Gramsci's concept of "consent" explains how the extended state and organic intellectuals operate to shape behaviors and belief systems within "civil society" so that a significant number will accept hyper-privatization. This includes explaining the way hyper-privatization is being constructed as a necessity by a bourgeois class made up of

private-sector business moguls who have established hegemony by legitimizing their dominance through the formal political organs of the U.S. government. The concepts “consent” and “coercion” work together to explain processes involved with U.S. efforts to get international institutions and the general public to go along with the hyper-privatization of outer space. Historically this has involved both symbolic and institutional coercion. As Chapters 2, 3 and 4 demonstrate, the U.S. has historically operated as a dominant neoliberal state in influencing international institutions and other states to accept commercialization and privatization practices regarding space industries. Forms of U.S. – led concessions, which have included the threat of being left out of new space industries, the promise of participation in new outer space technologies, and agreements allowing for profit-sharing in outer space industry have led states to comply with US led commercialization of outer space. This resonates well with Cox’s argument that “the dominant state takes care to secure the acquiescence of other states according to a hierarchy of powers within the inter-state structure of hegemony” (1993: 63).

A Gramscian application of the consent concept is critical to explaining the general acceptance of commercialization, privatization and free market liberalism regarding outer space development. At the US cultural level, people outside the outer space development regime are taking on new perceptions about outer space, perceptions that glamorize a new image of space. Space has gone from being seen as a realm for government trained astronauts, to being seen as a cool place to visit, if you have enough money. Publicity regarding space tourism and private space tourists such as the Dennis Tito flight, magazine articles, news reports, conversations and many other forms of discourse are shaping these new perceptions.

A Gramscian analysis which allows for a focus on a broader conception of the state, which includes civil society, allows us to interrogate the cultural changes mentioned above in light of their embeddedness in the third epoch of hyper-privatization. For example, members from the private sector have negotiated for concessions from the U.S. government which include educational and employment initiatives, new plans for entertainment and prizes for the small business community. A Gramscian analysis suggests that these types of practices are for the purposes of ensuring consent in international civil society and in the United States. Cox explains this phenomenon as one where “the neoliberal state played a hegemonic role by making capital accumulation on a world scale appear to be compatible with a wide range of interests of subordinate groups” (1993: 268). These processes are closely linked to the ideological role played by the dominance of free market ideology and capitalism in the third epoch of the outer space regime (Rupert and Smith, 2002). The United States’ position as a dominant state which professes free market neoliberal ideology has influenced international institutions and multiple channels and networks between space industries and other private and government institutions to accept commercialization and privatization during the first and second epochs. Cox explains this as the way “adherence to universalised principles which are accepted or acquiesced to by a sufficient proportion of subordinate states and social forces” (1993: 264).

Thus, a Gramscian analysis enables us to acknowledge the importance of the role played by capitalism, globalization, U.S. domestic lawmaking’s power and influence on international regimes, the role of consent and coercion, and organic intellectuals in historic blocs and how these processes produce hegemony. It also allows for a more

careful probing of the ways in which the international structure has shifted over three epochs, and how capital and the dominance of free market ideology have influenced commercialization and privatization practices through institutions and are influencing hyper-privatization of outer space development. As stated earlier, Rupert and Smith (2002: 76) point out that “orthodox social science, and international relations, avoid” speaking about capitalism and imperialism. It “is as if the central motor of this phenomenon is too complex, or too sacred, for social science to utter its name: this, more than any other discursive denial, constitutes the ideology of social science, globalization studies included, today” (Rupert and Smith, 2002: 76). They further assert “that this process is conducted for profit, with the aim of both subjugating and incorporating, is the central dynamic, and secret, of the modern epoch” (2002: 76). This insight is particularly useful in explaining the new boldness of the private-sector in asserting free market rationales within both U.S. and international forums.

## METHODOLOGY

This dissertation utilizes a Gramscian approach for explaining change in the outer space development regime. In essence, a Gramscian framework suggests that “fundamental changes have to be grasped as a whole. This whole is the configuration of social forces, its economic bases, its ideological expression, and its form of political authority as an interactive whole. Antonio Gramsci called this the *blocco storico* or *historic bloc*” (Cox 1993: 259). Thus, the methodology deployed in this dissertation includes political, legal, and historical analysis. Legal analysis provides the “content and context” (Garavaglia, 2005: 46) of existing laws and policies regarding outer space, including U.S. legislation such as bills, acts and laws. In addition, it also includes an

analysis of executive branch policies covering the issue of outer space, and the international space law treaties. Historical analysis, or what Gramscians call historicism, involves understanding ideas and social forces within their historical context. This includes interrogating the mechanisms of hegemony including the relationship between state and civil society and the manufacturing of consent, the ideological and political environment at various historical moments, mechanisms of influence such as laws, policies, and institutions, and how these social forces and mechanisms shape change in the outer space development regime.

This dissertation uses both primary and secondary resources that address space law and space policy during the three epochs of outer space development. The initial project began with legal research on primary resources on space law including international and U.S. domestic law pertaining to outer space, the United Nations international space law treaties, and Congressional and Senate hearings on outer space development. Other primary resources include U.S. government reports, correspondence, speeches, Executive Orders, Presidential Directives, policy statements, domestic laws, and transcripts from the President's Commission hearings in 2004. In addition, transcripts from business moguls and members of the private-sector testifying before the U.S. Congressional Subcommittee on Aeronautics and Space (2001-2004), and the Senate Subcommittee on Science, Space and Technology (2001-2004) were also utilized.

Primary documents which were analyzed from the United Nations also include the five international space law treaties, and other documents leading up to these treaties such as proposals and working group reports, meeting minutes, and workshop presentations. Other international documents examined include Colloquium Proceedings



of the International Institute of Space Law and program outlines of the International Astronautical Federation. A large number of websites were also reviewed and analyzed including the President's Commission on Moon, Mars and Beyond, the U.S. House of Representatives, the Space Exploration Alliance and the Coalition for Space Exploration and their affiliate corporations and organizations, and the various websites of the space tourism companies and business moguls discussed in Chapter 5 and Chapter 6.

Primary sources also include the informal and fact finding interviews that I conducted with space lawyers who are members of the International Institute of Space Law, the head of the legal subcommittee of the Committee of Peaceful Uses of Outer Space, the Secretariat of the United Nations on Outer Space Affairs, and various members of the International Astronautical Federation Congress.

Secondary resources include books, articles, dissertations, movies, and magazines dealing with outer space. Since my dissertation focuses on outer space development regime change in the third epoch, I relied mainly on the works of others in order to understand, describe and mark outer space development regime change during the first and second epochs. This involved secondary resources detailing the specific history of the negotiations leading up to the five international space law treaties which were created from 1957 to 1979.

In addition, I attended the 7<sup>th</sup> Annual International Space University Symposium in Strasbourg, France, June 4-7, 2002. Immediately following this symposium, I attended the United Nations Office for Outer Space Affairs, Committee on Peaceful Uses of Outer Space 45<sup>th</sup> Session in Vienna, Austria, June 11-13, 2002. During July 2002 I spent time researching various books and other resources in the library of the European Center for

Space Law in Paris, France and I met with space lawyers employed by Germany's Space Agency (the DLR) in Cologne, Germany on July 2, 2002. I also conducted fact finding research by attending the World Space Congress (which encompassed annual meetings of the 53<sup>rd</sup> International Astronautical Federation and the International Institute of Space Law) in Houston Texas, October 10-18, 2002. To further get a grip on important issues regarding outer space development, I attended the 54<sup>th</sup> International Astronautical Federation Congress in Bremen Germany, September 28 – October 3, 2003. I also attended an Arizona State University special event for community discussion regarding President Bush's New Vision for Space Exploration policy, held April 30, 2004 in Phoenix, Arizona.

## **SIGNIFICANCE**

This project is significant in several ways. First, it provides an important analysis of the changes that are taking place in the outer space development regime in the post Cold War era. Although the outer space development regime is being hyper-privatized in the third epoch, the role of private capital, its interconnections with the US state, and the influence of a neo-liberal global order on change within the outer space development regime have not been systematically documented. This dissertation provides a documented analysis of these changes in outer space development.

Second, this dissertation is theoretically significant because it provides a Gramscian perspective on the nature and scope of regime change. Although there is a burgeoning literature on outer space development, it has not focused on the ways in which current neoliberal global order and the privileging of private capital has influenced change in the outer space development regime. This dissertation, which suggests that the

role of capital is central to understanding outer space development regime change will provide a unique vantage point for understanding the influence of neoliberal ideology and the power of private capital in the politics of international regime change.

Third, this project will provide important insights into policy decisions on viewing outer space as the “province of mankind” rather than as the “common heritage of mankind”.<sup>5</sup> It will also shed light on the shift from the international realm as the focus of international lawmaking to the initiative in space lawmaking coming from the domestic arena of the United States. By suggesting that the U.S. neoliberal agenda is now visible in the hyper-privatization of outer space development, this dissertation demonstrates the new direction that outer space development is taking today. Finally, by examining how the neoliberal agenda is bringing in new interpretations of private property rights, this dissertation addresses how the “province of mankind” principle is being replaced by the characterization of space as a free market domain.

## **CHAPTER SUMMARIES**

Chapter 2 analyzes the history of space law during the first epoch from its inception in 1957 to 1979. It demonstrates that the United States acted as a hegemon, in the Gramscian sense, even though space lawmaking during the first epoch was initiated, negotiated, developed and codified by various state actors including the Soviet Union functioning as a competing superpower. Using a Gramscian lens, this chapter focuses on the international ideological and political environment of the first epoch to suggest the need for the creation of international space law was prompted by Cold War fears. Because of the presence of the Soviet Union and the United States as competing powers during the Cold War and the trust in the United Nations, space lawmaking was treated as

an international affair during the first epoch and the norms and rules of outer space law were debated, negotiated and drafted in the United Nations.

Chapter 3 provides a brief history of the second epoch of outer space development (1980-1991) using a Gramscian analysis. It further demonstrates that U.S. hegemonic influence over international institutions increased during the second epoch and it discusses how U.S. laws and policies under the Reagan Administration caused space lawmaking to shift from the international arena to the domestic sphere. Hence this chapter provides an explanation of how the United States initiated outer space development regime change and facilitated space commercialization through domestic space laws rather than to defer to the United Nations international lawmaking machinery.

Chapter 4 suggests that with the demise of the Soviet Union free market ideology became increasingly dominant. The subsequent rise in U.S. hegemony and the dominance of free market ideology impacted the outer space development regime and the U.S. began to accelerate the commercialization and privatization of satellite telecommunications, the International Space Station, the space transportation and spaceport industries through a series of U.S. domestic space laws and policy. It takes a closer look at the process of creation and passage of U.S. domestic laws that facilitated privatization and commercialization in the areas mentioned above. This chapter demonstrates how this was done by drafting various domestic laws, bills and policy statements to encourage this transfer of space activities over to private corporations. It also discusses how space commercialization has become generally accepted by the international regime.

Chapter 5 identifies the new actors that have emerged in the space law and outer space development regimes in the post Cold War era. This chapter establishes that

globalization and free market ideology are prevalent shapers of politics today, and it demonstrates how these realities have impacted space law in the post Cold War era. It outlines recent actions, by old and new actors, categorizes them into three broad areas: the U.S. government, the private-sector and the international space community to discuss the ways in which the outer space development regime has been impacted in the third epoch. It also defines the concept “hyper-privatization” of space as a new phenomenon involving private-sector actors lobbying the U.S. government for new laws which will legitimize private property rights regarding *space exploration*, *space resources* and *outer space development*. In this chapter I discuss the current dominant global mindset promoting the notion that priority must be given the internationalization of capital and profit motive. Thus it identifies the prominent role played by private capital in the outer space development regime - identifying new actors and their actions. It further demonstrates the connection between the lawmaking process and the dominance of free market/neoliberal ideology and globalization. This enables us to better understand and explain why three periods of regime change have occurred, and how they have shifted from government to private and commercial.

Chapter 6 investigates the specific activities taking place at the cultural level since this seems to be shaping new popular perceptions about outer space development. This includes new images of space travel recently being represented in the news, films, and magazines. It explains the importance of how space tourism is being represented today and the use of culture and ideology in shaping public ideas about space. Since ideology is usually shaped at the cultural level, I see popular cultural efforts in outer space as critical in gaining legitimacy and public consent for the hyper-privatization of space.

Chapter 7 set forth conclusions and implications of this study of the activities and actors operating to influence hyper-privatization of outer space as a form of regime change, and it lays out a framework for understanding how space lawmaking works within the confines of the world capitalist system. The initiation of new U.S. space laws and policy by members of the space transnational capitalist class, in conjunction with cultural practices, which have been put into place to gain consent from the general public, suggest that a dominant class of actors are facilitating the hyper-privatization of outer space. As such, they have established hegemony, by legitimizing dominance through the formal state apparatus, and by getting civil society to consent to these processes. Using Gramscian concepts hegemony, consent, symbolic and institutional coercion, the extended state, organic intellectuals and historic bloc, this chapter concludes that a Gramscian analysis best explains these relationships and how they have worked over historical moments. This includes highlighting the role played by state power and the influence of private capital. It also demonstrates how divestiture of publicly owned space assets including space exploration technology and equipment, natural resources and space territory is being facilitated through laws and policy, to benefit a dominant group. It explains that according to international space law the general public which owns these vast space resources. Yet, the members of the general public, as a subordinate class, are not scheduled to benefit in any significant way by the new policy.

## ENDNOTES

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<sup>1</sup> The term regime is used here in accordance with the literature in international relations to imply the “implicit or explicit principles, norms, rules, and decision making procedures around which actors’ expectations converge in a given area of international relations” (Krasner, 1995: 2).

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<sup>2</sup> I use the term hyper-privatization instead of privatization to suggest that the scale and intensity of divestiture being proposed of large-scale public resources including space assets, natural resources found in space, and territory in outer space. Proposals to carry out these efforts are continuously on the agenda. These types of private-sector actions regarding outer space are unprecedented. Although the second epoch saw the privatization of some space industries, it is only in the third epoch that efforts to secure ownership rights to outer space are being influenced by private-sector actors. I support this hyper-privatization assumption in detail in Chapter 5.

<sup>3</sup> Krasner does not have this category in his discussion of regimes.

<sup>4</sup> There is no single Gramscian approach to international relations and there are many different interpretations and applications of Gramscian ideas to international relations. However, there are some fundamental principles that I identify with a Gramscian approach which I discuss in this section.

<sup>5</sup> These two legal principles "province of mankind" and "common heritage of mankind" must be clearly distinguished. The common heritage of mankind doctrine was derived from the Roman law concept, *res communis*, which means that resources and territory designated in this way are classified as community property. As such it cannot be owned by any state, individual(s), entity, or combination of entities (Heim, 1990). In contrast, the province of mankind principle was a legal term developed specifically during the Outer Space Treaty negotiations to avoid using the term common heritage of mankind (Jasentuliyana & Lee, 1979-1981).

## **CHAPTER TWO**

### **THE FIRST EPOCH OF OUTER SPACE DEVELOPMENT (1957-1979)**

It was during the first epoch that the outer space development regime was created, and so was space law. Visionaries had written about outer space for centuries but it was the Soviet Sputnik launch in 1957, which marked the beginning of the space race. At this time, the international political environment was still freshly tempered by World War I and II. The reactions of the international community to the Sputnik launch were shaped by Cold War fears. Shortly after the launch, nation states immediately urged the United Nations to create laws to govern the outer space territory. The UN did as instructed, and it created the Committee on Peaceful Uses of Outer Space (COPUOS) and the International Institute of Space Law (IISL)<sup>1</sup> for the purpose of creating space law. After nearly ten years of state negotiations, five international space law treaties and five declarations to provide the international community with the principles of space law.

During the first epoch, the new outer space development regime consisted of three main actors: the United States, the Soviet Union, and a group of various states operating through the United Nations. The U.S. and U.S.S.R., two superpowers, constantly vied for alliances with other states in order to maximize their interests in the outer space regime. To this extent, less powerful states had the power to exert their interests during the space law negotiations. This was the international power dynamic at the beginning of the space age. Therefore, although the United States has had an interest in a free market direction for space activities, it had to consider the interests of the U.S.S.R. and other states. Early attempts were made by the U.S. to impose a free market direction to outer space development. For example, as early as 1959, President Eisenhower declared that the U.S.



Government “. . . should aggressively encourage private enterprise in the establishment and operation of satellite relays for revenue-producing services" (Jasentuliyana & Lee, 1979-1981, Vol. 1: at 304). U.S. attempts to press from free market commercialization principles were often thwarted by the Soviet Union, and superpower ideological conflicts created severe impasses in the space law negotiations.

The historical record of space law negotiations between nearly 100 nations reflect this power dynamic. This includes how less powerful states negotiated for clauses ensuring the prevention of militarization and colonization of outer space by the U.S. or the U.S.S.R. In exchange for these types of assurances, less powerful states acquiesced to U.S. and Soviet proposals to treat outer space as a commons territory which belonged to no one state. Pursuant to the Outer Space Treaty of 1967, ninety-eight nations agreed that outer space would belong to the “province of mankind”, that all nations would have the freedom to “use” and “explore” outer space, and that both these provisions must be done in a way to “benefit all mankind”. The province of mankind principle was never specifically defined (Jasentuliyana, 1992), thus allowing the superpowers to pursue their interests.

This chapter provides a historical analysis of the politics surrounding the first epoch in the outer space development regime. In addition, it discusses the key legal principles which were created to govern activities in outer space, the key actors instrumental in shaping these laws, and the role played by the United Nations as a key actor in the outer space development regime. As stated in chapter one, a Gramscian analysis best helps explain the dynamics surrounding the three epochs of outer space development. The three epochs are best understood as distinct historic blocs in which the

substructure (economic sphere) interacts with the superstructure (political, ideological, spheres etc) to form a new historical epoch in the development of the outer space regime. Thus, each epoch is marked by distinct economic, ideological, political, and social constellations.

Consistent with realism theory, state power, national security, and disarmament dominated space discourse in the first epoch. However, consistent with neoliberal institutionalism, economic interests became key factors in shaping outer space development. Yet, much is left unexplained by these theories. For example, a Gramscian approach explains these two phenomena while also explaining the political-ideological environment which caused space law negotiations to be constantly halted mainly because of ideological conflicts between the two superpowers. In comparison to President Eisenhower's attitude towards Khrushchev, President Kennedy triggered a new cooperative relationship with Khrushchev, which served to alleviate the impasse, causing space law negotiations to continue. Therefore, personalities of state leaders mattered in forging a direction for outer space development. U.S. Presidents Kennedy and Johnson stand out as being key influencers in the intellectual and moral leadership for outer space development during this period. Thus, organic intellectuals along with the international political-ideological environment played an integral part in the shaping of the outer space development regime in the first epoch. For example, international space lawmaking was most successful during *détente*, when superpower tensions were relaxed. During this period the core space law treaties were negotiated, drafted, and signed by the international community acting through the United Nations. When political *détente*

between the United States and Soviet Union waned in 1979, so did the process of international space lawmaking.

In the following sections I will discuss the first epoch using a Gramscian lens which highlights how cold war ideology and politics shaped international space law treaties, acceptable economic practices in the outer space development regime, and popular perceptions of outer space. For example, as I will discuss later in the chapter, the term “province of mankind” instead of “the common heritage of mankind” was inserted into the outer space treaty of 1967 in order to get both the USA and the USSR to sign the treaty. Thus competition between the superpowers was instrumental in determining the outcome of space law treaty negotiations during the first epoch. In addition, civil societies’ perception of outer space was also shaped by cold war fears. Reactions to the launching of Sputnik are best explained by the ideological climate of “fear” fostered by superpower rivalry.<sup>2</sup> These fears enabled the centering of national security in outer space discussions and preventing military installations in outer space became a key focus of the first epoch. Also intimately connected to this history is the way organic intellectuals made the general public feel about outer space through discourse. Outer space discourse during the time of Sputnik included science fiction books, films, newspaper reports, speeches and magazine images which constructed outer space and space travel as a scary thing. Therefore, when state leaders proposed increases in the military and defense budget, civil society consented. When state leaders proposed that the nation win the space race to the Moon, the civil society consented.

In this chapter, I begin with a discussion of the role played by the political and ideological environment in shaping outcomes during the first epoch. Second, I explain

that despite the presence of the USSR, the United States has played a hegemonic role in influencing international institutions to adopt its interests as international interests regarding outer space development since the first epoch.

### **The International Political and Ideological Environment**

As stated earlier, the superstructure, which includes the political and ideological spheres, was extremely important in structuring the first epoch of the outer space development regime. Cold war ideology was central to the construction of the regime itself, including the five international space treaties. The treaties containing the governing norms for space are still relevant today. In this section I use a Gramscian lens to analyze the history and politics of space lawmaking during the first epoch. This section explains the politics surrounding the creation of space law and how this was influenced by the Cold War ideological-political environment. This includes 1) Sputnik and the space race 2) international space lawmaking within the United Nations 3) détente and 4) the role played by U.S. civil society in influencing government spending on space.

### **Cold War Ideology**

I suggest that the political and ideological environment of the Cold War was an important shaper of the outer space development regime. Most accounts of the Cold War explain the politics of that era by using realism or neorealism theories. However, Cold War ideology can be better explained by using a Gramscian lens. According to most accounts, the Cold War began from around 1945 until 1991.<sup>3</sup> The Cold War was marked by superpower rivalry in which the United States seemed to feel it could not trust the Soviet Union, and vice versa. The United States and the Soviet Union rivaled to be seen by the world as the best - ideologically, technologically, militarily, economically,

politically, and culturally.<sup>4</sup> The main characteristic of the Cold War environment was that the ideological contest between communism and capitalism governed political decisions concerning international relations. For example, Painter (1999: 19) notes, “anti-communism became a guiding principle of US foreign policy and a significant force in US domestic politics” (Young, 1999; and Smith, 1998; and Woods & Jones, 1991). A similar sentiment existed on the Soviet side regarding capitalism and the American superpower rival (Mastny, 1979; McCagg, 1978; Taubman, 1982). During this period, tensions and hostilities were high, even though the United States and Soviet Union were not openly fighting a war against each other. Instead, they were involved in wars by supporting allies against their rivals in proxy wars in places such as Korea and Vietnam and many other places in Africa, Asia and the Middle East.<sup>5</sup> The Cuban Missile Crisis is a prime example of the cat and mouse tensions (Raymont, 1988). It was within this context that the “space race” began. At this time, Eisenhower was President of the United States and Secretary Khrushchev was the leader of the Soviet Union. The superpower rivals made political decisions based on the fear that the other might use this burgeoning space technology to launch atomic or nuclear missiles, or to colonize the Moon, other celestial bodies, or outer space in general.

The US and the USSR were not the only state actors in negotiating the space law treaties. Since the US and USSR vied with each other for alliance with other states, less powerful states could exercise a modicum of power. On the issue of space law, less powerful states’ interests were threefold: to protect against the possibility of one of the superpowers causing nuclear war from missiles launched from or stationed in outer space; to prevent the superpowers from colonizing the Moon or other areas of outer

space; and to prevent U.S. or U.S.S.R. from greedily appropriating outer space territories and resources before they themselves were able to amass sufficient resources to take advantage of the new space age.

The Cold War environment thus was instrumental in shaping the terms of space law treaties. The power dynamic between the US, USSR and other states working through the United Nations resulted, for example, in a space treaty that remains unclear and vague on the issue of property rights in space. The key factors outlined in the sections below provide a discussion of the politics of the Cold War environment was an important shaper of outer space development regime in the first epoch.

### **1. Sputnik and the Space Race**

The Sputnik launch<sup>6</sup> by the Soviet Union was the key event prompting the outer space development regime. From a legal perspective, the concern in the United Nations was that launching satellites into orbit would become an acceptable international practice. Unchallenged, the Sputnik launch, and subsequent launches could have become permissible as legal custom (Metcalf, 1999: 82-84). Therefore, when Sputnik was launched on October 4, 1957 President Eisenhower and other state leaders took immediate action urging the United Nations to create laws for outer space (Doyle, 2002).

In addition to the legal concerns prompted by the Sputnik launch, there was the concern that the Soviet's may be winning the ideological competition and may be seen by other states as superior to the US. Sputnik not only demonstrated the technological ability of the Soviet Union to strategically launch, monitor and track a satellite, it was also visible around the world and was discussed in the US and European media as the "red moon" or "man-made moon"(Collier & Collier, 2002). The Sputnik launch was perceived

by US state leaders as a demonstration of the Soviet ability to launch inter-continental ballistic missiles (ICBMs) which could pinpoint and target strategic locations. In addition, many people, including the media, were surprised and shocked by the Sputnik launches (Krug, 1991). This was because after World War II there was a boost to the U.S. ego. It was seen by many as the leader of the “free world”. It was known for mass producing consumer items such as shiny new cars, refrigerators and color television sets. It was ideologically referred to as the “New World” and as a land full of optimism, technological innovation, and opportunity. It was generally believed that the U.S. was the world leader in technology and science.

In spite of its image as a technological giant, the U.S. was losing the space race. In addition to being the first in launching the Sputnik satellite, the Soviets were also first to send a human into space - Yuri Gagarin in 1961.<sup>7</sup> Although Alan Shepard was the first American to successfully orbit Earth in 1962, it was clear, the Americans were falling behind in the space race. There was more at stake than just winning the space race. The ideological battle between communism versus capitalism was still going on.<sup>8</sup> Since the launching of Sputnik was perceived as a military threat in the United States and Europe, thus the focus during the first stage of UN discussions was on national security and disarmament. Consistent with a Gramscian analysis, the superstructure of politics and ideology during the cold war determined the focus of the negotiations on outer space. Similar to the early tensions between the superpowers which formed the basis of early discussions on outer space, détente also molded the outcomes of outer space negotiations.

## 2. Détente

In addition to the start of a space race ideological competition between the two superpowers other factors influences the direction of outer space development. For example, *détente* - a state of relaxed political tensions between the United States and the Soviet Union (Painter, 1999), which lasted from the late 1960s until around 1979, influenced the most fruitful period of international space lawmaking within the United Nations (Von Bencke, 1997).<sup>9</sup> Jasentuliyana and Lee (1979-1981) discuss the negotiations which resulted in the five UN outer space treaties. After ten years of negotiations between nearly 100 nations, the Outer Space Treaty was opened for signature on January 27, 1966 and entered into force as the Constitution for outer space on October 10, 1967.<sup>10</sup>

The Outer Space Treaty was well received; it was ratified by ninety-six nations and signed by another twenty-seven states.<sup>11</sup> As the first effort to regulate activities occurring in outer space, it established several principles of international law, making it the most important treaty in the field of space law.<sup>12</sup> Moreover, it incorporates the principles of peaceful use of outer space, cooperation between space faring nations and the extension of the rule of law into outer space; thus it is also “considered the cornerstone of international space law and the progenitor of the legal theories which found fruition in the four agreements following it” (Berkeley, 1997: 3).<sup>13</sup> Among the key principles contained in the five international space treaties is the understanding that outer space was deemed to belong to the *province of mankind*<sup>14</sup>, as distinct from the *common heritage of mankind*. Although this province of mankind principle was vague and undefined, creating such a term demonstrates the eagerness of the international



community to finalize a treaty for outer space. Neither the U.S. nor the Soviet Union would have agreed to sign the Outer Space Treaty if it had contained the common heritage of mankind wording since neither was willing to “freely share their space technology” with the rest of world (Von Bencke, 1997: 43). This sentiment had been expressed throughout the outer space treaty negotiations from 1958- 1966 (Jasentuliyna and Lee, 1979-1981). The treaty also contained granted all nations the right of *freedom of exploration and use* of outer space, prohibited anyone from *appropriating* outer space (in accordance with the already accepted *res communis*) principle, mandates that all space activities must be carried out for the *benefit of all mankind*, and insists that outer space must be used for *peaceful purposes*.

To further demonstrate the impact that the international political environment has had upon the creation of space law, although the first epoch was a fruitful period of international space lawmaking, this situation ended in 1979 when détente ended. The last space law treaty, The Moon Treaty of 1979, unlike the Outer Space Treaty of 1967, was only signed by 7 countries. The reason for its low acceptance is twofold: it was offered for signature, after détente; and it contained language deeming outer space as the common heritage of mankind instead of the vague province of mankind designation contained in the outer space treaty of 1967. The U.S., the Soviet Union, and most other nations rejected the Moon Treaty. Therefore, the Moon Treaty is typically viewed as not being part of international space law.<sup>15</sup> It only took five nations to enter it into force, however it opened for signature on December 18, 1979 and took five years to get the five signatures required in accordance with international treaty law to become formally part of space law.

As compared to the large number of state signatories to the Outer Space Treaty, this treaty arguably is not accepted as a legal norm. The Outer Space Treaty was well received: it was ratified by ninety-six nations and signed by another twenty-seven states. The other three outer space treaties also experienced a high level of international cooperation in terms of signage and ratification. The Moon Treaty goes further by defining the Common Heritage concept in more detail and by imposing specific obligations on the parties engaged in the exploration and/or exploitation of outer space. Unlike the indirect reference to the Common Heritage doctrine in the Outer Space Treaty, the Moon Treaty explicitly designates the moon and its natural resources as part of the Common Heritage of Mankind. This is the main reason that the Moon Treaty is much more controversial than the Outer Space Treaty<sup>16</sup> and this is why it has not gained widespread acceptance (Heim, 1990). Specifically, Article 11 states in Paragraph 1 that "the Moon and its natural resources are the common heritage of mankind" and in Paragraph 3 that the Moon, nor its natural resources shall not "become property of any State, international intergovernmental organization or non-governmental entity or of any natural person. . . ". In Paragraph 5 it calls for "an international regime . . . to govern the exploitation of the natural resources of the Moon . . .", and in Paragraph 7 (d) that an "equitable sharing by all State Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed directly or indirectly in the exploration of the Moon, shall be given special consideration".

### **3. The United Nations as the Designated Forum for Space Lawmaking**

A third factor important to understanding the first epoch of the outer space development regime is that the U.S. played the role of the hegemonic state by selecting the United Nations as the forum for space lawmaking. Immediately following the Sputnik launch, U.S. leaders, along with other state leaders, requested that the United Nations be the forum for making space law during the first epoch (Doyle, 2002). The Sputnik launch of 1957 was seen as a matter of national military security since it occurred shortly after World War II had devastated most of Europe, significant parts of Japan, and other countries. Memories of the atomic bombing of Hiroshima and Nagasaki were still fresh in everyone's mind.<sup>17</sup> The international political environment was such that it was common to view international activities as dangerous. Space technology was viewed in terms of its potential to allow states to annihilate other states. States had grave reservations about placing their trust in other states. Although they also had little trust in international organizations, the United Nations was viewed as the lesser of two evils. The ideological-political environment was such that states were willing to trust the United Nations to manage the international space lawmaking process. The subject of outer space development was taken to the United Nations since it was an organization established to "maintain international peace and security", and its General Assembly has been charged with the task of, "*inter alia* of encouraging the progressive development of international law and its codification" (Jasentuliyana and Lee, 1979-1981: xi). During this historical epoch, the United Nations was seen as "the natural forum for consideration" for these types of questions (Von Bencke, 1997: 40).

A Gramscian analysis provides the insight that phenomena are best understood within the context of their historical moments. The international political-ideological environment determined the politics of space lawmaking during the first epoch. Significant changes occurred within the outer space development regime when the international structure changed. When nations were fearful due to World War II, they trusted the United Nations. When détente was in effect, space lawmaking through international UN treaties was very fruitful. When détente ended, and when the SALT III talks on nuclear detainment were canceled following the Soviet invasion of Afghanistan (Young, 1999: 163), space lawmaking through the United Nations ended. As Von Bencke (1997: 87) explains, “once again cooperation in space proved itself subject to the broader state of U.S. – Soviet relations”. The Soviet invasion of Afghanistan caused U.S. - Soviet relations to enter into “a deep freeze” (Von Bencke, 1997: 87). After this, the Carter Administration took punitive measures and “proactive steps to strengthen its geopolitical posture and reach” (Von Bencke, 1997: 88).<sup>18</sup> At the same time, space lawmaking within the United Nations ceased.<sup>19</sup>

The politics regarding space law creation during the first epoch focused on military and national defense initiatives. While the United Nations seemed to play a primary role in shaping space law, this situation ended when changes occurred within the international structure. Consistent with Gramsci, structural changes within the international environment caused changes within the outer space development regime, either limiting or enhancing the power of the United Nations as demonstrated above.

#### **4. U.S. Civil Society during the First Epoch**

A fourth factor in understanding the outer space development regime during the first epoch is the relationship between public perceptions regarding outer space and state action. According to Launius and McCurdy (1997), state leaders have always been cognizant of and sensitive to the general public's views regarding outer space and have been careful not to offend the general public. These attitudes of the general public have had an impact on government spending on space activities. However, a Gramscian analysis suggests that the relationship between state and civil society is not so much influenced by democratic principles of representation, rather it is a relationship of power in which a hegemonic state seeks to maintain its dominance over civil society by securing its acquiescence to state ideology and policy.

Thus, during the first epoch the views of civil society regarding outer space mirrored U.S. government views of the USSR. Since the initial U.S. response to the Sputnik launch was marked by fear and mistrust of Soviet intentions, the views of US civil society also reflected fear regarding outer space (Dickson, 2007; Collier & Collier, 2002). With the launch of various speeches by President Kennedy, U.S. civil society's view on outer space development went from absolute fear to pure excitement and the goal became to win the national space race competition against the Soviet Union (Launius & McCurdy, 1997: 52). The Americans were the first to successfully send people on the Moon – Neil Armstrong, Michael Collins and Buzz Aldrin - in 1969 (Launius & McCurdy, 1997: 52)<sup>20</sup>. After the first Moon landing, the mood was one of international victory. As one space historian, Howard Benedict explained that "in London's Trafalgar Square, crowds screamed and applauded. In New York's Yankee Stadium, the baseball

scoreboard flashed 'They on the Moon!' The stadium was filled with cheers, then there was a moment of silence before the 35,000 fans sang 'American the Beautiful'. Celebrations were held, ticker-tape parades commenced, and medal-pinnings, hand-shaking, and back-slapping were the order of the day" (Krug, 1991: 47).

The U.S. went back to the Moon several more times and placed Space Station Skylab into orbit. Astronauts were sent to live and work in Skylab months at a time. The Soviets were heavily involved in space activities as well during this time. In spite of all of the technological and scientific space breakthroughs, the American excitement for space had waned right after the first Moon landing during Nixon and Carter's Presidencies (Krug, 1991: 48). American public was jaded in the post 1960s climate of social unrest. During the Presidencies of Nixon, Ford and Carter, the American people wanted problems at home fixed such as protests, demonstrations, civil unrest, riots, education, housing, employment, issues over the Vietnam War, poverty and many other social issues (Von Bencke, 1997). In spite of winning the space race and in spite of landing an American on the Moon as President Kennedy had promised, the general public (both in the U.S. and abroad) was no longer excited about outer space. Indeed, it has been suggested that civil society views regarding space went from absolute fear, to excitement, to sheer boredom and disillusionment (Krug, 1991: 48; Launius & McCurdy, 1997: 52).<sup>21</sup> The focus for a while shifted to domestic politics rather than what was now viewed as a lofty space program. Carter was aware that the American people could no longer be excited by the lofty space program (McCurdy, 1997).

In accordance with a Gramscian analysis, the above sections demonstrate that to explain the first epoch of outer space development we must account for the international

ideological and political environment created by the Cold War, how this shaped perceptions and reactions, key events such as the timing of the Soviet Sputnik launch, customary practices such as space lawmaking within the United Nations, and public perceptions, rejection, and/or endorsement of public spending on outer space development. The following sections discuss the role of the U.S. as a hegemonic state in the first epoch, creating space law to suit its interest while giving concessions to other states in order to sustain power. According to Cox (1993: 264), hegemonic power is achieved by “adherence to universalized principles which are accepted or acquiesced to by a sufficient proportion of subordinate states and social forces.” In the following paragraphs I will discuss the ways in which the United States acquired a hegemonic position in the outer space development regime.

### **The “Hegemonic State” in the First Epoch: Key Actors**

This section demonstrates how the United States played the role of a hegemonic state in influencing space law during the first epoch of outer space development. U.S. dominance involves incentives and sanctions along with what Gill & Law (1993: 93) refer to as “intellectual and moral leadership”. A Gramscian conception of hegemony is different from the realists’ concept of hegemony in that realists focus on state exercises of power over other states, whereas the Gramscian approach explains hegemony by focusing on the influence of coercion and the role played by consent (Cox, 1993).<sup>22</sup> In this section, I outline various instances during the first epoch where the U.S. played a hegemonic role and influenced consent through symbolic and institutional coercion and the use of organic intellectuals and economic concessions during the first epoch. In most cases U.S. interests prevailed, except for situations wherein the U.S. willingly compromised those

interests in exchange for faster cooperation on predictable points of contention (Von Bencke, 1997: 40).

### **Key Actors**

Most historical accounts which explain the politics surrounding space lawmaking during the first epoch discuss three key actors 1) United States 2) the Soviet Union, and 3) and a collection of other states acting through the United Nations. However, I am proposing that by using a Gramscian lens we can better understand that the U.S. has played a hegemonic role in the outer space development regime since its beginning. This is difficult to see since many of the space lawmaking activities and actors outline below are inextricably intertwined. Still, as this section explains detailed historical accounts on outer space development during the first epoch reveal that the U.S. had more influence over space law than the U.S.S.R. or any other state.<sup>23</sup> U.S. Presidents John F. Kennedy and Lyndon B. Johnson operated as key actors (“organic intellectuals) in influencing outer space development regime change. In addition, institutions such as the UN Committee on Peaceful Uses of Outer Space and the International Telecommunications Union<sup>24</sup> served as instruments to support acceptance of U.S. commercialization interests during the first epoch.

During this time other states played a key role in the balance between the superpower interests. These states voiced their concerns regarding preventing the spread of nuclear proliferation<sup>25</sup> by the space superpowers. This was the dynamic, involving a group of other states working through the United Nations to vying around a balancing of interests of the U.S. and U.S.S.R., describes the politics surrounding outer space development during the first epoch. This dynamic defined negotiations leading to the five



international space law treaties. For example, in negotiating the space law treaties, less powerful nations agreed to clearly define outer space as a *res communis*<sup>26</sup> territory (Jasentuliyana & Lee 1979-1981). Prior to this, outer space could have been defined as belonging to each nation in accordance with its sovereign territory, similar to air space. It is clear from the *travaux préparatoires and related documents*, leading up to the outer space treaties, the nations of the world were against ownership of outer space territory. This prohibition applies to individuals, private, corporate, international or governmental bodies.<sup>27</sup>

It is also clear from the record that nations participating in the outer space treaty negotiations were making this trade off in exchange for asserting their interest in preventing the U.S. and U.S.S.R. from colonizing outer space through military installations. The legal effect of this concession was that the outer space territory was no longer subject to the possibility of belonging to sovereign nations in conjunction with their air space and land rights. Outer space was deemed as belonging to no state in particular. This benefited the U.S. and the Soviet Union by granting them (since they were the only two space faring nations at the time) legal free reign over outer space to develop satellite communications industry.<sup>28</sup> In exchange for these new legal rights, the developed nations were granted the right to share in the benefits derived from outer space exploration. This is why one of the key principles of space law is that space activities are to be for the "benefit of all nations", "irrespective of their stage of economic or scientific development" (Von Bencke, 1997: 43). In spite of the number of key actors participating in the space law negotiations during the first epoch, the U.S. played a dominant role in the creation and direction of the outer space development regime. The following section

explains how the U.S. played the role of the hegemonic state actor by using three examples: 1) U.S. interests prevailed during the international negotiations; 2) American organic intellectuals influenced the creation of space law; and 3) economic concessions through U.S. – led initiatives were granted to the international community.

### **1. Prevailing U.S. Interests**

In various ways during the space law negotiations, U.S. interests prevailed and therefore contributed to the shaping of international space law during the first epoch of outer space development. For example, within days of the Sputnik launch, President Eisenhower and other leaders<sup>29</sup> contacted the United Nations regarding Sputnik (Galloway, 1997). As one space law historian "there were multiple exchanges of formal correspondence between heads of state of major powers" and "multiple proposals submitted to the United Nations for consideration by the General Assembly"<sup>30</sup> (Doyle, 2002: 83). The first debates on space law took place in the United Nations from November 17-24, 1958. During these debates on the first day, November 17, 1958, the United States<sup>31</sup> addressed the United Nations and urged it to adopt the U.S. proposed Resolution 1348(XIII). This Resolution was to form an *ad hoc* committee to create space law. Nineteen other nations supported this U.S. proposed Resolution. The United Nations General Assembly passed the Resolution on December 13, 1958. In 1959 the United Nations General Assembly passed Resolution No. 1472 (XIV). This Resolution created the first space lawmaking institution - the Committee on the Peaceful Uses of Outer Space (hereinafter referred to as the COPUOS<sup>32</sup>) and its Legal Subcommittee.

Another example of U.S. influence in the creation of space law is that during negotiations the Soviets proposed a "United Nations agency for international co-

operation in research in cosmic space and to serve as a clearing house and co-ordination for national research". The Soviet Union essentially proposed an organization that would eventually develop into a United Nations Space Agency (Von Bencke, 1997: 42) - like NASA or ESA.<sup>33</sup> In contrast, the U.S. proposed "an *ad hoc* committee to study this question" (Jasentuliyana and Lee, 1979-1981: xi). The United Nations elected to go with the structure proposed by the United States. On November 24, 1958 the United States' proposal was selected and the United Nations Ad Hoc Committee on Peaceful Uses of Outer Space was created. The U.S. proposal "passed by a vote of 54-9-18", and nine votes against the proposed *Ad Hoc* committee were "cast by socialist states" (Von Bencke, 1997: 42). The fifty-four votes in favor of it "was a significant victory for the United States . . ." (Von Bencke, 1997: 42). It is clear that "American views dominated" (Von Bencke, 1997: 42), and the *ad hoc* Committee on Peaceful Uses of Outer Space (hereinafter the COPUOS) was for the purpose of forming working groups to study space law; explore cooperation possibilities; information exchanges; the division of radio frequencies; and spacecraft registration and liability (Von Bencke, 1997: 42).

Examining the specific historical content of this period allows us to see several reasons for this type of influence. The United States' political, ideological and economic power greatly increased after World War II and many nations placed a great deal of trust in the United States to lead the global community into post War peace (Leffler, 1992; Duignan, 1992; Hogan, 1987 and Milward, 1984). In addition, the United States held much influence over the United Nations, including its creation. In the aftermath of World War II, most nations wanted peace, and were willing to trust an international institution to facilitate it. This was the international mood, in spite of the strong influence that the

United States had over the United Nations during its development (Simons, 1994: 36). The “United Nations was mainly an American idea, and its structure today closely follows the plans prepared by American diplomats during World War II” (Meisler, 1995: 3; and Gati, 1983). The Soviet Union often used the United Nations for its own self-interest too; for example, to garner support for other countries, particularly from nations with less power (Simons, 1994: XII).

Another important factor to consider is that the Soviet Union lost trust within the outer space development regime by jumping the gun and launching Sputnik in October of 1957. Prior to the Sputnik launch, various countries were planning to launch a communications satellite into Earth’s orbit as part of the International Geophysical Year in 1958. The purpose of this venture planned by the International Council of Scientific Unions was to demonstrate the advancement of humankind in science and technology (Von Bencke, 1997: 2-3). Although a participant in the International Council, the Soviet Union jumped the gun and launched their satellite – Sputnik I – in 1957 prior to this scheduled event. This action sparked grave concern within the international community (Von Bencke, 1997: 12). The United States, unlike its rival superpower, was viewed by the international community as a team player. The provided the U.S. with an added ideological-political advantage over the Soviet Union.

## **B. American Organic Intellectuals Influence Outer Space Development**

During the international space law negotiations, President Kennedy’s influence stands out from the record. As such, according to a Gramscian analysis, Kennedy would be classified as an organic intellectual. He consistently took state actions which resulted in alleviating impasse situations between the U.S. and Soviet Union. In addition, in

contrast to President Eisenhower, Kennedy understood the value of presenting outer space development as a “race”, and he made the U.S. space program and beating the Soviet Union at landing a person on the Moon as a national priority. Under Kennedy’s direction, the American space program was accelerated. The U.S. government began to spend unprecedented amounts on space (Von Bencke, 1997; McCurdy, 1997; Krug, 1991). Therefore, President John F. Kennedy has to be treated as a key actor in the process of creating international space law. This section explains that the personality and mindset of the U.S. President was a key influencer of space law. President Kennedy did several key things that influenced the making of international space law and the development of an outer space development regime.

First, at the U.S. domestic level, Kennedy was able to gather support from both the Congress and the Senate. While campaigning, Kennedy, unlike Eisenhower, acknowledged that the U.S. was in a *race* to space. President Kennedy promised that if elected he would make the United States a country that would be “not 'first but, first and, first when, first if, but first PERIOD' ” (Launius & McCurdy, 1997: 51).<sup>34</sup> Shortly after taking office<sup>35</sup>, President Kennedy approved a “crash program to put Americans on the Moon” (McCurdy, 1997: 83), and he shifted the nation’s space program into “high gear” and that he “established the modern U.S. space program with its emphasis on large-scale engineering, big science, and human exploration” (McCurdy, 1997: 83). Most importantly, the budget for NASA “increased from \$524 million in fiscal year 1960 to \$5.3 billion in fiscal year 1965” (McCurdy, 1997: 257). In justifying the huge expenditures needed to fund this new goal of outer space exploration to the House of Representatives and to the general public, Kennedy argued that “the United States had to

beat the Soviet Union into space in order to prevent tyranny from overshadowing democracy . . ." (Krug, 1991: 30). For example, Kennedy stated the following in his address to the nation regarding "urgent national needs".<sup>36</sup>

If we are to win the battle that is now going on around the world between freedom and tyranny, the dramatic achievements in space which occurred in recent weeks should have made clear to us all, as did the Sputnik in 1957, the impact of this adventure on the minds of men everywhere, who are attempting to make a determination of which road they should take.

As part of this speech before the joint session of Congress, Kennedy challenged Americans to "commit themselves 'to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth' " (Launius & McCurdy, 1997: 2). This speech was successful since prior to the speech Kennedy had encountered "opposition from various sectors of the political spectrum" (Launius and McCurdy, 1997: 3). After this speech "Kennedy's space proposals sped through the Congress", and "the bill authorizing the buildup necessary to reach the Moon passed the Senate one month later on June 28. There was so little opposition that the senators did not even both to take a recorded vote. The debate in the House was perfunctory, and the bill passed by a lopsided vote of 354 to 59" (Launius and McCurdy, 1997: 3). Kennedy himself even noted that the "overwhelming support by members of both parties" as he signed the bill<sup>37</sup> which authorized his proposed space expenditures. Through various public speeches, changed the way America and the world viewed space. He asserted a new vision that the U.S. must now become winners in the new frontier instead of losers.<sup>38</sup> For Kennedy, America was the leader of the free world and therefore, we needed to play a leadership role in outer space exploration (Krug, 1991: 31).

Kennedy changed the mood of mutual distrust between the U.S. and the Soviet Union that had existed under Secretary Khrushchev and President Eisenhower. The distinct new attitude between President Kennedy and Secretary Khrushchev began when Kennedy changed the tone through a faxed letter to Khrushchev. Essentially, Kennedy facilitated regime change and cooperation by acknowledging the Soviet lead and Soviet firsts in space.<sup>39</sup> The international political environment was changed after that and as a result the Kennedy-Khrushchev years reflect that international space law progressed significantly.

Kennedy also influenced an end of the impasse and the Committee on Peaceful Uses of Outer Space. This body had been formed in December 1959, however it was stuck in impasse. Kennedy influenced the end of the impasse and the Committee on Peaceful Uses of Outer Space which had been formed in December 1959. Negotiations resumed in September 1961. Subsequently, the General Assembly adopted Resolution 1721 (XVI) on December 20, 1961. This Resolution represented "a significant achievement in the formulation of space law". It laid down the fundamental principles of international space law. This was encouraging to the committee; they met in March 1962 and established a Legal Sub-Committee; it held its first session May 28 - June 20, 1962 (Metcalf, 1999: 113) The COPUOS Legal Subcommittee "considered a large number of proposals from many states . . . (Metcalf, 1999: 113). It was given the task of elaborating "legal norms relating to space activities" (Jasentuliyana and Lee, 1979-1981: xviii).

Kennedy triggered cooperation and negotiations resumed in September 1961 the year he took office. Also, in addition to building trust with Premier Khrushchev, in 1961, Kennedy addressed the United Nations General Assembly "urging greater co-operation in

this field and proposing that outer space be reserved only for peaceful purposes and that the United Nations Charter be extended to outer space" (Jasentuliyana and Lee, 1979-1981: xviii). Kennedy's speech prompted intense negotiations on the issue of creating international law to govern outer space. Shortly after Kennedy's prompting, the General Assembly acted by unanimously adopting Resolution 1721 (XVI) on December 20, 1961. This Resolution represented "a significant achievement in the formulation of space law", since it laid down the fundamental principles of international space law. This was encouraging to the committee; they met in March 1962 and established a Legal Sub-Committee; it held its first session May 28 - June 20, 1962 (Metcalf, 1999: 113) The COPUOS Legal Subcommittee "considered a large number of proposals from many states . . . (Metcalf, 1999: 113). It was given the task of elaborating "legal norms relating to space activities" (Jasentuliyana and Lee, 1979-1981: xviii).

The Soviet Union wanted a formal and comprehensive document that would encompass a declaration of basic legal principles governing the activities of states in outer space endeavors, whereas the United States desired an informal document in the form of a UN Resolution laying out the legal principle concerning "the limited areas of rescue and assistance to astronauts and space vehicles, and liability for space vehicle accidents" (Jasentuliyana and Lee, 1979-1981: xviii). This situation created another impasse. The Legal Sub-Committee could not agree on which proposal to give priority to. The General Assembly, "realizing the rapid advances in space science and technology, called upon the Outer Space Committee to continue urgently its work relating to the progressive development of international law in this field and also called upon all states to collaborate in that effort" (Jasentuliyana and Lee, 1979-1981: xix). But due to



disagreements on "the relative priority of general declarations versus agreements dealing with specific problems, as well as on the roles of inter-governmental agreements versus action by the UN General Assembly" and disagreement on "the legality of reconnaissance satellites" (Metcalf, 1999: 113) the Legal Subcommittee was at an impasse again. Again, with Kennedy's exercise of influence, the Nuclear Test Ban Treaty was signed in August of 1963, prohibiting the testing of nuclear weapons in Outer Space, in the atmosphere and underwater. This ended the deadlock between the U.S. and the U.S.S.R. (Metcalf, 1999: 126). Afterwards and about a month before Kennedy's assassination, on October 17, 1963 the General Assembly unanimously adopted Resolution 1884 (XVIII)<sup>40</sup> (Von Bencke, 1997: 71-72).

President Lyndon B. Johnson can also be classified as an organic intellectual. He played a key role in keeping the momentum of international space lawmaking going. He was cognizant of the American public's admiration for the befallen President and his promises to make America first in space. Just as President Kennedy's interest in space was a key factor in the promotion of outer space development and international space lawmaking, so was his successor, President Lyndon B. Johnson. It is also important to note that it was upon Johnson's advice, while serving as Kennedy's Vice President, that President Kennedy began to the creation of a U.S. space program as a race against the Soviets and to make it a national priority. Krug (1991: 30) explains "space exploration was not very high on his (President Kennedy's) personal or political agenda"<sup>1</sup> within the first months of taking office as President. It wasn't until after the Bay of Pigs fiasco, when Kennedy asked Vice President Lyndon Johnson to make a determination of "whether there is any program now, regardless of cost, which offers us hope of being

pioneers in a project, . . . which could put us first in any new area.” It was Vice President Johnson who proffered that an outer space exploration program should become Kennedy's pet priority. Johnson had already been involved in promoting outer space development and had established an expertise on issues concerning outer space while a Senator during Eisenhower’s Presidency. Kennedy did as Johnson suggested. Before becoming President and before becoming Kennedy’s Vice President, Johnson, while a Senator, took consistent fervent action pushing for international space laws, despite President Eisenhower's cool nonchalant approach to the issue. While a Senator.<sup>41</sup> Johnson was a fervent supporter of an American space program and "a leading critic of the Eisenhower Administration's [lack luster] response" (Krug, 1991:36). In January of 1958, still just a few months after Sputnik, Senator Lyndon B. Johnson gave a speech before a meeting of the Columbia Broadcasting System Affiliates, Senator Johnson calling for "world leadership by the United States in the new dimension offered by space exploration" (Galloway, 1997: 5). In February 1958 the Senate created the Special Committee on Space and Astronautics, and Senator Johnson was named as Chairman. When the first debates on space law took place in the United Nations from November 17-24, 1958 it was Senator Johnson<sup>42</sup> who addressed the United Nations and urged the adoption the U.S. proposed Resolution 1348(XIII) suggesting the formation of an *ad hoc* committee to create space law.

### **3. Economic Concessions for Space Commercialization Initiative**

The U.S. had an interest in commercializing space technology since the beginning of the first epoch. Consent of the international community by induced by inviting various members to purchase shares a corporation established for the purpose of commercializing

space technology - the COMSAT Corporation. President Kennedy had "charged his administration with the need to develop a coherent and cohesive policy with respect to communications satellites" and by July 1961 he called for joint ownership with other nations of a communications satellite system, non-discriminatory access for all countries of the world, and a constructive role for the United Nations in international space communications. This call was at all times with the assumption that "private ownership and operation of the United States portion of the system would be favored and that her leadership in satellite communications would result in establishment of the system at the earliest practicable date for the benefit of all peoples in the interest of world peace and brotherhood" (Jasentuliyana & Lee, 1979-1981, Vol. 1: at 304). COMSAT later developed into INTELSAT via a U.S. - led international treaty. It was said it be a commercial venture "intended to produce a minimum of fourteen percent return each year for its shareholders" (Wong, 1998). In order to facilitate the commercial framework, these agreements included allowing the parties to participate in ownership (Wong, 1998). Countries therefore were allowed to own a piece of INTELSAT in proportion to their investment. This provided an incentive for various governments to want INTELSAT to succeed. And, it did. This was achieved through the purchase of shares in INTELSAT. The U.S. (through COMSAT) owns the largest share at "just over 20 % and the remaining foreign ownership is just under 80 percent".<sup>43</sup> This remainder is split in differing proportions between approximately 143 other countries. Similarly, The International Maritime Satellite Organization (IMARSAT) was formed by an international treaty in 1979 pursuant to the Maritime Satellite Act.<sup>44</sup> Seventy-nine countries are members of IMARSAT and it is headquartered in London. It came into

being as an IGO in order to "provide global safety and other communications for the maritime community. Starting with a customer base of 900 ships in the early 1980s, it then grew rapidly to offer similar services to other users on land and in the air . . .".<sup>45</sup> Hence, a service that began as a life-line to seafarers by carrying distress communications from failing vessels at sea has turned into a commercial enterprise.<sup>46</sup>

Shortly after the successful launching its first satellite, Telestar I, the U.S. Congress passed the Communications Satellite Act of 1962, in order to commercialize the satellite communications industry. This law authorized the creation of a Communications Satellite Corporation (COMSAT) - a private corporation "to own and operate, either by itself or in conjunction with foreign governments or business entities, a commercial communications satellite system; to furnish, for hire, channels of communications; and to own and operate satellite terminal stations." This private for-profit corporation called the Communications Satellite Corporation (COMSAT)<sup>47</sup> has "an interim Board of Directors appointed by the President of the United States" (Cheng, 1997: 544). This was done through the creation and passage of the Communications Satellite Act of 1962. According to the language of this Congressional Act it had "twin goals of quickly obtaining the benefits of satellite communications and doing so by creating competition". The Act established the U.S. policy "of developing a global communications satellite system responsive to public needs and national objectives that would provide economical service to lesser developed countries, 'nondiscriminatory' access for all users and 'contribute to world peace and understanding'<sup>48</sup> " (Morgan, 1994: 18). The Act provides that COMSAT "had the responsibility for planning, constructing, and operating the satellite system, either along or with other countries, and for leasing

space satellite communications channels to common carriers" (Morgan, 1994: 18). This corporation is authorized to issue stock, fifty percent of which are to be reserved for authorized United States communications common carriers and the rest to the general public. This established the framework for the "first step towards a global communications satellite system" - The Early Bird in 1965 (Cheng, 1997: 545). This 1962 Act has "twin goals of quickly obtaining the benefits of satellite communications and doing so by creating competition". The Act established the U.S. policy "of developing a global communications satellite system responsive to public needs and national objectives that would provide economical service to lesser developed countries, 'nondiscriminatory' access for all users and 'contribute to world peace and understanding'<sup>49</sup> " (Morgan, 1994: 18). The Act provides that COMSAT "had the responsibility for planning, constructing, and operating the satellite system, either along or with other countries, and for leasing space satellite communications channels to common carriers" (Morgan, 1994: 18).

On August 20, 1964 the U.S. and an initial ten other countries entered into two international agreements: the "Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System" (an international agreement registered with the United Nations) and the "Special Agreement" (a contractual arrangement between participating governments and certain public corporations) (Murphy, 2001). These agreements established INTELSAT as an organization created for the purpose of operating satellites and providing access to satellites on a commercial basis for profit" (Morgan, 194: 18). Subsequently in a successor INTELSAT organization was created by two new international agreements: the Agreement Relating

to the International Telecommunications Satellite Organization with Annexes (opened for signature August 20, 1971) and the "Operating Agreement Relating to the International Telecommunications Satellite Organization (opened for signature August 20, 1971). Both agreements became effective in 1973.

## CONCLUSION

A careful study of primary and secondary sources reveals that space law and the outer space development regime were shaped by the ideological-political environment which was largely dominated by the U.S. as a hegemonic state actor during the first epoch. Actions was shaped by Cold War fears and the bipolar balance of power (DePort, 1986).<sup>50</sup> States were the relevant actors, however they were not willing to trust other state powers. With endorsement of the U.S., the UN was granted the authority to create space law as a form of international law. Issues concerning outer space were contextualized as national security and nuclear/atomic deterrence issues, counterbalanced the secondary desires to see advances made in science and technology.

The space race competition and space "firsts" were motivated by state self-interest, including boosting national security along with national pride and esteem. In the first epoch, private entities were not relevant actors. The only exception was that within the U.S. they served as small subcontractors for the government, and privatization and commercialization of space industries was not important. Commercial issues were thought best left to the future. The ITU and satellite products were in an infancy stage. Satellite technology was primarily used for military reconnaissance and military spying. Private actors such as multinational corporations and transnational organizations were almost unimportant at this time. Private government contractors are mentioned in a few

references of historical text. Still, it is clear that space commercialization and privatization were to become important issues within the outer space development regime.

## ENDNOTES

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<sup>1</sup> Shortly after Sputnik was launched by the Soviet Union in 1957, states pressed the United Nations to act in order to create laws to govern outer space. To this end, the Committee on the Peaceful Uses of Outer Space (COPUOS) was set up by the General Assembly in 1959 via Resolution 1472 (XIV) “to review the scope of international cooperation in peaceful uses of outer space, to devise programmes in this field to be undertaken under United Nations auspices, to encourage continued research and the dissemination of information on outer space matters, and to study legal problems arising from the exploration of outer space”. The Committee and its two Subcommittees meet annually to consider questions put before them by the General Assembly, reports submitted to them and issues raised by the Member States. The COPUOS) and its two Subcommittees – the Scientific and Technical Subcommittee, and the Legal Subcommittee - on the basis of consensus, make recommendations to the General Assembly regarding rules concerning outer space. Another important actor is the International Institute of Space Law (IISL), founded by the International Astronautical Federation in 1960 to foster the development of space law. Although an earlier version of this organization had been created in 1958, this organization as it stands today began in 1960. Membership includes approximately 300 elected individuals and institutions from over 40 countries who are distinguished for their contributions to space law development. The IISL is authorized to function autonomously from the COPUOS and the IAF in accordance with its (the IISL) statutes. See <http://www.iafastro-iisl.com>. The International Astronautical Federation is the main umbrella organization for outer space development. It was established in 1951, prior to the Sputnik launch. Its members include government agencies, companies, associations and organization from 44 countries. It manages an annual Congress, workshops and networking activities for the various professionals, academics and others who work within the field of outer space development.

<sup>2</sup> Both the USA and the USSR were instrumental in constructing this climate of fear within their own civil societies. Mass media and popular discourse described Sputnik as the “red moon” and created a sense of panic regarding Soviet intentions behind the launch.

<sup>3</sup> There is some disagreement on whether the Cold War began at the end of World War II with the Yalta Conference between Stalin, Churchill and Roosevelt in 1945, or whether it began with The Marshall Plan of 1947, which pledged to provide post war non-communist Europe with economic recovery, and Truman Doctrine of 1947, which

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pledged aid to Greece and Turkey the only two Eastern European countries who were not communist, after World War II (Hogan, 1987; Milward, 1984; Young 1996). There is also disagreement on whether the Cold War ended with the breakup of the Eastern bloc countries in 1989, or whether it ended with the dissolution of the Soviet Union in 1991 (Smith, 1998; Ball, 1998; Crockatt, 1995).

<sup>4</sup> This Cold War mood existed during the Presidencies of Roosevelt, Truman, Eisenhower, Kennedy, Johnson, Nixon, Ford, Carter, Reagan and Bush, on the U.S. side, and through the leadership of Stalin, Malenkov, Khrushchev, Brezhnev, Andropov, Chernenko and Gorbachev on the Soviet side.

<sup>5</sup> Proxy wars were common during the Cold War period since the nuclear superpowers were hesitant to fight each other directly and were anxious to prevent the other from securing additional allies. Proxy wars have continued in spite of the end of the Cold War. For example, the Second Congo War, Uganda and Rwanda. Further a more detailed discussion see Mamdani, Mahmood, *Good Muslim, Bad Muslim : America, the Cold War, and the Roots of Terror* (New York: Pantheon Books, 2004); and Leonardo A. Villalón, Phillip A. Huxtable (eds.) in *The African State at a Critical Juncture: Between Disintegration and Reconfiguration* (Boulder, Colorado: Lynne Rienner Publishers, 1998).

<sup>6</sup> *Sputnik* was the world's first artificial satellite launched directly into the Earth's orbit in 1957. It circumnavigated the globe about every 96 minutes for 3 months.

<sup>7</sup> For an accounting of space firsts and activities see Rob Nagel, *Space Exploration – Almanac* (Gale Research, Incorporated, 2004) and Anthony R. Curtis, *Space Almanac: Facts, Figures, Names, Dates, Places, Lists, Charts, Tables, Maps, Photos Covering Space From Earth to the Edge of the Universe* (Woodsboro, Maryland: Arcsoft Publishers, 1990). For example the Soviet Union was the first to land a flag bearing probe on the Moon in 1959 before the U.S. landed a human on the Moon.

<sup>8</sup> Ball, S. J. (1998), *In the Cold War: An International History, 1947-1991* (New York: Arnold) explains that the ideological and political details of the superpower competition.

<sup>9</sup> For further reading see Painter, David S., *The Cold War: An International History* (London and New York: Routledge, 1999). "The collapse of communism as an ideology paralleled the decline in the Soviet strategic position. Highly regarded by many at the end of World War II, the appeal of communism and the Soviet model of development declined sharply in most of the world over the course of the Cold War. Repression in the Soviet Union, Eastern Europe, and the People's Republic of China tarnished communism's image. In the 1960s and 1970s some European communist parties attempted to reform themselves and to divorce communism from the harsh reality of Soviet (and Chinese) practice. These efforts failed to gain sufficient support to wrest leadership of world communism from the Soviet Union and the PRC. Also see Hogan, Michael J., *The Marshall Plan: America, Britain and the Reconstruction of Western*



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Europe, 1947-52 (Cambridge: Cambridge University Press, 1987); Milward, Alan S., *The Reconstruction of Western Europe, 1945-51* (London: Methuen, 1984); De Porte, A.W., *Europe Between the Superpowers* (New York and London: Yale University Press, 1986); Duignan, Paul and Gann, J.H., *The Rebirth of the West: The Americanization of the Democratic World 1945-58* (Blackwell, Cambridge, MA, 1992); Young, John W., *Cold War Europe, 1945-91: A Political History* (2<sup>nd</sup> ed.)(London: Edward Arnold, 1996); Duignan, Paul and Gann, L.H., *The Rebirth of the West: The Americanization of the Democratic World 1945-58* (Cambridge, MA: Blackwell, 1992); Knipping, Franz, *Power in Europe: Great Britain, France, Italy and Germany in a Post-War World, 1945-50* (Berlin: De Gruyter, 1986); Young, John W., *France, the Cold War and the Western Alliance, 1944-49* (London: Leicester University Press, 1990). Regarding the Far East see Yahuda, Michael, *The International Politics of the Asia-Pacific, 1945-95* (London: Routledge, 1996).

<sup>10</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (The Outer Space Treaty, 1967); The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (The Rescue and Return Agreement, 1968); The Convention on International Liability for Damage Caused by Space Objects (The Liability Convention, 1971); and The Convention on the Registration of Objects Launched into Outer Space (The Registration Convention, 1976). The questionable one is The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (The Moon Treaty, 1984). Only nine states (Australia, Austria, Chile, Mexico, Morocco, The Netherlands, Pakistan, Philippines and Uruguay) have ratified it and five states (France, Guatemala, India, Peru and Romania) in addition have signed but not ratified. It only took five nations to enter it into force, however it opened for signature on December 18, 1979 and took five years to get the five requisite signatures. Conversely, The Outer Space Treaty was well received: it was ratified by ninety-six nations and signed by another twenty-seven states. See *Report of the Legal Subcommittee on Its Fortieth Session*, UN Committee on the Peaceful Uses of Outer Space, 40<sup>th</sup> Session, 22(a), United Nations' Document A/AC.105763 (2001) see [http://www.oosa.unvienna.org/Reports/AC105\\_763E.pdf](http://www.oosa.unvienna.org/Reports/AC105_763E.pdf). Since the Moon Treaty has garnered such a low level of international support, some space law experts have reasoned it is "obviously unacceptable". Kelly M. Zullo (2002), note 12, citing Eilene Galloway, "Guidelines for the Review and Formulation of Outer Space Treaties", Presentation at the International Astronautical Federation 41<sup>st</sup> International Colloquium on the Law of Outer Space, Melbourne, Australia, at 2, October 2, 1998.

<sup>11</sup> See *Report of the Legal Subcommittee on Its Fortieth Session*, UN Committee on the Peaceful Uses of Outer Space, 40<sup>th</sup> Session, 22(a), United Nations' Document A/AC.105763 (2001). See [http://www.oosa.unvienna.org/Reports/AC105\\_763E.pdf](http://www.oosa.unvienna.org/Reports/AC105_763E.pdf). Since the Moon Treaty has garnered such a low level of international support, some space law experts have reasoned it is "obviously unacceptable". See Eilene Galloway, "Guidelines for the Review and Formulation of Outer Space Treaties", Presentation at the International Astronautical Federation 41<sup>st</sup> International Colloquium on the Law of Outer Space, Melbourne, Australia, at 2, October 2, 1998.

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<sup>12</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Dec. 19, 1966, 18 UST 2410, TIAS No. 6347, 610 UNTS 205 (adopted by the General Assembly in GA Res. 2222 (XXI) (entered into force by the U.S. on October 10, 1967);

<sup>13</sup> In addition to The Outer Space Treaty, others treaties include The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (The Rescue and Return Agreement, 1968); The Convention on International Liability for Damage Caused by Space Objects<sup>13</sup> (The Liability Convention, 1971); and The Convention on the Registration of Objects Launched into Outer Space<sup>13</sup> (The Registration Convention, 1976).

<sup>14</sup> It is important to note that the principle of *res communis*, which means that certain territories shall be treated as community property and cannot be owned by any person(s), states, any other entity or combination of entities, was already adopted as a legal principle for outer space through Resolution 1721. The "Province of Mankind" principle was created specifically for the purpose of ushering in agreement on the terms of the Outer Space Treaty. The Province of Mankind is a vague principle, which has never clearly been defined. See Jasentuliyana and Lee (1981: 259). From the record of negotiations, it is clear that the Common Heritage of Mankind Principle threatened to invoke another impasse and disagreements. Therefore, a special term ("Province of Mankind") was put forth in a treaty draft and apparently was not disagreeable to the signatories. It first appears in the Soviet draft treaty submitted to the UN on June 16, 1965 as UN Document A/6352. See (Jasentuliyana and Lee, 1981: 4) the Province of Mankind clause later appears in a draft resulting from one of the working sessions (Working Group L.3) of July 29, 1966. See Jasentuliyana and Lee (1981: 25) "travaux préparatoires and related documents" in *Manual on Space Law*.

<sup>15</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (The Outer Space Treaty, 1967); The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (The Rescue and Return Agreement, 1968); The Convention on International Liability for Damage Caused by Space Objects (The Liability Convention, 1971); and The Convention on the Registration of Objects Launched into Outer Space (The Registration Convention, 1976). The questionable one is The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (The Moon Treaty, 1984). Only nine states (Australia, Austria, Chile, Mexico, Morocco, The Netherlands, Pakistan, Philippines and Uruguay) have ratified it and five states (France, Guatemala, India, Peru and Romania) in addition have signed but not ratified. It only took five nations to enter it into force, however it opened for signature on December 18, 1979 and took five years to get the five requisite signatures. Conversely, The Outer Space Treaty was well received: it was ratified by ninety-six nations and signed by another twenty-seven states. See *Report of the Legal Subcommittee on Its Fortieth Session*, UN Committee on the Peaceful Uses of Outer Space, 40<sup>th</sup> Session, 22(a), United Nations' Document A/AC.105763 (2001). For more information see

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[http://www.oosa.unvienna.org/Reports/AC105\\_763E.pdf](http://www.oosa.unvienna.org/Reports/AC105_763E.pdf). Since the Moon Treaty has garnered such a low level of international support, some space law experts have reasoned it is "obviously unacceptable". Kelly M. Zullo (2002) at note 12, citing Eilene Galloway, "Guidelines for the Review and Formulation of Outer Space Treaties", Presentation at the International Astronautical Federation 41<sup>st</sup> *International Colloquium on the Law of Outer Space*, Melbourne, Australia, at 2, October 2, 1998.

<sup>16</sup> The Outer Space Treaty has been ratified by approximately 98 states, whereas the Moon Treaty has been ratified by only 7 nations. For further detail see Kurt Anderson Baca, "Property Rights in Outer Space." 58 *Journal of Air Law and Commerce* 1041 (1993).

<sup>17</sup> The United States, by the decision of President Truman, went down in history as being the only country to drop an atomic bomb on a populated city, and this was done twice. According to a White House press release this decision was made due to Japanese leaders' flat refusal to accept the Potsdam Declaration, President Truman authorized the use of an atomic bomb on August 3, 1945 and August 6<sup>th</sup> on Hiroshima and Nagasaki respectively. The world saw how devastating the use of atomic weapons could be to mankind. See White House Press Release Draft of a White House press release, "Statement by the President of the United States," 1945 at [http://www.trumanlibrary.org/whistlestop/study\\_collections/bomb/small/mb10.htm](http://www.trumanlibrary.org/whistlestop/study_collections/bomb/small/mb10.htm) of August 6, 1945 at pp. 1-3.

<sup>18</sup> Also under President Jimmy Carter, Von Bencke (1997) explains that "the U.S. Navy intensified a massive buildup in the Indian Ocean, and began aggressive military maneuvers". In addition "Carter sped up the development of the new rapid deployment force, increased his request for the fiscal year 1981 military budget to \$154.5 billion and announced a new \$400 million aid package to nearby Pakistan"(at pg. 88).

<sup>19</sup> Toward the end of his term, President Carter was on the offensive towards the Soviet Union<sup>19</sup>, and Congress was "military-minded". They allocated a defense budget even higher than Carter had requested – allocating \$159.7 billion. This represented an increase of \$28.7 billion over the fiscal year 1980 defense budget, "the biggest rise in American peacetime history". See Von Bencke (1997: 88) in *The Politics of Space*.

<sup>20</sup> Richard M. Nixon was President from 1969-1974. Nixon was President on July 20, 1969 when Neil Armstrong landed on the Moon, he was not a key actor in space law's creation or in outer space development. Similar to Johnson's Presidency, there are no prominent dialogs between President Nixon and Secretary Brezhnev, former leader of the Soviet Union (1964-1982). Like Johnson, Nixon was not new to the issue of outer space development. When Sputnik was launched, Nixon was Eisenhower's Vice President. Nixon had debated with Secretary Khrushchev during the famous "Kitchen Debates". Kennedy used these debates against Nixon while they were competing for Presidential office in 1960. For example, Senator Kennedy told Nixon, "You yourself said to Khrushchev, 'You may be ahead of us in rocket thrust, but we're ahead of you in color television' " and he argued that "I will take my television in black and white. I want

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to be ahead of them in rocket thrust” Kennedy was referring to debates Nixon had with Khrushchev while Nixon was Vice President to President Eisenhower. See Senate, Joint Appearances of Senator John F. Kennedy and Vice President Richard M. Nixon, 86<sup>th</sup> Congress, 2<sup>nd</sup> session (Washington, D.C.: Government Printing Office, 1961) at pg. 211.; and Senate, The Speeches of Senator John F. Kennedy: Presidential Campaign of 1960, 87<sup>th</sup> Congress, 1<sup>st</sup> session (Washington, D.C.: Government Printing Office, 1961) at pg. 113.

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<sup>22</sup> Cox explains that there are two interpretations of “hegemony”. One is the traditional definition used in the international relations literature defining a dominant state in one that has the ability “to determine the conditions in which interstate relations are conducted and to determine the outcomes in these relations”. The second definition of hegemony is one informed by Gramsci’s writings which Cox refers to as “a special case of dominance: it defines the condition of a world society and state system in which the dominant state and dominant social forces sustain their position through adherence to universalized principles which are accepted or acquiesced by a sufficient proportion of subordinate states and social forces”. This definition denotes “intellectual and moral leadership” where the “strong make certain concessions to obtain the consent of the weaker” (Cox, 1993 at 264).

<sup>23</sup> For example, in David Russell Hager's dissertation, *Space Law: The United Nations, and the Superpowers: A Study of International legal Development and Codification, 1957-1969*, sets forth a study of the development and codification of international space law within the United Nations during the period between 1957 to 1969. (University of Virginia, Ph.D. Political Science, International law and relations, 1970); Similarly Katrin Nyman Metcalf's dissertation subsequently turned into a book entitled "Activities in Space - Appropriation or Use? (Uppsala: Lustus Forlag, 1999) sets forth the complete

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history of the creation of international space law as it relates to public international law. Nandasiri Jasentuliyana and Roy S.K. Lee (1979-1981) provide a formal detailed written record of the discussions, negotiations, proposals and UN declarations and Resolutions which led up the five international space treaties along with views of the various state representatives in *Manual on Space Law, Volumes I, II, III and IV* (Dobbs Ferry, New York: Oceana Publication, Inc., 1979-1981); In *The Decision to Go to the Moon: Project Apollo and the National Interest*, Logsdon (1976) sets forth a detailed account of how, when and what steps were taken towards America's goal of going to the Moon. Launius & McCurdy (1997) in *Spaceflight and the Myth of Presidential Leadership*; Krug (1991) in *Presidential Perspectives on Space Exploration*; and McCurdy (1997) in *Space and the American Imagination* provide similar accounts of this significant period of outer space explorations; Von Bencke, M. J. (1997). *The Politics of Space: A History of U.S. - Soviet/Russian Competition and Cooperation in Space*. Boulder, Colorado: Westview Press. Also see Galloway, 1997.

<sup>24</sup> The International Telecommunications Union (the ITU), formerly known as the International Telegraph Union, has been around since 1865 developing norms for telegraph communications and later for the telephone industry. However, it was not until the World Administrative Radio Conference in 1959 that policy was formulated by the ITU for space communications (White & White, 1988). ITU conferences held from 1959 until mid- 1960s "followed a trend established in the early 1960s<sup>24</sup> emphasizing the principle of nondiscriminatory, equitable access to the radio spectrum and the geostationary satellite orbit" (White & White, 1988: xix). After the Sputnik launch, states decided that the International Telecommunications Commission (ITU) would play an important role in formulating policy concerning space communications. This is closely related to the commercialization of satellite telecommunications technology. The ITU is a specialized agency of the United Nations with a Convention, and Constitution and two sets of operating regulations, and all these have Treaty status. The international community has granted this intergovernmental organization the authority of being the regulatory regime for assigning rights to various orbital slots for satellite telecommunications services.

<sup>25</sup> For further reading see Painter, David S., *The Cold War: An International History* (London and New York: Routledge, 1999). Painter examines the structures and processes at the international level and analyzes the Cold War as a product of the domestic histories of the great powers and of the structure and dynamics of international relations. Following World War II, changes in the global distribution of power, weapons technology, the balance of political forces within and among nations, the world economy, and relations between the industrialized nations and the underdeveloped periphery led to the Cold War. He further explains that throughout the Cold War, the global distribution of power influenced US and Soviet perceptions of their respective national interests and consequently their actions at 112.

<sup>26</sup> The Roman law concept, *res communis*, which means that certain territories shall be treated as community property and cannot be owned by any person(s), states, any other entity or combination of entities, is at the heart of the laws and treaties governing

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activities involving the Antarctica, the high seas, deep seabed, and outer space (Metcalf, 1999: 105-106). Metcalf (1999: 105-106) explains that "space is a global common and in the legal sense all states are equal, when it comes to activities in space. No state can assert claim of ownership rights to outer space. This is customary international law - binding on all states pursuant to Resolution 1721 (XVI). This UN Resolution laid down two fundamental principles, which formed the basis for the development of contemporary space law: (a) international law, including the Charter of the United Nations, applies to outer space and celestial bodies; (b) outer space and celestial bodies are free for exploration and use by all states in conformity with international law and are not subject to national appropriation. It also required launching states to publicize satellite launching by registering them with the United Nations" (Jasentuliyana and Lee, 1979-1981: xviii). To enforce this provision, this Resolution required that UN Secretary-General maintain a public registry of objects launched into outer space.

<sup>27</sup> For discussions/views leading to the space treaties see Nandasiri Jasentuliyana and Roy S.K. Lee (1979-1981) *Manual on Space Law, Volumes I, II, III and IV* (Dobbs Ferry, New York: Oceana Publication, Inc., 1979-1981).

<sup>28</sup> International law had already been settled in favor of allowing free flight for satellites, instead of each country claiming the right to airspace (including outer space) above their sovereign territories, in preparation for the IGY (1958) See Rita Lauria White and Harold M. White, Jr., *The Law and Regulation of International Space Communication* (Artech House, 1988).

<sup>29</sup> Sputnik was not the first object to be launched into space. The Chinese, Greeks and many others in ancient society were using, experimenting and theorizing about new uses of rockets for thousands of years (Winter, 1990). Scientists such as Robert Goddard and Von Braun and Sergei Korolev had been working on rockets for various purposes. Goddard was the first to achieve flight of a liquid-propellant rocket on March 16 1926. It reached an altitude of 41 feet (12 meters) and 184 feet (56) meters horizontally. This was a significant first step towards space flight<sup>29</sup>. In the 1930s many were seriously writing about rocket uses and space travel and many rocket societies formed at this time. Around 1941 rockets had been launched to 10 miles above the surface of the Earth and by 1951 to an altitude of 135 miles (McCurdy, 1997: 36). The Germans had launched bombs from rockets in World War II. It was little known that the Soviets were not the only nation with the technology to launch a satellite. U.S. also had the technology and funding to launch a satellite into Earth's orbit, and had planned to do so, in conjunction with the International Council of Scientific Unions. This was a cooperative of government-sponsored programs through bilateral cooperative agreements. There were about 30,000 scientists and technological experts from sixty-six countries involved. The overall aim of IGY was to "pursue intensive observations of the Earth and the cosmic environment" (Metcalf, 1999: 47), and to demonstrate humankind's technological accomplishments by revealing this new satellite technology to the world during the International Geophysical Year (IGY) scheduled for sometime between July 1, 1957 and December 31, 1958. It was widely publicized that a small satellite would be launched into Earth's orbit with a tracking device as during the IGY, and the issue had been discussed for many years at symposia

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and conferences. See Achievements in Space, International Aspects of Exploration and Use of Outer Space, 1954-1962, Senate Documents, Volume 6, No. 1, 88<sup>th</sup> Congress, 1<sup>st</sup> Session, 1966 at pg. 3. July 1, 1957 through December 31, 1958 was designated the International Geophysical Year (IGY).

<sup>30</sup> U.S. Senate report, *Documents on International Aspects of the Exploration and Use of Outer Space*, 1954-1962, a Staff Report prepared for the Senate Committee on Aeronautical and Space Sciences, May 9, 1963, GPO, Washington, D.C. at pp. 51-52, 55-56, 62-64, and other communications in those pages for examples of letters exchanged between U.S. President Dwight Eisenhower and U.S.S.R. Premier Bulganin. See also C.Q. Christol, *The Modern International Law of Outer Space*, 12-14 (New York: Pergamon Press, 1982); A.G. Haley, *Space Law and Government*, 313-314 (New York: Appleton Century Crofts, 1963) and M.S. McDougal, H.D. Lasswell and I.A. Vlasic, *Law and Public Order in Space*, 205-210 (New Haven: Yale University Press, 1963).

<sup>31</sup> Lyndon B. Johnson, while a Senator, took consistent fervent action pushing for international space laws, despite President Eisenhower's cool nonchalant approach to the issue. It is also important to note that it was upon Johnson's advice, while serving as Kennedy's Vice President, that President Kennedy began to the creation of a U.S. space program as a race against the Soviets and to make it a national priority.

<sup>32</sup> In 1959, the Committee had 24 members, and since then it has grown to 67 members<sup>32</sup>. This makes it one of the largest Committees in the United Nations. In addition to States a number of international organizations, including both intergovernmental and non-governmental organizations, have observer status with COPUOS and its Subcommittees.

<sup>33</sup> Matthew J. Von Bencke in *The Politics of Space: A History of U.S. - Soviet/Russian Competition and Cooperation in Space* (Boulder Colorado: Westview Press, 1997) pg. 58 note 9 references Arnold W. Frutkin, *International Cooperation in Space* (Prentice Hall: Englewood Cliffs, 1965: 170).

<sup>34</sup> Launius & McCurdy, 1997: 64) note 1 refers to Michael R. Beschloss, *The Crisis Years: Kennedy and Khrushchev, 1960-1963* (New York: Harper, 1991) pg. 28.

<sup>35</sup> Krug (1991: 30) explains "space exploration was not very high on his [President Kennedy] personal or political agenda"<sup>35</sup> within the first months are taking office as President. It wasn't until after the Bay of Pigs fiasco, when Kennedy asked Vice President Lyndon Johnson to make a determination of "whether there is any program now, regardless of cost, which offers us hope of being pioneers in a project, . . . which could put us first in any new area." It was Vice President Johnson who proffered that an outer space exploration program should become Kennedy's pet priority. Johnson had already been involved in promoting outer space development and had established an expertise on issues concerning outer space while a Senator during Eisenhower's Presidency. Kennedy did has Johnson suggested.

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<sup>36</sup> John F. Kennedy, "Special Message to the Congress on Urgent National Needs," 25 May 1961, PPP, JFK, 1961, 402. Also in 1962, NASA's "budget of \$1.1 billion was increased by \$665 million"; in the Department of Defense "received \$850 million dollars for space, an \$226 increase over the previous year" (Von Bencke, 1997: 69).

<sup>37</sup> Bill of July 21, 1961, "Budget summary" Congressional Quarterly Almanac, 1961, P. 424.

<sup>38</sup> John F. Kennedy, "Address at Rice University" in Houston Texas, 12 Sept. 1962, PPP, JFK, 1962, 669.

<sup>39</sup> Achievements in Space, International Aspects of Exploration and Use of Outer Space, 1954-1962, Senate Documents, Volume 6, No. 1, 88<sup>th</sup> Congress, 1<sup>st</sup> Session, 1966, pp. 23-102. It is important to point out that although Kennedy and Khrushchev spoke of cooperating to explore outer space, their actions were still marked by Cold War suspicions as described by Realism theory. Particularly the assumption that in a Hobbesian scenario, states will behave to further their state self-interest and to maximize their own power. For example Kennedy would respond to part of what Khrushchev expressed and ignore part. Particularly when Khrushchev harped on complete disarmament and removal of U.S. foreign military bases. Likewise, Khrushchev would response to a portion of what Kennedy had conveyed and ignore, for example, profitability and investor relations issues regarding cooperating to create a U.S. - led Comsat Corporation (Von Bencke, 1997: 52-57). The U.S. consistently refused the Soviet request to completely disarm, and the Soviet Union consistently refused to agree to allow non-state actors to participate in outer space development. The Soviet Union was insistent that space activities be carried out "solely and exclusively by states"; hence, "barring private bourgeois corporations" (Von Bencke, 1997: 57). In spite of this tension, Kennedy was seriously considering ways that the U.S. could formally turn the space competition into a joint venture with the Soviet Union. Tensions between Kennedy and Khrushchev arose between the two leaders, for example the Berlin Crisis (the construction of the Berlin Wall, August 13, 1961) the Vienna Summit, the Soviet test of a nuclear weapon (September 1, 1961) and the Cuban Missile crisis in October of 1962 (Von Bencke, 1997). However, there appears to have been an overarching mood of willingness to cooperation between the two leaders. This led to further international cooperation towards the creation of the Outer Space Treaty of 1967. This mood of cooperation lingered on through Johnson's term as President.

<sup>40</sup> Specifically, Resolution 1884 called upon all States: (a) to refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons in outer space in any other manner; (b) to refrain from causing, encouraging, or in any other way participating in the conduct of the these activities " (Jasentuliyana and Lee, 1979-1981: xix).

<sup>41</sup> Lyndon B. Johnson's Presidency lasted from 1963 to 1969. The leaders of the Soviet Union were Khrushchev (1953-1964) and Brezhnev (1964-1982). The record does not



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make a prominent display of correspondence between leaders of the U.S. and the Soviet Union.

<sup>42</sup> Lyndon B. Johnson, while a Senator, took consistent fervent action pushing for international space laws, despite President Eisenhower's cool nonchalant approach to the issue. It is also important to note that it was upon Johnson's advice, while serving as Kennedy's Vice President, that President Kennedy began to the creation of a U.S. space program as a race against the Soviets and to make it a national priority.

<sup>43</sup> Memorandum Opinion and Authorization, Federal Communications Commission, Chairman Kennard, August 2, 2000, In the Matter of the Applications of INTELSAT, LLC for Authority to Operate, and to Further Construct, Launch, and Operate C-band and Ku-band Satellites that form a Global Communications System in Geostationary Orbit; see <http://www.fcc.gov/Bureaus/International/Orders/2000/fcc00287.txt>.

<sup>44</sup> Pub. L. No. 87-624, Title V. 501, 92 Stat. 2392 (1978), Convention of the International Maritime Satellite Organization (Inmarsat) Sept. 3, 1976, 31 U.S.T. 1, 4, 1143 U.N.T.S. 105, 107 (effective July 16, 1979).

<sup>45</sup> <http://about.inmarsat.com/business>

<sup>46</sup> Inmarsat's website (see note 44) states "Today Inmarsat is at the forefront of 3G wireless telephony, capitalizing on almost a quarter of a century's experience to deliver broadband communications solutions to enterprise, maritime and aeronautical users around the globe" and "a cornerstone of this strategy is the new Inmarsat I-4 satellites, the largest commercial communications spacecraft, currently scheduled to enter service in 2005. Retrieved December 13, 2005.

<sup>47</sup> COMSAT is the US Signatory to both the INTELSAT and INMARSAT Conventions. It is regulated by the Federal Communications Commission and receives its instructions on how to vote on INTELSAT and INMARSAT from the U.S. government; see Richard A. Morgan (1994) "Military Use of Commercial Communication Satellites: A New Look at the Outer Space Treaty and "Peaceful Purposes" 60 *J. Air L. & Com.* 237 at note 291.

<sup>48</sup> Communications Satellite Act of 1962, Pub. L. No. 87-624, Title I, 102, 76 Statute 419, codified at 47 U.S.C. 701-708 (1988).

<sup>49</sup> Communications Satellite Act of 1962, Pub. L. No. 87-624, Title I, 102, 76 Stat. 419 codified at 47 U.S.C. 701-708 (1988).

<sup>50</sup> For further reading see De Porte, A.W., *Europe Between the Superpowers* (New York and London: Yale University Press, 1986).

## **CHAPTER THREE**

### **THE SECOND EPOCH OF OUTER SPACE DEVELOPMENT (1980-1990)**

This chapter provides a brief history of the second epoch of outer space development, from 1980-1991. Like the first epoch, the second epoch was influenced by the Cold War era. The second epoch is distinct from the first epoch in two ways. During the second epoch rapid advances occurred in commercialization of space technology. For example, during the first 20 years of the space age, global spending on space activities was around \$300 billion (Dula, 1985: 163), whereas space spending during the second epoch rose to about \$100 billion per year (Goldman, 1996). The profit potential of space had been clearly demonstrated and the process of space commercialization had begun. Second, space lawmaking shifted from the international to the domestic arena. During the second epoch and the United States became the key actor in the growing practice of creating its own domestic space laws rather than to defer to the United Nations. The United Nations international lawmaking machinery had proven to be too slow and too unpredictable. The new domestic laws created to govern newly emerging space industries included satellite telecommunications, remote sensing, data imagery retrieval, and commercial space launch and transportation services. Several countries followed this trend of commercializing, privatizing<sup>1</sup> and creating domestic space laws. These domestic laws encouraged and provided incentives for the private-sector to participate with governments in new space industries. In the second epoch, space activities were transformed by state actors into commercial enterprises and nonstate private business interests became relevant actors. Also the agenda for outer space development was expanded to include economic interests, which were treated as equally important to

national security concerns. Commercialization and privatization trends in satellite communications, remote sensing, space transportation and space stations became widely accepted by the international community. This chapter identifies the actors and their actions in causing these changes in the nature and character of outer space development. At the beginning of outer space development, key actors had been strictly focused on preventing the Soviet Union and the United States from colonizing space or using space to deliver or store atomic weapons. Many countries made a conscious decision to leave future legal issues concerning commercial space activity up to each nation to draft their own domestic space laws (Jasentuliyana, 1992; 1999). By the 1980s space law actors were focusing mainly on the commercial applications of space technologies. Although during the second epoch the private-sector was invited to participate in space activities, their participation was moderate.

Similar to chapter one, chapter two applies a Gramscian lens to explain the distinctiveness of the second epoch of outer space development. I suggest that the second epoch is a unique historic bloc involving a new “constellation of forces”. These forces include the international political environment during which there was a return of the Cold War rhetoric and a tempered rise in capitalist ideology. Although the US was challenging the USSR in many spheres, the USSR as a key player in the United Nations was able to thwart US efforts at pursuing its commercial interests in space. Thus during this period the US began to create a series of domestic space laws through which commercialization of space could be pursued without having to secure prior consent of the international community.

The US was the hegemonic actor during this epoch and it influenced regime change. In addition to causing a shift from international space lawmaking to domestic space lawmaking, the U.S. also initiated the commercialization process for satellite telecommunications, space launch and transportation services, and remote sensing. This chapter points to the specific instances of U.S. space lawmaking initiatives instituted by the Reagan Administration, Congress, NASA, the Federal Communications Commission, which were subsequently followed by similar initiatives by China, Russia, Japan and Europe. The U.S. – led International Space Station commercial mandate is also explained in this chapter. It also explains how these processes worked in conjunction with the new system of orbital slot allocation by the International Telecommunications Union. Through international agreements which granted other nations the use of orbital slots, the right to profit sharing, and the right to participate in the international space station, the U.S. was able to produce consent within the international community. Since the Soviet Union under Gorbachev was experimenting with Glasnost and Perestroika in the mid-1980s, it too was receptive to the commercialization ventures initiated by the US. Consistent with a Gramscian analysis, I treat these various activities as economic concessions and inducements which secured international consent to space commercialization and privatization during the second epoch.

The second epoch of outer space development occurred at a time when many industries were undergoing commercialization, privatization and deregulation processes which were becoming widespread in the international arena. The two key factors characterizing the outer space development regime in the second epoch – the shift to domestic space lawmaking and the rise in commercialization practices – were influenced

by the US. Since Gramsci's historicism necessitates examining social forces within their historical context, this chapter discusses the political and ideological environment in the international sphere, the role of the US as a hegemonic player in the second epoch, and its influence on other actors such as the ITU in the commercialization of space, and the ways in which international and national consent was secured in the area of space law.

## **The International Political and Ideological Environment**

### **Cold War Ideology**

Widespread activities to commercialize and privatize space activities during the second epoch mirrored the international political environment during the 1980s. For example, détente had ended and the Cold War had returned. Although it was actually before President Ronald Reagan took office that international relations between the two superpowers had "turned sour" (Von Bencke, 1997: 93), President Reagan highlighted this situation and used it as justification for no longer trusting the Soviet Union. For example, "upon assuming office, Ronald Reagan immediately began implementing the "get tough" program he had championed during his campaign" (Von Benke, 1997: 93). Another example, in a speech on January 29, 1981, President Reagan asserted that "détente's been a one-way street that the Soviet Union has used to pursue its own aims . . ."<sup>2</sup> Reagan used this no trust attitude to justify the creation of a myriad of U.S. domestic space laws which were used to privatize and commercialize space activities.

With the return of the Cold War, outer space development once again was treated as a national security concern. The Reagan Administration issued a large number of National Security Decision Directives<sup>3</sup> regarding national defense. President Reagan consistently procured funds for a Strategic Defense Initiative (SDI) - a space-based

military weapons public defense system. Also, Reagan increased Carter's proposed military budget by an additional \$6.3 billion even though Carter had already requested a significant increase. Due to Reagan's request the U.S. spent between 1981 and 1986 \$1.638 trillion on defense (Von Bencke, 1997: 93).

Another key aspect of the international political environment during the second epoch involved drastic changes in leadership of the Soviet Union. During the mid-1980s Mikhail Gorbachev had a policy of encouraging some aspects of private economy in the USSR<sup>4</sup> (Goldman, 1996: 110). After 1985 various events began to change and the relations between the U.S. and Soviet Union improved. For example, in 1987 the U.S. and USSR signed a bilateral agreement regarding cooperation in space.<sup>5</sup> Changes occurring in the Soviet Union included a change in leadership, a decrease in economic and political power, and a decrease in control over the Eastern European bloc countries (Von Bencke, 1997). During Gorbachev's time, "the Soviet Union faced declining world power and general economic collapse" (Von Bencke, 1997: 96). It was during this time and towards the end of the Cold War that Gorbachev began "his policies of liberalization", which "contributed to 1989 revolutions in Bulgaria, Czechoslovakia, East Germany, Romania, Hungary, Poland and March 1990 Declarations of independence from Lithuania and Estonia" (Von Bencke, 1997: 96). As soon as "Gorbachev took power in March 1985, the U.S. and USSR resumed arms negotiations, and from November 19 to 21 of that same year Reagan and Gorbachev met for the first time in Geneva" (Von Bencke, 1997: 97). Once again, nuclear disarmament talks created an environment for outer space cooperation. During the next three years, Reagan and Gorbachev "met three more times and signed the Intermediate-range Nuclear Forces Treaty agreeing to

eliminate an entire class of nuclear weapons" (Von Bencke, 1997: 97). In December 1988, Gorbachev addressed the United Nations and "challenged the United States to join the Soviet Union in disarming and took the initiative, announcing the unilateral withdrawal of 50,000 troops and 5,000 tanks from Eastern Europe, the reduction of the Soviet armed forces personnel by 500,000 and the destruction of 10,000 tanks, 8,500 artillery systems and 800 aircraft" (Von Bencke, 1997: 97). With these issues plaguing the other space superpower, the U.S. boldly began to privatize and commercialize space activities. This had been an expressed interest of the U.S. since the beginning of the space age (Krug, 1991; and Von Bencke, 1997).

### **HEGEMONIC STATE INFLUENCE ON REGIME CHANGE**

During the first epoch, the U.S. began the commercialization and privatization of satellite communications with the formation of COMSAT and later INTELSAT, and with the launching of *Intelsat I* in 1965 (Taylor, 1987). It took some time but by the second epoch, the international community had started to follow this pattern. They could see the profit potential, and were interested in deriving revenues to compete for a market share (Goldman, 1996). Also many countries were interested in providing new products and new services to the general public. Although this pattern of commercialization and privatization started in the 1960s, it was not visible until the 1980s (Salin, 2002: 212). The Reagan Administration's space policy during the mid-1980s sought to create private industry in space. As part of the Reagan Administration's "general fervor for deregulation", the government began to encourage the commercialization and privatization of space activities (Brooks, 1991: 60). The rationale behind this initiative

was that it necessary to streamline the federal government by increasing its efficiency and reducing government's size and scope. In addition, some have argued that by privatizing or commercializing activities formerly conducted by the federal government, NASA would achieve reduced costs, thereby freeing up funds for space initiatives such as human exploration beyond Earth orbit (Heydon, 1996). Many of the space technologies were converted into consumer goods and services. Examples include the Internet, cell phones, cable television, weather forecasting, imagery retrieval and computer-mapping systems which are all widely used products which were derived from space technology. Space research and development is extremely expensive, time consuming, not very profitable initially, and is very risky. Therefore, not many private businesses wanted to get involved without government incentives (Straubel, 1987: 950).

### **The Private-Sector**

The second epoch demonstrates that a distinct “constellation of forces” were at work. In order to understand why the third epoch of outer space development is so distinct, it is important to point out that during the first and second epochs, private-sector business interests did exist (Brooks, 1991: 61; Straubel, 1987; Jacobs, 1982). However, the only role played by the private-sector was that of "a contractor for a government space program" (Finch and Moore, 1985: xv). For example, Brooks (1991: 60) states that is the "early days of space exploration, space programs were conducted almost exclusively by the public sector with little involvement by the private sector". He further notes that "In the United States, the National Aeronautics and Space Administration (NASA) determined the course of development and contracted with the private sector for particular engineering and construction needs" (Brooks, 1991: 60). Private business



interests behaved more like silent beneficiaries.<sup>6</sup> It seems fair to assume that business interests lobbied for favorable treatment, which resulted in the legal infrastructure, which shaped privatization and commercialization (Straubel, 1987; and Jacobs, 1982), but this is largely undocumented. By 1983, many companies began to incorporate and form businesses for the purpose of taking part in the space transportation industry (Finch and Moore, 1985: 30-35). This was prior to the Commercial Space Launch Act of 1984 - the main piece of legislation facilitating the shift over to commercialization and privatization of the space industry (Finch and Moore, 1985: 30-35). Therefore, there is some indication that the private-sector influenced commercialization and privatization of space. However, the information during this epoch is sketchy.

President Reagan, NASA, and Congress all expressed an interest in having private business participate in space activities. Due to this push, the U.S. government began the process of transferring space technologies over to private industry (Obermann and Williamson, 1998: 17).<sup>7</sup> For example, in the United States, communications satellites were first developed with government assistance and through government subsidies (Miyagiwa, 1986). Satellite telecommunications, remote sensing and space launch services went through the process of commercialization and privatization, and were increasingly influenced by the rise in deregulation, neoliberalism, globalization, and free market philosophy prevalent in the 1980s (Nesgos, 1984; Serrano, 2000; and Livingston, 2000).

During the second epoch the spacefaring nations cooperated in these new patterns of partnering. It was not uncommon for former political adversaries formed joint ventures for the purpose of conducting space business. Outer space development changed from

government-to-government competition and cooperation for science and prestige to competition and cooperation for profit (Aldrin, 1998). Bencke (1997: 151-182) provides many examples of partnerships demonstrating this new trend. In general, the pattern of deregulating, privatizing and liberalizing domestic markets and economic institutions in many industries in the 1980s (Jayakar, 1998). Deregulation, privatization and commercialization policies were dramatically implemented in the fields of direct television broadcasting, space launch and transportation services, satellite telecommunications, and remote sensing (d'Angelo, 1994; Goldman, 1988).

### **1. Commercialization of U.S. Space Activities**

The key actor influencing regime change during the second epoch was the United States government. This section outlines actions taken by the Reagan Administration, NASA, the FCC, and Congress which prompted commercialization and privatization of space. In other words, this section demonstrates U.S. hegemony in initiating regime change was facilitated through a combination of published reports and mandates, speeches, policy statements, Presidential Directives, Executive Orders, and the passage of various laws (Finch and Moore, 1985; d'Angelo, 1994; Goldman, 1996). The impetus towards commercialization and privatization actually began prior to Reagan's taking office. For example in 1979 NASA was already "aiming at increasing private-sector use of NASA resources" to encourage private business interests' involvement in outer space development (Rumerman, 1999: 356). Another example, a NASA Transition Team in 1980 was assembled to prepare a report advising the new President-elect Ronald Reagan on space issues. Among the many recommended actions set forth in the team's report for the incoming administration were the following: that the President recognize the

importance of the U.S. space program at an early date; that the purpose and direction of the U.S. space effort be defined, and that a commitment to a viable program be articulated by the President at a timely opportunity; and that the Administration develop an unequivocal statement of national space policy and an organizational framework that promotes economic exploitation.<sup>8</sup>

Consistent with NASA's efforts, the Federal Communications Commission also played an important role in deregulating, privatizing, and commercializing the satellite telecommunications industry (Goldman, 1988). For example, in addition to the Communications Satellite Corporation (COMSAT) in 1962, INTELSAT in 1974, and Inmarsat in 1979, "the FCC during the 1980s began to use strategies intent on increasing competition in the international telecommunications" (Wong, 1998: 6). While during the 1960s and 1970s the general mood was to focus on protection and promotion of intergovernmental organizations like INTELSAT and Inmarsat, by the 1980s this shifted to a new mood of wanting to increase free market competition - both domestically and internationally in the telecommunications and satellite systems markets. Wong (1998: 6) explains that:

the domestic telecommunications market was the first target of this new pro-competitive agenda" (Wong, 1998: 6). In the mid-1980s, after years of monopoly status, AT&T was effectively ordered to spin off its regional assets. The birth of "baby bells" provided local telecommunications services, while new companies entered the long-distance and international phone markets. Meanwhile, these national events had an eventual ripple effect in the international satellite telecommunications realm.

Wong (1998: 6) further explains that:

In 1981, the FCC authorized the use of domestic satellites for transborder communications between the United States, Canada, and Mexico. In 1983, several U.S. companies filed applications with the FCC to establish satellite systems to compete with INTELSAT. The next year, President Ronald Reagan issued

Presidential Determination No. 85-2, which authorized the entrance of these new competitors into the satellite telecommunications market. This Presidential Determination claimed that such competition was, under the Communications Satellite Act of 1962, in the national interest of the United States.

In addition to actions taken by the FCC, President Reagan took several actions to further the privatization and commercialization processes. For example, on July 4, 1982, at the landing of the Space Shuttle Columbia, President Reagan announced the "National Space Policy". He stated that the basic goals of the United States space policy are to: (a) strengthen the security of the United States; (b) maintain United States space leadership; (c) obtain economic and scientific benefits through the exploitation of space; (d) expand the United States private-sector investment and involvement in civil space and space-related activities; (e) promote international cooperative activities that are in the national interest; and (f) cooperate with other nations in maintaining the freedom of space for all activities that enhance the security and welfare of mankind. Also included was that the government would "provide a climate conducive to expanded private sector investment and involvement in space activities . . .". By taking this action, President Reagan "set the direction of United States space activities during the 1980s" (Straubel, 1987: 948). This policy provided for private-sector participation and for the United States to encourage domestic commercial "exploitation of space capabilities, technology and systems for national economic benefit" (Dula, 1985: 183).

Congress took actions that were intertwined with those stated above. In 1982, the Small Business Innovation Development Act was passed by Congress. It required that every federal department with a Research and Development budget of \$100 million or more establish and operate a small business innovation research (SBIR) program. Each

department by law must spend 2.5% of their annual budget for this program benefiting the small business sector (Schacht, 2002: 1). Congress passed this law due to the belief that "while technology-based companies under 500 employees tended to be highly innovative, and innovation is essential to the economic well-being of the United States, these businesses were underrepresented in federal R&D activities"<sup>9</sup> (Schacht, 2002: 1). Actions taken in creating these new space laws through the U.S. government involved the combined efforts of Congress and the Reagan Administration. For example, President Reagan made the following remark on July 22<sup>nd</sup> upon signing The Small Business Innovation Development Act of 1982<sup>10</sup> into law:

I think before I say anything, some thanks are in order. First, I would like to congratulate the Members of the Congress whose hard work has resulted in the passage of the Small Business Innovation Development Act, and particularly, Senators Weicker and Rudman and Congressmen Mitchell and McDade for their work. And, of course, the small business community itself should be complimented for a job well done.

As you know, last March I submitted to the Congress the first annual report on the state of small business. In that report, I reiterated my support for the bill that's about to be made law. Now, you just think about that. There's a government report whose recommendations are actually being followed. So, I'm very happy to put my John Hancock on this legislation today . . .

This demonstrates why we must understand the actions taken to commercialize and privatize the space industry as being inextricably intertwined between several government entities. In addition to actions taken by NASA and the FCC, President Reagan suggested the creation of certain laws favoring private business interests to Congress, which would then deliberate the issue and decide to draft a bill which would subsequently be converted into a law to be enacted upon the signature of the President. This pattern of action between the President and Congress existed in the creation of the

following key laws that served to facilitate the commercialization and privatization of various space activities. Private business was encouraged by technology transfers, gifts, grants, and profit making opportunities described below.

Congress stated its support for commercialization of space activities during deliberations resulting in two reports. The Committee on Science and Technology, U.S. House of Representatives, report of April 15, 1983 stated that "we should establish a policy which would encourage commercialization of space technology to the maximum extent feasible", and the Committee on Commerce, Science and Transportation, U.S. Senate report of May 15, 1983 stating that "efforts by the private sector to invest and seek commercial opportunities in space" (Rumerman, 1999: 357).

On May 16, 1983 The National Security Council "issued the Reagan Administration's policy on commercialization of expendable launch vehicles (ELVs)". Thereby fully endorsing and facilitating the commercialization of ELVs (Dula, 1985: 183-184). This space policy directive created "the Senior Interagency Group on Space (SIG-Space), which is chaired by the Assistant to the President for National Security Affairs. SIG-Space was created to implement the policies announced by the President on July 4, 1982". The SIG-Space, in focusing on the issue of commercialization of the space launch business, created the Presidential Directive on the Commercialization of Expendable Launch Vehicles on May 26, 1983 (Straubel, 1987: 948). President Reagan issued the Presidential Directive on the Commercialization of Expendable Vehicles to "encourage a private sector development of commercial launch operations" (Finch and Moore, 1987: 56-57; Straubel, 1987: 948). This involved making space technology

available to private industry at no cost (Dula, 1985), thereby providing even greater incentive for private-sector participation.

This 1983 Directive states:

- (1) The government will license, supervise, and regulate commercial ELV operations only to the extent required to meet national and international obligations and to ensure public safety.
- (2) The government will make available on a reimbursable basis facilities, equipment, tooling, and services required to support the production and operation of commercial ELVs.
- (3) While the government will not subsidize the commercialization of ELVs, it will price the use of its facilities, equipment, and services consistent with the goal of encouraging viable commercial ELV launch activity.
- (4) The government will review and approve any proposed commercial launch facility and range as well as subsequent operations conducted therefrom. Near-term demonstration or test flights of commercial launch vehicles conducted from other than the U.S. government national range will be reviewed on a case-by-case basis using existing licensing authority and procedures.

This Directive sets forth that "one of the government's basic goals should be to 'encourage the private sector development of commercial launch operations' " and to help realize this goal "regulation would be kept to a minimum and government facilities would be made available on a reimbursable basis" (Straubel, 1987: 948). This policy provides that the United States to encourage domestic commercial "exploitation of space capabilities, technology and systems for national economic benefit" (Dula, 1985: 183). Dula (1985: 185) explains that under these policies, "the administration is committed to take steps, including legislative proposals, to assure that the encouragement of private investment in space is a long-term, consistent United States policy".

These policies were informed by a comprehensive study by the National Academy of Public Administration (NAPA). The NAPA report of 1983 provided the guidelines for NASA's implementation of changes in the way NASA does business. It

recommended that NASA adopt the following policies to encourage private- sector participation in the space businesses:

- (1) declare and institutionalize a major commitment to the commercialization of space technology;
- (2) assist industry in pursuing opportunities for profitable investment in space;
- (3) offer NASA facilities and services for use by private companies under conditions that encourage commercial development;
- (4) continue publicly funded research and development including study of long-range opportunities; and
- (5) reduce the risks and restrictions that impeded commercial exploitation of space technologies.

In addition to creating privatization and commercialization policies, President Reagan made speeches to help effectuate the privatization and commercialization of space activities. For example, in his State of the Union message on January 25, 1984, President Ronald Reagan stated:

The Space Age is barely a quarter of a century old, but already we've pushed civilization forward with our advances in science and technology. Opportunities and jobs will multiply as we cross new thresholds of knowledge and reach deeper into the unknown.

Reagan's speech "strongly encouraged private space industrial activities and commercial launch services that he had to override strong opposition from several economic and military advisors"<sup>11</sup> (Dula, 184).

President Reagan also issued Executive Order 12465<sup>12</sup> on February 24, 1984, along with the "National Commercial Space Policy", which was also established in 1984 (Taylor, 1987). These actions when considered together represent a dramatic shift to privatize and commercialize the space industry. Its purpose was to "encourage, facilitate and coordinate the development of commercial expendable launch vehicle (ELV) operations by private United States enterprises". This provided the private-sector with an



important government resource. It made the Department of Transportation the "lead federal agency for encouraging and facilitating private commercial ELV activities" (Straubel, 1987: 949). To further ensure a smooth shift, the Secretary of Transportation created the Office of Commercial Space Transportation (OCST)<sup>13</sup> to carry out the duties set forth in Executive Order 12465. This Order helped to facilitate the implementation of the 1983 Presidential Directive on the Commercialization of Expendable Launch Vehicles (Straubel, 1987).

Congress further expressed its endorsement of these commercialization and privatization activities by amending the original NASA Act of 1958. The initial Act stated that NASA is to "provide for the widest practicable and appropriate use and dissemination of information concerning its activities and the results thereof".<sup>14</sup> On July 16, 1984, The NASA Space Act was amended by Congress to include explicit language specifically mandating commercialization. It reads: "The Congress declares that the general welfare of the United States requires that the National Aeronautics and Space Administration seek and encourage to the maximum extent possible the fullest commercial use of space"<sup>15</sup> (Obermann and Williamson, 1998: 17).

The very next day on July 17, 1984, Congress passed the Land Remote Sensing Commercialization Act. This Act of Congress facilitated the privatization and commercialization of space remote sensing by providing for the sale of the LANDSAT system to private industry. It also promoted the commercial distribution and use of data from remote sensing satellites. The Reagan Administration influenced Congress to pass this law arguing that "Landsat should be transferred to private industry more quickly and worked with Congress to accomplish the task" (Obermann and Williamson (1998: 19).

Prior to the Land Remote Sensing Policy Act of 1984, U.S. remote sensing activities were shaped by bilateral agreements between NASA and foreign countries (Baker, O'Connell and Williamson, 2001). The primary purpose of the Land Remote Sensing Policy Act<sup>16</sup> was "to transfer remote sensing activities from the public to the private sector" (Jasentuliyana, 1992: 79). This process of privatization was "intended to make the acquisition and use of the data more economically efficient and less costly to the government by phasing out government funding for operational satellite remote sensing" (Jasentuliyana, 1992: 79). The stated goals of this Act include the maintenance of US worldwide leadership in commercial remote sensing, the preservation of its national security and the fulfillment of its international obligations. Its ultimate end is a "viable private sector enterprise not hampered by excessive regulation"<sup>17</sup> (Ramey, 2000). The Reagan Administration listed three conditions for the transfer: 1) defense and foreign policy interests must be protected, 2) the US government must retain guaranteed access to weather data and 3) the transfer must be a good deal for the US taxpayer (Ramey, 2000).

During a White House ceremony on July 20, 1984, in celebration of the 15<sup>th</sup> anniversary of the lunar landing of Apollo 11, Reagan elaborated the commercialization policy by describing the following as federal goals (Dula, 1985: 184):

- 1) eliminate provisions in the tax codes and regulations that discriminate against commercial space ventures;
- 2) update laws and regulations predating space operations to accommodate the commercial use of space, including streamlining regulatory decisions affecting future space projects;
- 3) expand industry's role in setting the nations' research agenda, through advisory committees, to expand research and development in areas that have commercial applications and will result in development of marketable commercial space products and services; and
- 4) take steps to assure companies and potential investors of policy consistency to encourage the long-term commitment required for most space projects.

In facilitating the commercialization and privatization process, NASA took actions concurrent with the Reagan Administration and Congress. For example, during the 1983 shaping of space commercialization and privatization policy, NASA established the Office of Commercial Programs and formed the NASA Space Commercialization Task Force consisting of NASA representatives, private contractors and advisory groups from industry and academia to "examine the opportunities or impediments to expanded commercial activities in space and developing a policy for NASA's commercialization efforts and an implementation plan for putting the policy to work" (Rumerman, 1999: 357). In 1984, the task force completed its efforts and created a plan "to enhance the agency's ability to encourage and stimulate free enterprise in space". The task force concluded that "private enterprise should help the nation retain its lead in science and technology, as well as modify or eliminate natural and bureaucratic barriers to the commercial use of space" and recommended "the implementation of a NASA Commercial Space Policy to expedite the expansion of self-sustaining, profit-earning, taxpaying, jobs-providing commercial space activities" (Rumerman, 1999: 358). In October 1984, NASA released its Commercial Space Policy containing a detailed policy and implementation plan "aimed to foster commercial involvement in space". It stated that NASA encouraged "free enterprise to participate in space by inviting industries and other private entities to finance and conduct business in space". It further stated that "NASA's support for commercial space activities by reducing the technical, financial and institutional risks to levels competitive with conventional investments and by establishing new links with the private sector to stimulate the development of private business in space" (Rumerman, 1999: 359). The policy provides incentives for private-sector

involvement in "research and development, using NASA's facilities, patent rights and procedural issues, organizations designed for commercial involvement in space, and NASA's outreach program" (Rumerman, 1999: 359).

Another important action taken by Congress on October 30, 1984 was the passage of the Commercial Space Launch Act<sup>18</sup>. The purpose of the Act was "to facilitate commercial space launches, and for other purposes", and it "requires the Secretary of Transportation to promote and facilitate private sector commercial space launches". This made possible the privatization and commercialization of the space launch and transportation services industry. The new law announced a strong United States policy in developing a governmental infrastructure for supporting private investment in a space launch services industry and it created a regime for the smooth operation of a private U.S. space transportation system. It did this by making by providing a governmental entity to ensure fast and smooth paperwork. The Office of Commercial Space Transportation was made the lead agency and was granted the exclusive authority to license commercial launches. The Act states that the Secretary of Transportation is responsible for carrying out the Act's objectives of:

- 1) encouraging, facilitating and promoting commercial space launches by the private sector;
- 2) consulting with other agencies to provide consistent application of licensing requirements under this Act, and
- 3) ensuring fair and equitable treatment for all license applicants.

This Act was significant because prior to its passage, private-sector space business was conducted piecemeal with little or no certainty (d'Angelo, 1994: 114).<sup>19</sup> As Straubel (1987: 949) states "Congress realized the need for an organized policy toward the regulation of private launch activities and took steps to codify the policy and

administrative developments discussed above". He further states that "Congress enacted, and sent to President Reagan, the Commercial Space Launch Act, partially in the hope that a change in administrations would not result in a modification of the steps already taken toward ELV regulation"<sup>20</sup> (Straubel, 1987: 949).

The National Space Policy announced by President Reagan on July 4, 1982 led to the passage The Commercial Space Launch Act and the creation of an Office of Commercial Space Transportation (Straubel, 1987: 947). In addition, many meetings in the House of Representatives regarding commercialization and privatization of space activities also contributed the passage of the Commercial Space Launch Act. For example, On May 3, 4, 17 and 18 of 1983 during the 98<sup>th</sup> Congress, "Space Commercialization" hearings were held before the Subcommittee on Space Science and Applications, House Science and Technology Committee.<sup>21</sup> Similarly, on November 18, 1983 and March 29, 1983 "Expendable Launch Vehicle Commercialization Act" hearings took place before the Subcommittee on Space Science and Applications, House Science and Technology Committee. On June 19, 1984, "Initiative to Promote Space Commercialization" hearings took place before the Subcommittee on Space Science and Applications, House Science and Technology Committee.<sup>22</sup>

Even the *Challenger* explosion tragedy of January 1986<sup>23</sup> was treated in part as justification for privatization of space activities. Although tragic, this event was highlighted as an example of why space activities needed to be privatized. As one theorist explains, in response to the Challenger explosion, Reagan began to articulate "two different roles in outer space, one for NASA and one for private industry" (Krug, 1991: 81). This tragedy is said to have created "conditions under which the commercial launch

industry envisioned in the Commercial Space Launch Act could actually develop" (Obermann and Williamson, 1998: 20). This tragedy was publicized as "a symbol of bureaucracy gone bad" (Krug, 1991: 81). This event was used as another tool to justify privatization of space assets.

In 1986 Congress passed the Federal Technology Transfer Act to facilitate the transfer of government owned technology and intellectual property, such as patented space technology, to the private-sector and for commercial applications. This legislation authorized Federal organizations to enter into Cooperative Research and Development Agreements (CRADAs) with private entities.<sup>24</sup> On January 5, 1988, President Reagan approved a new space policy released on February 11, 1988. The new National Space Policy Directive "separated US space activities into three separate and distinct sectors: two governmental sectors (civil and national security) and one non-governmental sector, identifying for the first time a separate and distinct commercial space sector" (Salin, 2002: 213). It specifically stated that:

The United States government shall not preclude or deter the continuing development of a separate, non-governmental Commercial Space Sector. Expanding private sector investment in space by the market-driven Commercial Sector generates economic benefits for the Nation and supports governments Space Sectors with an increasing range of space goods and services. Governmental Space Sectors shall purchase commercially available space goods and services to the fullest extent feasible and shall not conduct activities with potential commercial applications that preclude or deter Commercial Sector space activities except for national security or public safety reasons. Commercial Sector space activities shall be supervised or regulated only to the extent required by law, national security, international obligations, and public safety.<sup>25</sup>

## **2. Commercialization of China, Russia, Japan and Europe's Space Activities**

This 1980s U.S. initiative to commercialize outer space activities became a growing trend with the assistance of China, Japan and Europe (Chen 1993; Yoshida,

1992; Tatsuzawa, 1988; and Chorley, 1988). Several space law scholars have commented on U.S. trendsetting behavior in shaping domestic space laws to foster commercialization and privatization of space activities. Salin (2002: 209) asserts that:

the United States is the predominant space power on earth, due to its sheer economic, technological and political might. But the business dimension does not explain the whole story. The United States also administers a full-fledged body of space laws and regulations that is unchallenged in volume, sophistication, and coherence by any other nation, or group of nations on earth.

Similarly, distinguished space law scholar, current President of the International Institute of Space Law, and former Deputy Director-General of the United Nations Office for Outer Space Affairs states "National legal regulation of space activities began with the onset of space activities. The United States, of course, has the most exhaustive legislation in this field. This is especially so with regard to the privatization and commercialization of space activities" (Jasentuliyana, 1999: 11).

In addition to U.S. influence in the commercialization of satellite telecommunications through COMSAT and INTELSAT during the 1960s and 1970s, commercial applications in other areas of space activities began to catch on. By 1986 many countries had entered the commercial space launch services market. However, in the early 1980s, there were only two players in the commercial space launch services industry: the United States and France. The U.S. marketed the government owned and operated Space Shuttle. France marketed its commercial space launch services through Arianespace, a private space launch company. France's Arianespace was the first private commercial operations space carrier in the world (Finch and Moore, 1985: 27).<sup>26</sup> This business entity involved thirty-six leading European companies operating in the

aerospace and electronics fields, together with thirteen European banks and the French Centre Nationale d'Etudes Spatiales (CNES), the French space agency. Arianespace was designed for the specific purpose of satisfying the demand for sending various unmanned space systems into space - specifically the geostationary orbit. These space systems provided services such as telecommunications, direct broadcasting, meteorology and data transmission, and to Near Earth orbit for surveying and surveillance purposes (Finch and Moore, 1985: 25-27).

In addition to the example of France, several nations had some sort of domestic legislation or policies concerning space activities during the second epoch. However, none compare in terms of breath, depth and scope of U.S. domestic legislation. For example China, to facilitate its space commercialization, in 1989 formed "a high-level Space Leading Group" (Chen, 1993: 45). Other key players in China's commercialization process include the Ministry of Aerospace Industry, the Wanyuan Industry Corporation, the Shanghai Bureau of Astronautics, the Chinese Academy of Space Technology, the China Great Wall Industry Corporation, China Satellite Launch and TT&C General (an organization under the Commission of Science, Technology and Industry for National Defense (Chen, 1993: 45). Although commercialization efforts have caught on, it is unlikely that privatization trends will be adopted in China. As Chen explains "China has a centrally planned economy, and to expect its space commercialization efforts to follow free market principles is unrealistic" (1993: 45).

Russia also began to commercialize its space activities during the second epoch. V.S. Vereshchetin, Professor of International Law, Deputy Director of the Institute of State and Law of the Academy of Sciences in the USSR and G.V. Silvestrov, a researcher



at the same institution explain that "it is perfectly clear now that the policy of space commercialization, just like the general process of economic reforms, is a strategical long-term course chosen by the Soviet Union. Our space industry is now making its first but confident steps in the world market of space technology and services" (1992: 32-40 at 39). It seems that skepticism regarding space commercialization has prevailed a long time in Russia. For example Vereshuchetin and Silvestro, (1992: 33) attributes this resistance to "the ossified nature of our economic system and its inability to adopt new, more effective economic mechanisms of cooperation, as well as the over ideologized approach to international cooperation" (Vereshuchetin and Silvestro, 1992: 33). Although the notion of using space for the sheer purpose of economic profit is inconsistent with the ideological structure, the Soviet Union began to unofficially participating in "the commercial state of exploitation of the space communications systems", through Soviet participation in the Agreement on the Establishment of the INTERSPUTNIK International System and Organization of Space Communications, signed in 1971 (Vereshuchetin and Silvestro, 1992: 32). Specifically, Article 5 of this Agreement provided for the Sputnik communications system to be created in three stages. First, was an experimental stage wherein the Soviet Union gave the organization a free access to Sputnik communications channels, followed by a stage of exploitation of these channels on lease. The agreement provided for commercial exploitation stage. The third stage involved a transition to "economic feasibility" (Vereshuchetin and Silvestro, 1992: 32). Soviet commercialization of space officially began, however, with the Convention and Operating Agreement on the International Maritime Satellite Organization of 1983 (INMARSAT). In addition to China and Russia, nine Western European countries

(France, Germany, England, Italy) making up the European Space Agency have been executing their space commercialization through guiding principles known as "L'une des principales considerations qui aient conduit a la création de l'Agence et à l'approbation des programmes a été le souci de mettre en oeuvre une politique industrielle de nature à répondre aux aspirations technologiques de l'Europe". As Tatsuzawa (1992: 12) points out, the following goals are sought:

- 1) to meet the requirements of the European space programme and the co-oriented national space programmes in a cost-effective manner.
- 2) To improve the world-wide competitiveness of European industry by developing space technology and the rational and appropriate industrial structure.
- 3) To ensure equitable participation in the work of technological interest.
- 4) To exploit advantages of free competitive bidding in all cases, except where this would be incompatible with other defined objects of industrial policy.

In addition to these commercialization principles the European Space Agency, after the Cold war, also instituted a privatization policy. Tatsuzawa (1992: 13) calls it "a new policy encouraging the direct participation of the private sector in space activities, the application of the principle of fair return, and the relations between ESA and the EC". In January of 1985, the ESA Council adopted a Resolution called "The Long-Term Space Program and Plan covering 1987-2000". The Resolution established a number of objectives for space commercialization. It also reinforces the "European space infrastructures should provide new investment opportunities for the private sector: the private sector should be encouraged to use available potential, to participate in investment, and to bear responsibility for operations" (Tatsuzawa, 1992: 13). However, ESA abides by the principle of fair return which aims at equitably distributing contracts of work of optional programs among member States". However, there is criticism for the gaps that exist between big and small ESA states (Tatsuzawa, 1992: 13). Therefore,

conflicts and tensions exist between equitable distribution of opportunity and economic competitiveness in this effort to commercialize and privatize the space industry in ESA states.

Similarly, Japan began to commercialize its space launch, remote sensing, environment utilization, satellite telecommunications, and weather forecasting. This was carried out by the Science and Technology Agency, the Ministry of International Trade and Industry, the Ministry of Posts and Telecommunications, the Ministry of Education, and the Space Activities Promotion Council of the Federation of Economic Organizations (Yoshida, 1992: 328). The Ministry of International Trade and Industry is responsible for encouraging commercial space launching, commercial remote sensing, and space launching policy. In the Fundamental Policy of Japan's Space Development (FPJSD) includes a fundamental goal the encouragement of private space activities. This includes the role of the private sector in space exploitation which is recognized as a need within the context of national space development policy. However, clearly defined policies for carrying out this goal appear to be lacking (Tatsuzawa, 1992: 18). State competition to excel in the commercial market became an important issue.<sup>27</sup>

### **3. The International Space Station**

In addition to leading the commercialization process in satellite communications and space launch and transportation services, the U.S. also initiated the construction of the international space station<sup>28</sup>, with a mandate to be used for commercial interest. In 1984 President Reagan articulated an interest in constructing an international space station for commercial, technological, and scientific purposes. The international community heeded this call in September of 1988 by signing The International Space

Station Multilateral Intergovernmental Agreement. This Agreement to develop the International Space Station".<sup>29</sup> The preamble states "Recalling that in January 1984 the President of the United States directed the National Aeronautics and Space Administration (NASA) to develop and place into orbit a permanently manned Space Station and invited friends and allies of the United States to participate in its development and use and to share in the benefits thereof".

The signatories include: the Kingdom of Belgium, Kingdom of Denmark, The French Republic, The Federal Republic of Germany, the Italian Republic, the Kingdom of the Netherlands, the Kingdom of Norway, the Kingdom of Spain, the Kingdom of Sweden, the Swiss Confederation, the United Kingdom of Great Britain & Northern Ireland (the European Space Agency states), the Government of Canada, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America.

It is clear in the wording of this treaty that the purpose of the ISS was to include commercial purposes. For example Article I states:

The object of the Agreement is to establish a long-term international cooperative framework among the Partners, on the basis of genuine partnership, for the detailed design, development, operation, and utilization of a permanently inhabited civil international Space Station for peaceful purpose, in accordance with international law. The civil international Space Station will enhance the scientific, technological, and commercial uses of outer space . . .

The International Space Station provides a unique environment for research and product development since it is a laboratory which continuously operates in a microgravity atmosphere. This has vast implications for conducting innovative research projects and to creating new products (Finch and Moore, 1985).

#### **4. Allotments of Orbital Slots**

During the 1980s, the International Telecommunications Union granted orbital slots to member nations. This was consistent with all of the other U.S. – led initiatives to commercialize and privatize space activities. This helped to encourage trade liberalization of satellite communications during the second epoch. The commercialization trends established by the COMSAT and INTELSAT corporations were followed by the establishment of similar industries who launched their own regional satellite systems for example, EUTELSAT in Europe and ARABSAT in the Middle East, The ITU is a specialized agency of the United Nations with a Convention, and Constitution and two sets of operating regulations, and all these have Treaty status. Also, it is important to note that the international community has granted this intergovernmental organization the authority of being the regulatory regime for assigning rights to use various orbital slots (in the orbit spectrum – a limited natural resource) for various goods and services deriving from satellite communications. Around the mid-1980s, fundamental shifts occurred within the international telecommunications regime. This included changes such as the ITU's Space World Administrative Radio Communications Conference held in 1985 and 1988 (WARC 85-88) (Roberts, 2000; Cook, 1999). This conference came about because, developing nations had continuously pressed for more rights to the orbit-spectrum and in 1988 a compromise was arrived at during the WARC 85-88 Conference. The ITU created a new hybrid system in place of the old "first come, first served" (*a posteriori* system). On the surface this new system appears to be a compromise to address concerns of developing countries that they will lose out on the commercial opportunities associated with the orbital slots above their

sovereign territories (Roberts, 2000: 13). Instead of acquiring rights to use orbit slots by being the first to use or license it, under the new *a priori* allotment system, ITU member states were each granted an assigned allotment by the ITU. Since many developing nations lack the resources to take advantage of this opportunity, this essentially had the effect of linking the orbital slot arena to free market principles each member state had an incentive to sell or lease their newly acquired slots to companies in exchange for a profit. The above section demonstrates how the U.S. initiated space commercialization and privatization through an intricate series of actions which included getting the international community to consent through various concessions and inducements.

### **CONCLUSION**

This chapter demonstrates that during the second epoch of space law and outer space development international space lawmaking came to a halt. Tensions between the U.S. and Soviet Union had arose again, ending détente. The Reagan Administration, the key actor during the second epoch, took advantage of this situation to further its economic agenda and passed an unprecedented number of domestic laws to commercialize and privatize various aspects of the space industry. Pushing more market involvement in the satellite telecommunications and space launch industries, the U.S. government provided much needed support to create the various space industries in the 1980s. Without government assistance the various thriving space industries probably would not exist today, as the business ventures were quite risky and probably not profitable. Hence, government aided space commercialization became an international trend during the second epoch. This chapter also demonstrates that the U.S. established trend towards commercialization and increased participation of the private-sector was

facilitated at the international level through the UN and the ITU. The Soviet Union still had superpower status and the U.S. was not yet making bold hyper-privatization proclamations. This situation would change with the advent of the Post Cold War era, as will be discussed in the next chapter.

The main point made by this chapter is that it is clear that during the second epoch, the U.S. government was the key actor in outer space development regime change. There were several reasons for this. For example, space lawmaking shifted from the international arena to the domestic sphere and the justification provided by the U.S. for this shift was that it could not trust the international law making machinery due to the Soviet invasion of Afghanistan. This was the attitude taken by President Reagan (Von Bencke, 1997). During the 1980s there was a global shift towards privatization, commercialization, globalization, neoliberalism and the spread of free market economics in many areas (Wong, 1998). Deregulation and decreasing government controls over private business was a global trend. The U.S. government began a policy of providing incentives to businesses to get involved with space activities. The U.S. also passed a series of laws, directives and policy statements to protect business interests regarding space activities. With regard to domestic telecommunications, in the 1980s space lawmaking shifted to a focus on protecting free market competition in the telecommunications and satellite systems markets. In addition, there were technological breakthroughs in space transportation such as the development of the U.S. Space Shuttle. This caused a massive movement from public and national space programs to commercialize space development and industries, and wider access to space by an ever-increasing number of other nations and private entities. Space development became more

a matter making profit rather than the prior focus on accomplishments of science, military power and national prestige. Commercial industries were blooming at a speedy pace. Another factor causing regime change was that tension and ideological conflicts at the international level made space lawmaking very slow and unpredictable (Goldman, 1996). The U.S. and Soviet Union consistently butted heads on several key issues. For example, the Soviets "wanted to couple space negotiations with talks aimed at general disarmament and the dissolution of foreign military bases", and the U.S. wanted to treat these issues separately. In addition, the Soviets repeatedly criticized the U.S. "for space espionage" and wanted reconnaissance satellites to be declared illegal (Von Bencke, 1997: 44). The U.S., argued for guaranteed frequency allocations, asserted that investors "would not see COMSAT as commercially viable if there were no guaranteed frequency allocations" (Von Bencke, 1997: 54). In addition, the Soviets opposed the specific allocation of frequency sections. As one writer explains "Khrushchev showed no interest in a system in which the U.S.S.R. would have a small minority interest and the United States a monopoly of technology; he denounced the planned consortium as a capitalist tool" (McDougall, 1985: 356-357). Citing these types of conflicts, the US policy was now to reject negotiations with the USSR during the second epoch. The U.S. further asserted that the international treaty making process was extremely slow and complex. It took approximately ten years to secure the Outer Space Treaty. Actions were taken to create legal specificity appropriate for growing commercial realities (Goldman, 1996: 94). In addition international space lawmaking through the United Nations had become increasingly less favorable to the space powers. For example, during the second epoch two more UN Resolutions<sup>30</sup> were passed concerning telecommunications satellites.



Resolution 37/92 was passed by the General Assembly on December 10, 1982, over "Western objection". The United States and "many Western nations rejected any legitimacy of this Resolution" mainly because it emphasized "prior consent" and "special rights for developing countries" (Goldman, 1988: 100). Countries involved in the space telecommunications business at that time viewed this as an unnecessary restriction on doing business. Resolution 41/65 of December 3, 1986, arrived at legal principles after much compromise. This involved a determination that "sensing nations did not need prior consent of the sensed nation". However, the new Resolution "restricted the manner and methods that the sensing nation may use - benefit to all countries" (Goldman, 1988: 104). Neither of these Resolutions during the second epoch was ever codified into formal international treaties. Therefore, public international law began to stagnate "amid the growth of private international and domestic (municipal) space law" (Goldman, 1996: 89). For these reasons, after 1980 an unprecedented number of domestic laws, Executive Orders, Presidential Directives, and policy statements were created to encourage the privatization and commercialization of space industries (Salin, 2002; Goldman, 1996; d'Angelo, 1994; and Finch and Moore, 1985).

## ENDNOTES

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<sup>1</sup> There is a distinct difference between commercialization and privatization. The term "commercialization" means the profit making transfer of goods and services by or to state, private, or organizational enterprises. Whereas "privatization" means "the transition of government owned and operated civilian space activities to strictly private ownership and operation, or civilian space activities originating through private initiative". Also commercialization and privatization often occur in successive phases (Tatsuzawa, 1988: 123).

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<sup>2</sup> *Public Papers of the Presidents of the United States: Ronald Reagan, 1981* (Washington, D.C. General Printing Office, 1982) at 57.

<sup>3</sup> Although Eisenhower, Kennedy, Johnson, Nixon, Ford and Carter all had overseen, in conjunction with the Department of Defense, the "development and deployment of various types of reconnaissance satellites" (Krug, 1991: 74), President Reagan issued considerably more Presidential Directives and policy statements than any of the former U.S. President. Consider the following: President Reagan's Speech on the Strategic Defense Initiative, March 23, 1983; NSDD-85, Eliminating the Threat of Ballistic Missiles, March 25, 1983; Possible Soviet Responses to the U.S. Strategic Defense Initiative Interagency Intelligence Assessment NIC M 83-10017 September 12, 1983; NSDD 116 Strategic Defense Initiative: Congressional and Allied Consultation, NSDD, December 2, 1983; NSDD-119, Strategic Defense Initiative, January 6, 1984; NDSS-143, July 5, 1984 on Arms Limitation Talks of September 1984; NSDD-172, June 1, 1985, Fact Sheet on the Strategic Defense Initiative (SDI); NSDD-192, October 11, 1985, The Strategic Defense Initiative (SDI) Program and the U.S. Interpretation of the Anti-Ballistic Missile (ABM) Treaty.

<sup>4</sup> During Reagan's Presidency there were several leaders of the Soviet Union: Leonid Brezhnev (1964-1982), Yuri Andropov (1983-1984), Konstantin Chernenko (1984-1985) and Mikhail Gorbachev (1985-1991). With the exception of Gorbachev, each played insignificant roles in outer space development.

<sup>5</sup> Bilateral "Agreement Between the United States of America and the Union of Soviet Socialist Republics Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes" entered into force on April 15, 1987. The 1977 version of this agreement had been allowed to expire in 1982. This agreement committed the two states to "carry out cooperation in such fields of space science as solar system exploration, space astronomy and astrophysics, earth sciences, solar-terrestrial physics and space biology and medicine" and to "encourage international cooperation in the study of legal questions of mutual interest which may arise in the exploration and use of outer space for peaceful purposes".

<sup>6</sup> Direct accounts of activities of private business actors to influence the U.S. government to act on its behalf are lacking. However, there are points of reference where this link can be implied. For example, the Reagan Administration consistently justified the body of pro private business legislation on the grounds that private enterprise does business better than government. This positive construction by President Reagan benefited private business interests. Government assistance through subsidies and favorable regulations, policy and laws allowing for decreased liability, tax breaks and technology transfer (gifts) is the reason the space industry is a thriving commercial enterprise. See Obermann and Williamson (1998).

<sup>7</sup> Obermann and Williamson (1998: 17) set forth a detailed analysis of the space technology transfer process. They explain that for over four decades "successive US Congresses and Presidential Administrations have sought ways to improve the prospects

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for successful commercialization in two major ways: transfer of technology developed in government laboratories to private industry; and creation of policies that promoted private financing of commercial opportunities in space".

<sup>8</sup> In the transition team report quiet a number of recommendations are made in addition to the examples provided herein. See "George M. Low, Team Leader, NASA Transition Team, to Mr. Richard Fairbanks, Director, Transition Resources and Development Group, December 19, 1980, with Attached: Report of the Transition Team, National Aeronautics and Space Administration" which can be viewed at <http://www.au.af.mil/au/awc/awcgate/low80.htm>. Retrieved January 12, 2006.

<sup>9</sup> Public Law 97-219. The rationale behind providing funds to the small business sector was to "guarantee this sector a portion of the government's research and development budget to compensate for what was viewed as a preference for financing large corporations. The following departments were included in this mandate: the Departments of Agriculture, Commerce, Defense, Education, Energy, Transportation, and Health and Human Services; the environmental Protection Agency; the National Aeronautics and space Administration; and the National Science Foundation. Wendy H. Schacht, Specialist in Science and Technology Resources, Science, and Industry Division, Congressional Research Service, Library of Congress, CRS Report for Congress, "Small Business Innovation Research Program, December 9, 2002.

<sup>10</sup> Enacted upon the signing of President Reagan on July 22, 1982, Public Law 97-219. "Remarks on Signing the Small Business Innovation Development Act of 1982, signing ceremony in the Rose Garden at the White House, July 22, 1982; <http://www.reagan.utexas.edu/archives/speeches/1982/72282c.htm>.

<sup>11</sup> President Reagan overrode strong opposition in announcing plans to construct a civilian permanently manned space station by 1994 "from Secretary of Defense Casper W. Weinberger and staff who felt that the project would drain development funding in general and dilute some space shuttle resources important to Defense Department space operations" (Dula, 1985: 184). Dula also informs that "additional opposition came from Office of Management and Budget Director David Stockman, who argued against the space station development as one additional program that would increase the national deficit.

<sup>12</sup> 49 Fed. Reg. 7211 (1984).

<sup>13</sup> 50 Fed. Reg. 7782 (1985) (49 C.F.R. §1.22 (a)). The OCST had operated "informally since November 16, 1983. Secretary Dole officially delegated the duties enumerated in Executive Order 12465 to the director of the OCST on February 24, 1984". The Secretary's order described "OCST's primary responsibility to be the "[f]ocal point within the Federal licensing related to commercial expendable launch vehicle operations and for promotion and encouragement of commercial expendable launch vehicle industry" (Straubel, 1987: 949).

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<sup>14</sup> National Aeronautics and Space Act of 1958, Public Law 85-568, 72 Stat., 426, sec. 203(3).

<sup>15</sup> National Aeronautics and Space Act of 1958, sec. 102 9c), as amended July 16, 1984 by Public Law 98-361.

<sup>16</sup> A compilation of U.S. Land Remote Sensing Policy, and laws go to [http://www.oosa.unvienna.org/SpaceLaw/national/united\\_states/15\\_USC\\_chapter\\_82\\_E.ht](http://www.oosa.unvienna.org/SpaceLaw/national/united_states/15_USC_chapter_82_E.ht).

<sup>17</sup> Land Remote Sensing Commercialization Act of 1984, 15 U.S.C. § 4200 and the Land Remote Sensing Policy Act of 1992, 15 U.S.C. § 5601).

<sup>18</sup> Public Law 98-575, The Commercial Space Launch Act of 1984, as codified at 49 U.S.C. Subtitle IX--Commercial Space Transportation, Chapter 701, Commercial Space Launch Activities, 49 U.S.C. 2601-2623 and 70101-70119 (as amended 1988, 1998).

<sup>19</sup> To demonstrate the prior difficulty "Senator Paul S. Trible, in his opening statement to hearings on the Commercial Space Launch Act, estimated that the regulatory jungle may include as many as eighteen federal agencies and twenty-two statutes" (Straubel, 1987: 950). See 98<sup>th</sup> Congress 1<sup>st</sup> Session. (1984) "To Facilitate Certain Space Launches, and for Other Purposes", 1984: Hearing on S. 2931 Before the Subcommittee. On Science, Technology, and Space of the Senate Comm. On Commerce, Science, and Transportation.

<sup>20</sup> Senate Report No. 656, 98<sup>th</sup> Congress, 2<sup>nd</sup> Session 2, *reprinted* in 1984 U.S. Code Congress & Admin. News 5328, 5329.

<sup>21</sup> CIS/INDEX Legislative Histories, 98<sup>th</sup> Congress, Committee Serial R. Report, prepared by Gordon A. Smith for the Subcommittee on Space Science and Applications, summarizing May 1983 hearings on potential private sector investment in commercial space activities. Examines industry plans for commercialization. CIS83: H702-29; and CIS84:PL98-575 pg. 623-625.

<sup>22</sup> CIS/Index Legislative Histories, CIS85: H701-14.

<sup>23</sup> The space shuttle program had started under President Nixon's term in office, and had been running smoothly until on January 28, 1986, "seventy-three seconds after liftoff, a faulty O-ring broke, causing the shuttle to burst into flames and explode" (Krug, 1991: 81). Millions witnessed this event on television. All seven of the crew members on board the space shuttle *Challenger* were killed instantly. Including the highly publicized first civilian "teach in space" - Christa McNair, who had won the Teacher in Space Project competition.

<sup>24</sup> Public law 99-502.

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<sup>25</sup> Fact Sheet, the White House, Office of the Press Secretary, "The President's Space Policy and Commercial Space Initiative to Begin the Next Century" February 11, 1998.

<sup>26</sup> By 1984, Arianespace had twenty-eight launch orders valued at over \$800 million (Finch and Moore, 1985: 27). Ariane's success provided the justification for President Reagan's urgent and dramatic new direction in commercializing and privatizing the space industry.

<sup>27</sup> In May of 1984, a U.S. company, Transpace Carriers, Inc., filed charges against Arianespace for allegedly subsidizing the price of its launch services and using "predatory pricing" techniques in the U.S., charging U.S. customers 25 to 30 less than member nations in the European Space Agency. Arianespace's defense was that a two-tier pricing policy was "the only way it could compete against NASA's subsidized shuttle service" (Finch and Moore, 1985: 105). For a full account of the nature and scope of this state competition in commercial space ventures see Timothy A. Brooks, "Comment: Regulating International Trade in Launch Services", *High Technology Law Journal* (1991): 59.

<sup>28</sup> The International Space Station is a floating orbital laboratory built to be permanently manned for long-term research. It is essentially a space hotel where people live and work while in space. For more information on space stations see Dyson (2001) and Nipaul (2004). Space stations are closely related to the materials processing industry. See Finch and Moore (1985). Scientists are able to process materials in new ways in space, creating new and advanced technologies. Many discoveries have been achieved from the high quality of research conducted on space stations. Most have been turned into lucrative products and services and are called "spin-off benefits".

<sup>29</sup> For more information see <ftp://ftp.hq.nasa.gov/pub/pao/reports/1998/IGA.html>.

<sup>30</sup> Resolution 37/92, "The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting" (December 10, 1982) and Resolution 41/65, "The Principles Relating to Remote Sensing of the Earth from Outer Space" (December 3, 1986).

## **CHAPTER FOUR**

### **THE THIRD EPOCH OF OUTER SPACE DEVELOPMENT (1991-2004)**

Chapters 1, 2 and 3 have demonstrated U.S. hegemony in the outer space development regime during the Cold War. However, during the first and second epochs of outer space development, the United States had to contend with Soviet interests. Since the demise of the Soviet Union, free market ideology became increasingly dominant in conjunction with a rise in U.S. hegemony. This chapter supports the assumption that when the Cold War ended, neoliberal free market ideology and globalization processes became internationally accepted norms. The rise in U.S. hegemony and the dominance of free market ideology have impacted the outer space development regime. This chapter provides the historical context to enable us to better understand new actors and the various actions taken to hyper-privatize outer space development outlined in Chapter 5.

This chapter also demonstrates that the international community began to accept and mimic U.S. - led space commercialization practices and an increased reliance on private corporations to carry out space activities. Established space industries have satisfied many with the creation of new markets for all of the various products deriving from space technology. This includes cell phones, the Internet, cable television, electronic bank transfers, GPS systems to name just a few. Since various states owned shares in INTELSAT and other international conventions, many states have been able to share in the profits of space technology. Therefore, there is a great deal of international consensus and acceptance for space commercialization and private-sector participation in space. As Cox (1993: 264) provides, the “United States was the dominant power and its dominance was expressed in leadership enshrined in certain principles of conduct that

became broadly acceptable”. Applying this insight from Cox, this chapter demonstrates that after the Cold War, the U.S. began to accelerate the commercialization and privatization of satellite telecommunications, the International Space Station, the space transportation and spaceport industries through a series of U.S. domestic space laws and policy. It also points to trends of acceptance and consent within the international space community. These mirrored trends within the international community have the “appearance of consensual arrangements” (Cox, 1993: 264).

### **The Ascendance of Free Market Ideology and U.S. Hegemony**

#### **The Post Cold War**

Many scholars are in agreement and define globalization as the phenomena After the Soviet Union was dissolved in 1991, shortly after the breakup of the Eastern bloc countries in 1989, the U.S. – Soviet superpower competition ended. With respect to political actions within outer space development regime, the U.S. no longer had to restrain its free market urges. As Sakwa (1999) explains, the demise of the Soviet Union represented the end of about 50 years of a superpower counter to the United States. Therefore, the decline of the Soviet Union meant that there was no longer serious opposition to neoliberal ideology, capitalism, or globalization. These events clearly mark the shift in the international distribution of power. The Cold War had finally ended. No longer was the geopolitical spectrum defined in terms of a bipolar balance of power. Neoliberal, free market philosophy and globalization have become dominant forces in the global society in the post Soviet era. The phenomena of globalization is perhaps a well researched, well documented one and there exists a burgeoning literature in many disciplines on its impacts. The task in this section is not to provide a comprehensive and

detailed literature review of globalization. Reviews on globalization can be readily found (Aaronson, 2001). Rather the purpose of this section is to demonstrate that 1) globalization has seen the ascendance and hegemony of a neoliberal, free market order and 2) that this ascendance has impacted outer space development.

Steger (2001) refers to globalization as “the new market ideology”. Many scholars are in agreement in defining globalization in the way. Globalization is often discussed as a process including “a set of interactions” which may be seen as a “complex of historical processes” and understood as “material processes closely related to the accumulation of capital” caught up with the “innovations in capitalism” including competition (Mittelman, 2001: 7). Mittelman in further defining the term explains that “globalization may be regarded as an ideology – the neoliberal belief in free markets and faith in the beneficial role of competition”, and that “globalization is an extensive set of interactions, dialectically integrating and disintegrating economics, politics, and societies around the world”. In referring to globalization as “an epochal transformation”, Mittelman (2001: 7) argues that “capital is in ascendance” while labor and nationality are fragmented, and that “globalization offers gains in productivity, technological advances, higher living standards, more jobs, broader access to consumer products at lower cost, widespread dissemination of information and knowledge, reductions in poverty in some parts of the world, and a release from traditional social hierarchies in many countries” (2001: 7).

International Relations theorists have critically analyzed the systemic dynamics and implications of globalization. The dominance of a neo-liberal state playing a hegemonic role has been critiqued by Gramscians. For example, Cox (1993: 268) argues that a major problem with the neo-liberal hegemonic state playing a role in global capital



accumulation is that it gives the *appearance* of being compatible with “a wide range of interests of subordinate groups”. In the case of increased commercialization and privatization in the Post Cold War era, this process is being carried out through the creation of U.S. space law and policy, and the creation of new private industries. This process is apparently producing agreement within the international community. The space community does not seem to discuss the negative effects of globalization, commercialization and privatization. For example, Marchand (2000) discusses the gendered effects of globalization on people’s lives in various countries and focuses on how people can reinterpret, resist, and change globalization’s restructuring patterns. Appadurai (2001) examines how global capitalism has caused drastic changes in many countries at the cultural level, and how social and political mechanisms regulate people’s wants, tastes and various aspects of trade. Although Appadurai examines the current epoch of globalization, nothing is mentioned regarding outer space – an important new territory linked to important new technologies. Mittelman (2000) focuses on globalizing market forces and refers to the globalization phenomenon as a “syndrome”. He specifically critiques many of the detrimental impacts of globalization. Similarly, Peterson (2003) argues that although globalization has brought new technologies such as information technologies, which “enhance integration and homogenization”, globalization’s effects have been uneven in terms of structural hierarchies. Peterson points to ethnicity, race, class, gender, and nation and argues that globalization has served to perpetuate structural inequality.

In addition, although a number of Gramscians have written on globalization, none so far, have applied their analysis to outer space development. It is generally understood

that after the Cold War neoliberal policies, deregulation, liberalization, privatization, and free market ideas arose as the dominant ideology in the international arena. This dominance is connected to globalization and privatization processes (Mandelbaum, 2002; Dumenil, Levy & Jeffers, 2004; Moylan & Baccolini, 2003; Yergin & Stanislaw, 2002; Steger, 2001). As Rao & Rao (1998: 1) in *Globalization, Privatization and the Free Market Economy* point out the interrelationship between the "three dominant forces" – globalization, privatization and liberalization - shape the economies of the world. They describe these three factors as a "multidimensional phenomena" that impacts the economic considerations as well as the sociocultural and environmental aspects of societies. Similarly, Cole (1999) provides that privatization has "swept the globe". This dominance was achieved, in part, through the process of lawmaking (Aune, 2002; Williams, 2001; Garvey, 2000; Fitzpatrick, 1996). Gilpin (2001) proposes that "since the end of the Cold War, globalization has been the most outstanding characteristic of international economic affairs, and, to a considerable extent, of political affairs as well", and that "globalization has become the defining feature of the international economy at the beginning of the twenty-first century. . ." (pg. 3). Increasingly more countries are accepting free market principles (Claudon & Wittneben, 1993; Travieso-Diaz, 1996; Roden, 2003; Cafruny & Ryner, 2003).

Countries in Africa, Asia, Europe and North and South America all seem to have embraced free market ideology as evidenced by the formation of free trade units (Kegley and Wittkopf, 2004). In addition, both China and Russia signed the Joint Declaration on the International Order in 1997, agreeing to defer to international law norms established by the United Nations (Rogachev, 2005). China and Russia, in many ways, joined in this

procession towards globalization practices and neoliberal free market hegemony (Molchanov, 2005; Zhao, 2004; Peng, 2003). In addition, after the Cold War, various international conventions and regional trade blocs promoting free market ideology were widely entered into by the international community. International law has played an important role in facilitating these processes in the Post-Cold War era. As Stark (2002: 1) explains "international law seeks to justify the power of late capitalism". Therefore, it is important to realize that the legal processes of legitimation are connected to the increased global trends towards privatization (Poole, 1996).

In April 1994 125 nations signed the Final Act of the Uruguay Round to create the World Trade Organization (WTO), a permanent institution legally equivalent to the IMF and the World Bank. Its predecessor, the General Agreement on Tariffs and Trade (GATT), had been a purely voluntary compliance system with trade rules and retaliatory measures by states acting on their own with no real protection against offenders (Jackson, 2000). The new WTO has a stronger mechanism for enforcement and compliance. It was designed to be a more formal, legally binding arrangement that incorporates the various agreements of the GATT rounds into a single document. This required a higher level of commitment from the members to observe both the substantive and procedural rules. This serves as another signal that there is a rise in dominance of free market ideology, namely, that the GATT agreement in conjunction with the WTO, as international legal conventions affiliated with the United Nations, have promoted and legitimized the application of free market ideology and principles on matters of international law.

## **Globalization Visits Outer Space: U.S., Commercialization, and Privatization**

There has been a historical progression of U.S. – led space commercialization and privatization practices, followed by and accepted by the international community. Similar to the acceptance of widespread globalization patterns and accompanying neoliberal economies, there has been a similar acceptance of space commercialization and privatization practices in the United States and in the international arena. In the Post Cold War era commercialization of satellite communications, remote sensing, space transportation, launch services, and space stations became generally accepted by the international community (Goldman, 1996). Privatization was best described as growing private-sector involvement, through government contracts, to handle certain aspects of space activities. In the Post Cold War era thousands of private-sector companies had become active participants in various areas of outer space development earning billions annually.<sup>1</sup> The pattern of increased commercialization and privatization, which became visible in the 1980s, began to escalate in the 1990s.

During the 1960s and 1970s the general mood was to focus on protection and promotion of intergovernmental organizations like INTELSAT and INMARSAT, and during the 1980s the mood was to delicately compromise. United States' domestic policies "drove the liberalization of international telecommunications policies in the 1980s" (Wong, 1998: 6). By the 1990s this shifted to a new mood of wanting to increase free market competition - both domestically and internationally in the telecommunications and satellite systems markets emerged.

The United States, during the third epoch, created a large number of domestic space laws and policies, thereby legitimizing the increased commercialization and

privatization of outer space industries. After the Cold War, however, U.S. law became more far reaching. This process began when the Executive Branch took an explicit Post Cold War stance in articulating an unprecedented amount of Task Force and Commission Reports, Executive Orders, and Presidential Directives setting forth the new U.S. Post Cold War space commercialization policy<sup>2</sup>. Reiterated throughout various Executive Branch documents are three interrelated themes regarding post Cold War strategies: 1) commercial and economic interests of the private-sector must be treated as a national priority along with government commercial and economic interests, and private-sector interests and investments must be encouraged and protected through government action; 2) U.S. military and national security interests in space will remain a high national priority; 3) and the U.S. must solidify its position as the international leader of outer space development.

On April 20, 1989 President George H.W. Bush signed Executive Order 12675 creating the National Space Council to assist the executive departments and agencies in developing a new strategy for space activities. Subsequently seven national space policy directives were issued. Each one requires that private-sector commercial activities, and investments be encouraged and protected by the U.S. government. Similarly, National Policy Directive 1 states that “free and fair trade in commercial space goods and services” must be encouraged. Specifically, its goals are to: (1) to strengthen the security of the United States; (2) to obtain scientific, technological and economic benefits for the general population and to improve the quality of life on Earth through space-related activities; (3) to encourage continuing United States private-sector investment in space and related activities; (4) to promote international cooperative activities taking into

account United States national security, foreign policy, scientific, and economic interests; (5) to cooperate with other nations in maintaining the freedom of space for all activities that enhance the security and welfare of mankind; and, as a long-range goal, (6) to expand human presence and activity beyond Earth orbit into the solar system. The other six directives articulate a similar theme, as applied to various space activities including commercial space launch policy and national space launch strategy and Landsat Remote sensing strategy, space exploration initiative strategy and space-based global change observation.<sup>3</sup>

In addition to Executive branch Directives, policy statements, and speeches, the U.S. Congress has been a key actor, influencing the furtherance of commercialization and privatization processes through U.S. domestic legislation. For example in 1992, Congress passed a new Land Remote Sensing Policy Act. This 1992 revision of the 1984 Act heightened the process of privatization and commercialization of remote sensing technology (Bourbonniere, 1997).<sup>4</sup> It did this by allowing for the licensing of private remote sensing satellites (Salin, 2002: 212).<sup>5</sup> Several Landsat satellites were launched with increasing improvements in technology and the ability to pick up and record images and data. Many knew that this technology had tremendous market potential. However, there were certain restrictions due to national security and state sovereignty issues during the first and second epochs (Biache, 1982).<sup>6</sup>

In contrast, in the Post Cold War priority was placed on promoting commercial applications of advanced higher resolution technology than prior national security concerns. For example, the Bush Administration licensed the first commercial remote sensing satellite system in 1993. By mid-1991 "sufficient pressure had built within the

scientific community and the military to continue the Landsat program beyond Landsat 6 that the Bush Administration decided to bring the development and operation of Landsat 7 back within the government" (Obermann and Williamson, 1998: 20). Congress joined this effort of the Executive Branch and passed the Land Remote Sensing Policy Act of 1992. This new policy and new law made it easier for private-sector companies to benefit from the remote sensing industry.

Although the U.S. has been a hegemonic leader in creating domestic space law to promote commercialization and privatization of outer space since the first and second epochs, in recent years, other countries have started to pursue this path as well. The trick is to balance this encouragement with holding to international treaty obligations under Articles VI and VII of the Outer Space Treaty of 1967. For example, a research project initiated in 1997 named Project 2001 initiated by the Institute of Air and Space Law, University of Cologne and the German Aerospace Center involves research carried out by six expert *working groups* made up of about 100 internationally renowned experts from many countries (Reif, 2003). These experts focused their attention on the general effects of privatization, launch and associated services, remote sensing, telecommunications, space stations, and domestic space legislation. With regard to privatization, the general discussions noted that "few States yet have clear and comprehensive national laws on private space activities", and recommended many things including the supposition that national laws must be made transparent concerning international treaty obligations regarding non-governmental space activities. Regarding national space legislation the participants acknowledged that there is an urgent need to develop clear national space law, similar to what the U.S. has done to foster space commercialization (Reif, 2003).

The next section addresses increased space commercialization and privatization in four arenas: 1) satellite telecommunications 2) the International Space Station 3) spaceports and 4) space transportation.

### **1. Privatization of Satellite Telecommunications**

Another example, the Telecommunications Act of 1996<sup>7</sup> was created as an instrument to facilitate the deregulation of the telecommunications industry (Salin, 2002: 212). As a result, U.S. telecommunications policy also began to focus on liberalizing international markets. Telecommunications services were included in the General Agreement of Tariffs and Trade (the "GATT"), and the newly created World Trade Organization (WTO) was given the responsibility of "brokering future trade agreements to open up global telecommunications markets" (Wong, 1998: 6). The goal involved having the WTO get countries to open up their telecommunications markets to the competition by 1) allowing foreign operators to purchase ownership stakes in their domestic telecommunications services; and 2) establishing a set of common rules for fair competition in the telecommunications sector (Wong, 1998: 6). On February 15, 1997 a deal was struck and the WTO Basic Telecommunications Agreement secured the pledge from sixty-eight countries (more than 90% of the world's telecommunications revenues) to begin opening their markets to foreign competition. By January 1, 1998 when the pact took effect, the world's biggest markets in the United States, European Union, and Japan began liberalizing their telecommunications markets (Wong, 1998: 6).<sup>8</sup>

In continuation of this process, in November of 1999 the Congress passed the Intellectual Property and Communications Omnibus Reform Act.<sup>9</sup> This was a powerful piece of legislation amending Title 17 of the US Code, the Communications Act of 1934,



the Satellite Home Viewer Act of 1994, the Trademark Act of 1946 and the Tariff Act of 1930 and several Federal Patent regulations (Salin, 2002: 220). It increases the amount of legal protection for inventors from piracy of intellectual properties such as trademark, patent, domain name, and publications for services offered by satellite carriers.

Commercialization of the satellite industry was not new since this process occurred during the first and second epoch with COMSAT and INTELSAT, as corporate entities used to facilitate the commercialization of space telecommunications. More recently - INTELSAT and INMARSAT<sup>10</sup> were placed on an agenda to go through the process of privatization through the mechanism of U.S. domestic law. U.S. legislation has been passed to privatize these intergovernmental organizations. INTELSAT and INMARSAT are two key fixed satellite operators. Both were intergovernmental organizations and both were owned mainly by state actors. The international satellite communications industry generally viewed as a success by the international community. It has been a very lucrative industry<sup>11</sup> and it provides the world with voice, data, and fax transmissions, credit/debit card and other bank transactions, the Internet, email and attachments, new varieties of telephone services including long distance and cell phones, new varieties of television options such as cable television and direct broadcasting, and remote sensing, mapping and GPS services. The goods and services provided from this form of commercialized space technology amount to hundreds of billions of dollars in annual revenues for a multitude of companies.

Working in conjunction with the new WTO legal structure, in May 1996, the Federal Communications Commission issued a notice of proposed rulemaking called the Domestic International Satellite Consolidation Order (DISCO I). This FCC rule gave

priority to U.S. satellite operators. DISCO I proposed that in order to be granted a license to operate, foreign operators must show that "U.S. - based satellites have effective competition opportunities in 1) the home market where the foreign operator is licensed; and 2) all 'route markets' that the foreign satellite intends to service from earth stations in the United States" (Wong, 1998: 7). However, DISCO I had to be revised because it conflicted with the WTO agreement's requirement of "Nondiscriminatory access to markets without consideration of where a foreign operator is licensed" (Wong, 1998: 7). This rule had to be revised into the International Satellite Service Order (DISCO II). This new rule allowed non-U.S. satellite operators from WTO countries to receive a presumption in favor of access to the U.S. market in order to provide fixed and mobile services (Wong, 1998: 7).

Political activity surrounding the Communications Satellite Competition and Privatization Act of 1999 ultimately resulted in the passage of the Open Market Reorganization for the Betterment of International Telecommunications ("the ORBIT Act")<sup>12</sup> of 2000. On March 17, 2000, President Clinton signed this Act into law calling for the privatization of INTELSAT "no later than July 31, 2001" (Murphy, 2001:18). The INTELSAT Assembly of Parties (representing all 144 member governments) unanimously approved a plan to privatize INTELSAT<sup>13</sup> during their meeting November 13-17, 2000 (Murphy, 2001: 18). Their approved decision was consistent with the mandate set forth in the ORBIT Act to "transfer substantially all assets, liabilities, and operations to a private, Bermuda-based holding company, known as Intelsat Ltd., and its fully owned subsidiaries. All satellites, as well as corresponding operating licenses, would be held by a Delaware-incorporated subsidiary and U.S. licensee, Intelsat, L.L.C.

Intelsat's main service subsidiary would remain in Washington, D.C., in the INTELSAT headquarters building" (Murphy, 2001: 18). Regarding the ORBIT Act's effect internationally, Salin (2002: 220) asserts:

The Orbit Act of 2000 proved to be an important piece of U.S. legislation powerful enough to re-shape the international satellite communications landscape and to provide further evidence of the strength of the US Congress in international affairs. This new legislation amended the Communications Satellite Act of 1962 and laid down measures to ensure the privatization of satellite communications, with a profound impact on COMSAT, and the two ISO, INTELSAT AND INMARSAT. The result of a legislative process that lasted three years, the Act bore clear extra-territorial implications. . .

On July 18, 2001, INTELSAT, a former IGO, became a private company, however the owners/shareholders are still largely the over 140 government entities and/or their agents. Both INTELSAT and INMARSAT were mandated to hold an initial public offering by certain dates. To date neither has actually fulfilled this key requirement. Until this final requirement is fulfilled, it is fair to say that neither INTELSAT nor INMARSAT are fully privatized. A number of extensions have been granted for fulfilling this requirement. For example Senate Bill 2315 of May 5, 2004 requests that the new deadline be set for June 30, 2005 instead of December 31, 2003 and for December 31, 2005 instead of June 30, 2004. Another recent piece of legislation, Senate Bill 2896 calls for a modification of "certain privatization requirements". This included extending the deadline date from June 30, 2004 to June 30, 2005, and it changed the requirement of an initial public offering by instead allowing for "other methods" of privatization (other than an initial public offering) that shows "substantial dilution".

INMARSAT began its privatization in April 1999, transferring all of its assets over to a U.K. private limited corporation - INMARSAT Ventures, Ltd. Ownership of INMARSAT by signatories to the INMARSAT Agreement remained in the hands of

mostly government-owned telecommunications companies as ownership was transferred from INMARSAT to INMARSAT Ltd. Similarly, INTELSAT through its 144 member countries agreed at the 25<sup>th</sup> assembly of parties meeting in November 2000 to privatize INTELSAT turning over its assets and business to Intelsat, LLC (a U.S. Corporation) for the purpose of owning and operating INTELSAT'S C-band and Ku-band satellites upon privatization. The U.S. owns approximately twenty percent of INTELSAT (which owns Intelsat, Ltd.) through a legal entity called COMSAT. The remaining investment shares, of nearly 80 percent, are owned by a consortium of approximately 143 governments. Upon privatization INTELSAT signatories and investing entities received shares of Intelsat, Ltd., directly and Intelsat LLC indirectly according to their prior investment shares of INTELSAT. Both INTELSAT and INMARSAT were support to have an initial public offering of the shares by the deadline imposed by the U.S. ORBIT Act of 2000. So far, neither INTELSAT nor INMARSAT has fulfilled this requirement of full privatization.

Key actors in this process were members of the U.S. Congress. On June 12, 1997, Congressmen Thomas Bliley and Edward Markey introduced H.R. 1872 - the Communications Satellite Competition and Privatization Act of 1998 ("the Bliley Bill") to the U.S. House of Representatives. The Bliley Bill called for the privatization of INMARSAT by January 1, 2001 and INTELSAT by June 1, 2002. The Bill requires the FCC to limit or revoke authority from the International Satellite Organizations (INTELSAT and INMARSAT) to provide non-core services to, from or within the U.S., unless the International Satellite Organizations, and their successor entities have been privatized in a manner that does not harm competition in the U.S. telecommunications

markets. Moreover, this Bill directs the President and the FCC to initiate multilateral negotiations with the International Satellite Organizations' current signatories to establish a pro-competitive privatization of the International Satellite Organizations. Essentially The Bliley Bill's purpose was to amend the Communications Satellite Act of 1962 by "calling for the privatization of all treaty-established intergovernmental Satellite Organizations" (Wong, 1998: 2).

This legislation is aimed at promoting "competition in domestic and international market for satellite communications services by encouraging the privatization of the intergovernmental satellite organizations INTELSAT and INMARSAT, and by reforming the regulatory framework of COMSAT Corporation", which is the U.S. government's private corporation involved with contracting with the two IGOs. The overall legislative intent was to restructure the two intergovernmental organizations in order to "create a competitive satellite industry in the United States through the restructuring of the International Satellite Organizations" (Wong, 1998: 2).

The Bliley Bill called for a "worldwide privatization of state-owned telecommunications companies". Supporters of the Bill argued that INTELSAT and INMARSAT, as international governmental organizations (Egos) are monopolies which are impeding free market competition. As international governmental organizations owned by approximately 144 governments around the world, these IGOs have privileged relationships with these various countries that in turn have an ownership interest in ensuring their operating success They also have certain special privileges and immunities from domestic laws and tax requirements, and special competitive, regulatory and market advantages over the competition entering and desiring to enter the satellite

communications market. These IGOs also own the bulk of choice slots<sup>14</sup> in the geostationary orbit (Wong, 1998: 4). The Bliley Bill was passed by the U.S. House of Representatives on May 6, 1998. A similar Bill (S 376) entitled "Open-market Reorganization for the Betterment of International Telecommunications Act" with the same intents and purposes, was introduced to the Senate by Senator Conrad Burns on February 4, 1999. It passed the Senate Commerce Committee on May 5 and the full Senate on July 1, 1999. The House substituted the language of the Communications Satellite Competition and Privatization Act of 1999 (H.R. 3261) which was introduced on November 9, 1999. With this minor change the House and Senate agreed and passed the bill on March 2, 2000<sup>15</sup> (Salin, 2002).

As this section demonstrates, the privatization of satellite telecommunications occurred through the application of U.S. political and legal pressure as a hegemonic state actor. This momentum behind the push towards privatization of INTELSAT and INMARSAT predates the actual steps towards privatization of these two international intergovernmental organizations.

## **2. Commercialization of the International Space Station**

In addition to telecommunications, space transportation and remote sensing activities, actions were taken to further commercialize the International Space Station<sup>16</sup> through U.S. domestic law. This includes passage of the Commercial Space Act of 1998, established that the construction of the International Space Station for the economic development of Earth orbital space<sup>17</sup> and other commercial purposes as a national priority. The Act as codified in Title I, Section 101 entitled "Promotion of Commercial Space Opportunities, Commercialization of Space Station", Paragraph (a) reads:

The Congress declares that a priority goal of constructing the International Space Station is the economic development of Earth orbital space. The Congress further declares that free and competitive markets create the most efficient conditions for promoting economic development, and should therefore govern the economic development of Earth orbital space. The Congress further declares that the use of free market principles in operating, servicing, allocating the use of, and adding capabilities to the space station, and the resulting fullest possible engagement of commercial providers and participation of commercial users, will reduce Space Station operational costs for all partners and the Federal Government's share of the United States burden to fund operations".

In other words, the International Space Station owned and operated by sixteen countries was issued a mandate, through U.S. law, to construct an international space station for economic purposes in 1998. In 2001 the International Space Station was completed by the international community, and it operates in accordance with free market principles. By passing the Commercial Space Act<sup>18</sup> in 1998, Congress heightened the process of commercializing the International Space Station.<sup>19</sup>

The stated purpose of the Commercial Space Act of 1998 was to develop a policy to stimulate industry investment in ISS economic development. The ISS Commercial Development plan of November 1998, "establishes a strategy of 'pathfinder business opportunities' in which NASA partners with the private sector. These business pathfinders will break down public sector and market barriers, enabling industry to achieve profitable operations in the long run, without public subsidies".<sup>20</sup> During a conference of U.S. lawmakers on October 13, 1999, the Conferees agreed to create an International Space Station Commercial Development Demonstration Program.<sup>21</sup> This program authorizes NASA to carry out a program to demonstrate commercial feasibility and economic viability of private sector business operations involving the ISS. They stated the rationale for the program as follows:

The conferees believe that the ISS will be a catalyst for future economic development activity in low earth orbit. Therefore the conferees have included bill language establishing a demonstration program intended to test the feasibility of commercial ventures using the station, and whether or not it is possible to operate the station in accordance with business practices. In order to encourage private investment and increase economic activity in low earth orbit, NASA may negotiate for payments, at a value set by the private market, and retain any funds received in excess of costs for reinvestment in the station economic development program. The demonstration program applies only to the transition period associated with station assembly and early operations -- a period during which fledgling businesses will experience their first opportunity for sustainable, continuous access to orbital laboratories. The conferees expect NASA to refrain from picking winners and losers in the coming era and instead enable the power of the U.S. capital markets to come to bear on this new frontier of U.S. economic development. The conferees intend that the results of the demonstration program - - and lessons learned along the way -- will be incorporated into NASA's planning for long-term commercialization of the station, in concert with other ongoing activities such as the establishment of a non-governmental organization for station utilization and management.<sup>22</sup>

In addition, NASA commented<sup>23</sup> that:

In October 1999, Congress passed legislation (H.R. 2684) signed by the President, to "establish a demonstration regarding the commercial feasibility and economic viability of private sector business operations involving the International Space Station and its related infrastructure. This legislation is an essential component of NASA's effort to stimulate and support economic development in low Earth Orbit. The committee report directs NASA to establish and publish a pricing policy designed to eliminate price uncertainty for commercial use of the ISS. The primary innovation in the legislation concerns the use of receipts collected by NASA for the commercial use of the ISS will first be used to offset any costs incurred by NASA in support of that commercial use. Any receipts collected in excess of these costs may then be retained by NASA for reinvestment in the ISS economic development program.

This process of commercializing an internationally owned space station through U.S. domestic law, further demonstrated U.S. hegemony in the outer space development regime. U.S. interests in increased commercialization were expressly stated in U.S. policy which then was accepted by the international community.



### **3. Commercialization and Privatization of Spaceports**

In addition to telecommunications, space transportation and launch services, the spaceport business began to go through commercialization and privatization in the Post Cold War. In order to get satellites, supplies, space stations and the like up into space, they must be launched from a "spaceport". Until the Post Cold War, spaceports were strictly government owned and operated - not anymore. This makes sense given that international law holds states strictly responsible for launching activities. Articles VI and VII of the Outer Space Treaty of 1967 cover all activities whether undertaken by governmental or non-governmental entities. Article VI imposes international responsibility on states for national activities in space regardless of whether such activities are carried out by governmental agencies or non-governmental entities. Article VII ascribes liability for damages caused by the space objects that a state launches or procures the launching of.

In the United States there are approximately five U.S. Federal spaceports or launch sites: Vandenberg Air Force Base, White Sands Missile Range, Wallops Flight Facility, Cape Canaveral, and Edwards Air Force Base. In 1996 a new pattern emerged wherein spaceports are being erected to serve the commercial purposes of other space activities. This includes California Spaceport (the first license was issued by the FAA for the operation of a non-Federal commercial spaceport), Virginia Space Flight Center, Spaceport Florida, and Kodiak Launch Complex in Alaska. Others have been proposed: Spaceport Washington, Montana Spaceport, Wisconsin Spaceport, South Dakota Spaceport, Utah Spaceport, Nevada Test Site, Oklahoma Spaceport, Mojave Civilian Test Flight Center, Alabama Spaceport and Texas Spaceport Complex (3 sites have been

proposed). Recently, the Mojave site was the spaceport from which SpaceShipOne was launched twice winning the Ansari X Prize competition.<sup>24</sup> It is now licensed by the FAA to provide private suborbital flights into space. Space transportation and launch services, is a multibillion-dollar industry. Industry trends demonstrate consistent yearly increases in profits - with more and more countries joining in as players.<sup>25</sup>

#### **4. Privatization of the Commercial Space Transportation Industry**

Similarly, commercialization and privatization of space transportation and launch services also began to show more force in the Post Cold War epoch. Congress passed the Commercial Space Launch Amendments Act in 2004 to further the commercialization and privatization process of the space launch and transportation industry within the international arena (Ryabinkin, 2004). The U.S. as a hegemonic state had created increased private-sector international market competition in the 1980s concerning the advent of Chinese and Russian launch vehicles to further the commercialization and privatization of space transportation. In keeping with this pattern, the stated purpose of the Commercial Space Launch Amendments Act is "to promote the development of the emerging commercial human spaceflight industry, to extend the liability indemnification regime for the commercial space transportation industry, to authorize appropriations for the Office of the Associate Administrator for Commercial Space Transportation, and for other purposes". This new law is intended to trigger the further development of a new commercial suborbital space tourism industry. In spite of the recent success of SpaceShipOne in winning the Ansari X Prize, there is a need for legislation to clarify "the licensing scheme in order to attract investors who are skittish about regulatory costs and litigation risk. This is true on the most basic level; it would be easier for startups who

have not demonstrated technology to attract cash if the technical, insurance, and risk assumption requirements were fully spelled out and applied to commercial passenger vehicles" (Horsley, 2004: 2).

This demonstrates Mittleman's (2001: 7) assertion that globalization contains "a dialectic of inclusion and exclusion" and it involves a "set of interactions" which may be understood as material processes closely related to the accumulation of capital. It "is caught up with the innovations in capitalism, especially the inner workings of competition . . . , and globalization may be regarded as an ideology - the neoliberal belief in free markets and faith in the beneficial role of competition". As such, the Gramscian critique of globalization is applicable to the current increased privatization and commercialization within the outer space development regime in the Post Cold War era.

## **CONCLUSION**

With the demise of the Soviet Union, the U.S. began to take steps to assert free market neoliberal principles for the further development of outer space. Many U.S. Executive Branch policies were issued articulating that it was now time to apply free market principles to outer space. These policies statements further stated that private-sector participation and the protection of private investment must be encouraged. Actions taken by the legislative branch and various governmental agencies followed suit to assist in creating laws and policies to strengthen and reify laws and policies which were created in the second epoch.

The international community took actions rippling this new pro free market trend. Distinct changes have occurred with the regime including: 1) private business interests and for-profit corporations became visible and relevant actors in furthering

commercialization and privatization processes; 2) the number of U.S. laws and policies encouraging free marketization and private-sector participation in outer space development dramatically increased within several government entities; 3) the number of countries participating in the space race increased; 4) space faring nations began following the U.S. trend of creating domestic space laws to govern the commercial aspects of space technologies; and 5) government, private and institutional actors began to boldly assert neoliberal free market principles for outer space development. This chapter discusses how globalization and the rise of free market ideology have impacted the outer space development regime in the Post Cold War era.

## ENDNOTES

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<sup>1</sup> According to "Space News Top 50: 2004" in the *Space News Business Report* of August 2, 2004, based on company questionnaires, annual reports and interviews with corporate officials and analysts, the top grossing space firms for 2003 include: Boeing Co. (U.S.) at \$9,358,000,000; Lockheed Martin Corp. (U.S.) at \$8,700,000,000; EADS (Netherlands) at \$3,013,000,000; Raytheon (U.S.) at \$2,978,000,000; Northrop Grumman Corp. (U.S.) at \$2,800,000,000; Science Applications International Corp. (U.S.) at \$1,750,000,000; United Space Alliance (U.S.) at \$1,684,000,000; Alcatel (France) at \$1,506,000,000; The DirectTV Group (U.S.) at \$1,322,000,000; ATK (U.S.) at \$1,134,000,000; Mitsubishi Electric Corp. (Japan) at \$1,018,000,000; Honeywell, Inc. (U.S.) at \$775,000,000; Ariespace SA (France) at \$1,529,000,000; Alenia Spazio (Italy) at \$637,000,000; L-3 Communications (U.S.) at \$619,000,000; Orbital Sciences Corp. (U.S.) at \$582,000,000; Trimble Navigation Ltd. (U.S.) at \$541,000,000; Computer Sciences Corp. (U.S.) at \$500,000,000; Ball Aerospace & Technologies Corp. (U.S.) at \$476,000,000; Loral Space & Communications (U.S.) at \$474,000,000; General Dynamics (U.S.) at \$474,000,000; Harris Corp. (U.S.) at \$428,000,000; Snecma (France) at \$421,000,000; United Technologies Corp. (U.S.) at \$415,000,000; Eastman Kodak Co. (U.S.) at \$383,000,000; ITT Industries, Inc. (U.S.) at \$378,000,000; EchoStar Communications Corp. (U.S.) at \$244,000,000; ViaSat, Inc. (U.S.) at \$239,000,000; Mitsubishi Heavy Industries, Ltd. (Japan) at \$216,000,000; Aerojet (U.S.) at \$213,000,000; Ishikawajima-Harima Heavy Industries Co., Ltd. (Japan) at \$190,000,000; Gilat Satellite Networks, Ltd. (Israel) at \$190,000,000; MacDonald Dettwiler and Associates, Ltd. (Canada) at \$190,000,000; Swales (U.S.) at \$162,000,000; EMS Technologies (U.S.) at \$126,000,000; MAN Technologies AG (Germany) at \$121,000,000; OHB-System AG (Germany) at \$121,000,000; Jacobs Sverdrup (U.S.) at \$118,000,000; Goodrich Corp. (U.S.) at \$114,000,000; Spacehab, Inc. (U.S.) at

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\$95,000,000; ND SatCom AG (Germany) at \$92,000,000; Saab Ericsson Space AB (Sweden) at \$86,000,000; Contraves Space AG (Switzerland) at \$83,000,000; Integral Systems, Inc. (U.S.) at \$83,000,000; Dutch Space B.V. (Netherlands) at \$82,000,000; Com Dev International, Ltd. (Canada) at \$70,000,000; PSI Group (U.S.) at \$70,000,000; Qineti (U.K.) at \$44,000,000; Analytical Graphics (U.S.) at \$38,000,000; Vega Group, plc (U.K.) at \$36,000,000. For more information see [http://dev.space.com/spacenews/top50\\_2004.html](http://dev.space.com/spacenews/top50_2004.html).

<sup>2</sup> National Space Policy Directives under President George H.W. Bush (1989-1992) include the following: National Space Policy Directives and Charter, NSPD-1; Commercial Space Launch Policy, NSPD-2; U.S. Commercial Space Launch Policy Guidelines, NSPD-3; National Space Launch Strategy, NSPD-4; Landsat Remote Sensing Strategy, NSPD-5; Space Exploration Initiative, NSPD-6; and Space-Based Global Change Observation, NSPD-7. <sup>2</sup> Executive Branch Directives under President William Jefferson Clinton (1992-2000) include: National Space Technology Council Presidential Decision Directives, 1993-1995; Establishment of Presidential Review and Decision Series/NSTC, NSTC-1; Convergence of U.S.-Polar Operational Environmental Satellite Systems, NSTC-2; Landsat Report Sensing Strategy, NSTC-3 National Space Transportation Policy, NSTC-4, August 5, 1994; 19 Sep 96 National Space Policy Fact Sheet, NSTC-8; Fact Sheet on Presidential Decision Directive (PDD) 23; Foreign Access To Remote Sensing Space Capabilities, March 10, 1994; DoD Space Policy, July 1999; and the U.S. Decision to Stop Degrading Global Positioning System Accuracy, May 1, 2000.

<sup>3</sup> National Space Policy Directives 1-7 – NSPD 1, NSPD 2, NSPD 3, NSPD 4, NSPD5, NSPD 6, NSPD 7.

<sup>4</sup> For a complete analysis of U.S. and International laws and regulations structuring the commercialization of remote sensing images see Michel Bourbonniere (1997) *Commercialization of Remote Sensing. United States and International Law: Towards a Liberalization of Economic Regulations*, L.L.M. thesis, McGill University, Canada. In this analysis he argues that "a contextual evolution of the global geopolitical climate is forcing a regulatory retooling for commercial space endeavors", and has "created new paradigms based upon international economic market values". Therefore, "the initial international treaties and institutions must evolve to reflect these criteria". Regarding the impact of high resolution satellite technology on new policy directives in the U.S. and internationally in the Post-Détente international structure see Cornelia Christa Jarica (1996) *Commercialization of High Resolution Earth Observation Satellite Remote Sensing*, M.A. thesis, Florida Atlantic University.

<sup>5</sup> Various agencies are involved in these types of satellite activities: the National Oceanic and Atmospheric Agency (NOAA), the Department of Commerce (DOC), the Department of Defense (DOD), and National Aeronautics and Space Administration (NASA).

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<sup>6</sup> For further background on Remote Sensing see Andrew Biache, Jr. (1982) *The Politics of Space Remote Sensing*, Ph.D. Dissertation, George Washington University. This dissertation "analyzes U.S. space earth observation policy and policymaking, focusing on remote sensing. The technological function of space remote sensing is described in terms of acquisition, processing, exploitation and dissemination of imagery, data, and extracted information encompassing geographic areas of global extent for myriad uses". This dissertation shows how space remote sensing has impacted the international community.

<sup>7</sup> Public Law No. 104, 110 Statute 56; Also see U.S. House of Representatives Conference Report No. 104-458, at 1 (1996).

<sup>8</sup> For a detailed critique of the WTO practices and the process of privatization and commercialization of satellite telecommunications see Serrano Virginia Rodriguez (2000) *Trading with Space Resources: The Forces of Privatization and Commercialization Applied to Satellite Telecommunications Through ITU and WTO*, Dissertation, McGill University (Canada).

<sup>9</sup> This Act is also known as the Patent and Trademark Office Efficiency Act as well as the Anticybersquatting Consumer Protection Act; See Senate Bill 1948/House of Representatives Bill 1554-H.R.3194, 106<sup>th</sup> Congress, 1<sup>st</sup> Session, November 17, 1999.

<sup>10</sup> In December, 2004 the U.S. Federal Communications Commission approved the sale of satellite operator Intelsat Ltd. to Zeus Holding Ltd., a consortium of private-equity companies. Intelsat "based in Bermuda and Washington announced in August that it had reached an agreement with Zeus Holding, in which Zeus will pay Intelsat shareholders about \$3 billion as well as assume of \$2 billion of net debt" see Jason Bates (December 27, 2004) "U.S. Government Approves Sale of Intelsat to Private Equity Group" Space News Business Report at [http://dev.space.com/spacenews/satellitecomm/intelsat\\_122704.html](http://dev.space.com/spacenews/satellitecomm/intelsat_122704.html).

<sup>11</sup> For example revenues of the "Top 20 Fixed Satellite Operators" in 2003 were: SES Global (Luxembourg), \$1.52 Billion, Intelsat (Bermuda), \$1.1 Billion, Eutelsat S.A. (France), \$954 Million, PanAmSat Corp. (U.S.), \$831 Million, JSAT Corp. (Japan) \$421 Million, Telesat Canada (Canada), \$266.2 Million, Space Communications Corp. (Japan), \$241.94 Million, New Skies Satellites N.V. (Netherlands), \$214.9 Million, Loral Space Communications (U.S.), \$152.4 Million, Shin Satellite (Thailand), \$146.5 Million, Arabsat (Saudi Arabia), \$140 Million, Star One (Brazil), \$130.3 Million, Hispasat S.A. (Spain) \$115.5 Million, AsiaSat (Hong Kong) \$115.4 Million, KT Corp. (South Korea), \$103.5 Million, SingTel Optus (Australia), \$120.7 Million, Telenor Satellite Networks (Norway) \$84.9 Million, Satmex (Mexico), \$478 Million, Broadcast Satellite System Corp. (Japan), \$74 Million, Nordic Satellite (NSAB)(Sweden) \$63.4 Million, Russian Satellite Communications Co. (Russia) \$60 Million, APT Satellite Holdings (Hong Kong), \$38.9 Million, Measat Global Bhd. (Malaysia), \$33.4 Million, Nahuelsat (Argentina), \$17.7 Million. See "Top 20 Fixed Satellite Operators, 2004" *Space News, Business Report* at [http://www.space.com/spacenews/top20\\_satellite\\_2004.html](http://www.space.com/spacenews/top20_satellite_2004.html).

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<sup>12</sup> Title 47 U.S.C. Chapter 6 Subchapter VI, Part B., Section 763 "General criteria to ensure a pro-competitive privatization of INTELSAT and INMARSAT; see Public Law No. 106-180, 106<sup>th</sup> Congress and Sylvia Ospina, "International Satellite Service Providers" in *Proceedings of the Project 2001 Workshop on Telecommunications*, Berlin 8-9 June 2000 pp. 139-161.

<sup>13</sup> "Intelsat Privatization Plan Formally Approved" at <http://www.spacedaily.com/news/intelsat-ooe.html>, November 20, 2000.

<sup>14</sup> For clarification on satellite positions and the allocations process of the geostationary orbit see Lawrence D. Roberts (2000) "A Lost Connection: Geostationary Satellite Networks and the International Telecommunication Union" 15 *Berkeley Technology Law Journal*: 1095; also see Larry Frank Martinez (1984) *The Global Politics of Communications Satellites: Access to the Geostationary Orbit and Radio Spectrum Resources*, Ph.D. Dissertation, University of California, Santa Barbara.

<sup>15</sup> See the Communications Satellite Competition and Privatization Act of 1997 (June 12) - H.R. 1872 and International Satellite Communications Reform Act of 1998 (July 28) - S. 2365, both in the 105<sup>th</sup> Congress of the U.S.

<sup>16</sup> There have been several space stations before the *International Space Station* - the *Salyut*, the *Mir* and *Skylab*. However, the ISS is more than four times as large as the Russian *Mir* space station and weighs about 1,040,000 pounds. Also it was created by a partnership between 16 countries Brazil, Canada, Japan, Russia, United States, Denmark, Belgium, the Netherlands, Sweden, Norway, Switzerland, Italy, the United Kingdom, France, Germany, and Spain. It was a major venture. Construction began in 1998 and was completed in May 2001, costing approximately \$90 billion dollars and requiring more than 40 separate flights over a period of six years to connect about 100 parts. Research and information from this project will have vast implications for the future space infrastructure. See [www.nasa.gov](http://www.nasa.gov).

<sup>17</sup> Commercial Space Act of 1998, Public Law 105-303, October 28, 1998, 112 STAT. 2845 and Title I, Section 101, 42 U.S.C. 14711 - Promotion of Commercial Space Opportunities (a).

<sup>18</sup> In 1995 the U.S. House of Representatives passed the International Space Station Authorization Act - authorizing the creation of an International Space Station.

<sup>19</sup> Commercial Space Act of 1998, Public Law 105-303, October 28, 1998, 112 STAT. 2845 and Title I, Section 101, 42 U.S.C. 14711 - Promotion of Commercial Space Opportunities (a).

<sup>20</sup> See <http://commercial.hq.nasa.gov/policies.html>.

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<sup>21</sup> Title IV U.S.C., Section 434.

<sup>22</sup> Departments of Veterans Affairs and Housing and Urban Development and Independent Agencies Appropriations Act, 2000 (Public Law 106-74) October 20, 1999; Title IV, Section 434 Space Station Commercial Development Demonstration Program; See <http://commercial.hg.nasa.gov/files/houseconfrpt.doc>.

<sup>23</sup> See <http://commercial.hq.nasa.gov/policies.html>.

<sup>24</sup> For more information about the \$10 million dollar Ansari X private spaceship competition, go to <http://web1-xprize.primary.net/about/index.php>.

<sup>25</sup> In December, the Commercial Space Launch Amendments Act of 2004 (H.R. 5382 formerly H.R. 3752) was passed. See "The Space Launch Industry Recent Trends and Near-Term Outlook", July 2, 2003 at <http://www.spacedaily.com/news/launchers-03q.html>; "A New Asian Space Race Emerges" at [www.space.com/business/technology/business/Korea\\_space\\_000124.html](http://www.space.com/business/technology/business/Korea_space_000124.html).



## CHAPTER FIVE

### THE THIRD EPOCH OF OUTER SPACE DEVELOPMENT: OLD AND NEW ACTORS AND THE HYPER-PRIVATIZATION OF SPACE

The focus of this chapter is the hyper-privatization of outer space in the third epoch. The chapter identifies the reasons for this hyper-privatization, old and new actors influencing this hyper-privatization, and the mechanisms used to gain this influence. It discusses the hyper-privatization of outer space under three broad categories: the U.S. government, the private-sector, and the international space community. This chapter uses a Gramscian analysis to argue that a dominant group led by private-sector business moguls, space industry leaders various institutions within the U.S. government have used the administrative and executive capacities of the state to begin the process of hyper-privatizing outer space development. In addition this chapter demonstrates that key actors within the international community have either participated in this new push, or have acquiesced by not challenging this hyper-privatization of the final frontier.

While the previous chapters discussed various ways in which the U.S. has operated, in varying degrees, as a hegemonic state during each of the three historical epochs, this chapter demonstrates how a new dominant group within the U.S. has formed and has recently taken steps to hyper-privatize outer space development in the third epoch. Consistent with a Gramscian analysis, this chapter sets forth to demonstrate that a new dominant group, which I refer to as a space transnational capitalist class<sup>1</sup>, made up of old and new actors, has formed, which is driven by the interests of private capital. As such, they have established hegemony by legitimizing dominance through the formal political organs of the U.S. government. At the insistence of various members of this

dominant class, the hegemonic neoliberal state (the U.S. government) has created new laws and policies to hyper-privatize outer space development.

Since Gramscian thinkers treat capitalism as central to understanding key roles played by states, institutions and the private-sector, a Gramscian inquiry aids us in understanding the hyper-privatization of outer space discussed in this chapter. This includes what Rupert and Smith refer to as “globalizing capitalism – its dynamics and trajectory (or, more accurately, its possible trajectories) – and investigates how some of these traditions of thought can be used to help us understand contemporary international relations – or ‘globalization’ ” (2002: 4). Similarly, a Gramscian analysis allows us to highlight the important role played by both a multiplicity of human actions along with the important role played by historic blocs in outer space development regime change.

Typically, in most discussions regarding outer space development, privileged actors like private capital are invisible in spite of the active role that they play in bringing forth outer space development regime change. In contrast, this chapter elucidates the important roles played by privileged actors and private capital in outer space development regime change “at a given moment or conjuncture” (Gill, 1993: 24). In this case, the given moment is the third epoch. Thus, a Gramscian approach in which the “extended state”, including all of the different forms of human action, and private capital, are treated as connected to the legal and political actions taken by a dominant group in order to make space hyper-privatization a reality. This demonstrates the important role played by these seemingly disparate actors in influencing outer space development regime change.

In so doing this chapter highlights the concept of hegemony focusing on the ideological legitimation of norms and consensus in civil society, and the vision of an extended state which includes institutions of civil society such as the executive and legislative branches, NASA, the Chamber of Commerce, the Federal Aviation Administration, and various private-sector companies and organizations. These are examples of the various institutions involved in this analysis. At the U.S. domestic level, the extended state includes the administrative and coercive institutions of government (including the one listed above) as well as the institutions in civil society which shape the way people think and act (which are outlined in Chapter 6). The concept of hegemony is useful in understanding relations of domination and subordination in global politics within the context of historic blocs and world order (Cox 1993).

Gramsci's concept of "consent" explains how the extended state and organic intellectuals are operating to shape regime change within the outer space development community in order to cause a fundamental shift towards free market principles concerning space resources, space territory and space travel. This includes explaining how a dominant class made up of government actors, private-sector business actors and international actors have established hegemony by legitimizing their dominance through the formal political organs of the U.S. government. The Gramscian concept "coercion" explains the processes involved with securing consent. For example, at the international level, the extended state includes the international institutions outlined in this chapter. This includes the United Nations Committee on Peaceful Uses of Outer Space, the International Institute on Space Law, companies selling space real estate, and the International Astronautical Federation Congress. Understanding relations of domination

and subordination at the international level is particularly applicable to the ways in which the international space community has taken actions consistent with actions of the dominant class to hyper-privatize outer space development. This chapter demonstrates how the various actors outlined in this chapter have operated as a dominant group and are playing the role of “organic intellectuals” defined by Gramscians as “those able to theorise the conditions of existence of the system as a whole, suggest policies and justifications for such politics and, if need be to apply them” (Gill & Law, 1993: 110). The role played by “organic intellectuals”, which in this chapter includes, President Bush, the Presidents’ Commission members, business leaders, business moguls, and other academics who have created free market space law discourse, is important in the hyper-privatization of outer space and the hegemonic discourses of legitimation which are also discussed in this chapter. The section below applies these Gramscian concepts to actions taken by the U.S. government, the international community and the private-sector to hyper-privatize outer space.

### **The United States, the International Community and New Private-Sector Actors**

Although the United States has been a key actor in space since the space age began, recent actions are distinctly focused on applying free market principles to the outer space territory and seeking of unprecedented levels of divestitures of public space assets. This chapter explains the U.S. government regarding outer space development including a) the executive branch b) the legislative branch c) NASA d) the Federal Aviation Administration and its Office of the Associate Administrator for Commercial Space Transportation and e) the U.S. Chamber of Commerce Space Enterprise Council. It also explains the actions of the private-sector including a) lobbying activities and b)

testimonies at Congressional and Presidential Commission hearings by members of various space interest groups, super-coalitions, business leaders and business moguls. This chapter demonstrates how private-sector interests have influenced the U.S. government to pass new laws and new policies to increase the role played by the private-sector.

This chapter also examines actions of the international space community including a) the space lawmaking community (COPUOS, IISL and additional actors) b) companies selling space real estate and c) the International Astronautical Federation Congress. I argue in this chapter that these seemingly disparate entities have taken recent concerted action, as a dominant transnational capitalist class, to hyper-privatize outer space development in the post Cold War era. I suggest that this seemingly disparate group of actors have acted as a collective. Therefore, I refer to them as “the space transnational capitalist class”.<sup>2</sup> By using various institutional organs (both U.S. and international) these actors have enabled and legitimized the hyper-privatization of outer space. This involves, for example, making it legal to grant property rights of private-sector entities to own space resources, space assets and the outer space territory.

This class and their activities are supported by about two million loyal and politically active space enthusiasts, interest groups and organizations, all determined to “make space happen”.<sup>3</sup> For many people this means the creation of new private-sector space industries such as space tourism, space mining and space settlement/colonization, and the hyper-privatization of outer space development.

To explain these claims, this chapter analyzes the following data: the text from President George W. Bush’s New Vision for U.S. Space Exploration policy; recent U.S.

space legislation; hearing transcripts from the President's Commission on Implementation of U.S. Space Exploration Policy (aka the "President's Commission on Moon, Mars and Beyond"); hearing transcripts and written testimonies from various actors testifying before the U.S. House of Representatives' Subcommittee on Aeronautics and Space, and written testimonies from members of the space transnational capitalist class testifying before the U.S. Senate Subcommittee on Science, Space and Technology; text from websites literature of super coalitions, including free market space activists and lobby groups; meetings and workshops of the United Nations Committee on Peaceful Uses of Outer Space, Colloquium Proceedings of the International Institution of Space Law and program outlines of the International Astronautical Federation.

I argue that based upon a careful review and analysis of these documents, legal loopholes are being created for the allowance of hyper-privatization of publicly owned space resources. These resources include space technology, space research and development assets, unique natural resources, which are abundant in space, and to the outer space territory itself. This chapter explains how this is being done through U.S. law and policy. I suggest that there must be a transnational vision for the hyper-privatization of outer space which is replacing the "public domain" vision of previous epochs.<sup>4</sup>

### **The U.S. Government and the Hyper-Privatization Of Outer Space**

This section discusses actions taken within the U.S. government to hyper-privatize outer space development. These actions include a) the executive branch b) the legislative branch c) NASA d) the Federal Aviation Administration and its Office of the Associate Administrator for Commercial Space Transportation and e) the U.S. Chamber

of Commerce Space Enterprise Council. This section outlines the U.S. government's role in hyper-privatization of space and private-sector influence to create private property rights to space exploration, space resources, and outer space development.

#### **A. The Executive Branch**

Prior to this Presidential Administration, U.S. interests in space have historically been defined in terms of science, national security, and economic interests. In 2004 this changed. On January 14, 2004, President George W. Bush announced the creation of the New Vision for U.S. Space Exploration Policy. The *New Vision* U.S. Space Exploration Policy while reasserting these interests, it calls for doing something more – privatizing space exploration, space resources, and the next steps for outer space development. Recent actions taken by the executive branch of the U.S. government include a) creating the New Vision for U.S. Space Exploration Policy in 2004 which calls for an increased role to be played by the private-sector in the next steps of outer space development b) creation of the *President's Commission on Implementation of United States Space Exploration Policy* to provide advice, hold public hearing and to advise the President on matters of space travel including the Moon, Mars and other celestial bodies, and c) creating a new U.S. Space Transportation Policy in January 2005.

These executive branch activities suggest policies and justifications which require that the private-sector play an increased role in outer space development. For example, the New Vision policy report calls for “assuring appropriate property rights” are granted to “those who seek to develop space resources and infrastructure”. Those proposing to “develop” the outer space territory are private-sector entrepreneurs and business moguls. This new policy proposes that the following incentives be given: 1) property rights 2)

privatization of space resources, and 3) privatization of space missions and NASA equipment.

In furtherance of the justification and legitimation to the hyper-privatization of outer space, a number of public hearings were held.<sup>5</sup> The vast majority of witnesses invited to testify at these hearings were elites – members of the dominant space transnational capitalist class. The President ensured the facilitation of the hyper-privatization of space by the selection of specific individuals to head the President’s Commission. As shown in Table 5.1, members of the President’s Commission are essentially political and economic elites and several academics, connected to top levels of government, transnational corporations and academia. This group of professionals has taken actions consistent with private-sector business moguls, space industry leaders, academics to justify and legitimize the hyper-privatization of outer space resources.

The stated purpose for the creation of the President’s Commission was “to provide the U.S. government with recommendations, gleaned from views and opinions from the general public” concerning the implementation of the new vision for space exploration activities of the United States. The Charter for the Commission states:

The Commission shall conduct occasional meetings as appropriate, including at various locations throughout the United States to solicit views and opinions from the public, academia, and industry.

However, only ninety-six individuals were “invited” to testify on behalf of the general public, regarding the public's desired direction for outer space development. The reason given for this limitation as provided on the Commission website<sup>6</sup> is stated as follows:

Public hearings are advertised events, open to the public, and limited to the testimony of invited witnesses. Interested members of the public are welcome to attend, but, because the Commission is charged with producing a report within 120 days, we will not be



accepting oral statements from anyone other than the invited witnesses, unless the meeting notice provides otherwise. Anyone may submit a written statement to the Commission at [www.moontomars.org/notices/contact/asp](http://www.moontomars.org/notices/contact/asp).

(President's Commission on Moon, Mars and Beyond website, accessed July 7, 2005).

Although many of those testifying were teachers, professors and labor representatives, for the most part, the ninety-six individuals testifying were by and large, members of the space transnational capitalist class, and were not really representative of the general public. The vast majority of people in the general public never made aware of these hearings, and most people continue to be unaware. Thus, it seems that the public hearings were never really intended for members of the general public. The ninety-six people who provided testimony for the Commission during the five hearing were actually elites, or in Gramscian terms "organic intellectuals". Their role was to provide the Commission with the "views and opinions from the public, academia and industry". They were the only ones notified of the hearings. Very few people knew that these hearings were going on. This explains why there was not a more diverse representation from the various members who actually make up the American general public. Instead the large majority providing these attestations of views and opinions were provided by members of the corporate, industry and academic elite.<sup>7</sup>

### **1. The President's Commission New Vision Policy Implementation Report**

The hearings and testimonies discussed above resulted in The President's Commission report, which outlines an implementation program which maps a new direction for the U.S. space program. Considering how globalization has ushered in acceptance of transnational corporations, this report provides a step closer to a grant to

private corporations the legal right to own space territory. After conducting the five hearings and deriving testimony for the 96 invited members of the general public, the Commission published a report, which was delivered to the White House on June 16, 2004 entitled "A Journey to Inspire, Innovate and Discover".<sup>8</sup>

#### **a. Property Rights**

This report is replete with findings and recommendations mandating the hyper-privatization of space, and it suggests that property rights be granted to members of the space transnational capitalist class. Considering all of the policy and legal discourse involving the proposed hyper-privatization of outer space, property rights refer to natural space resources, space assets such as equipment and technology and parts of the outer space territory. For example, the President's Commission Report, dubbed "Property Rights in Space" states:

The United States is signatory to many international treaties, some of which address aspects of property ownership in space. The most relevant treaty is the 1967 UN Treaty on the Peaceful Uses of Outer Space (the "Space Treaty"), which prohibits claims of national sovereignty on any extraterrestrial body. Additionally, the so-called "Moon Treaty" of 1979 prohibits any private ownership of the Moon or any parts of it. The United States is a signatory to the 1967 Space Treaty; it has not ratified the 1979 Moon Treaty, but at the same time, has not challenged its basic premises or assumptions.

(President's Commission Report, 2004: 33)

#### **b. Privatization of Space Exploration and In Situ<sup>9</sup> Resources**

Regarding the privatization of space missions the report states:

NASA ask the National Academy of Sciences to engage the scientific community in a re-evaluation of priorities to exploit opportunities created by the space exploration vision. In particular, the community should consider how machines and humans, used separately and in combination, can maximize scientific returns;

and a discovery-based criterion to select destinations beyond the Moon and Mars that also considers affordability, technical maturity, scientific importance, and emerging capabilities including access to in-situ space resources.

The Commission also realizes that the launch of human crews requires extraordinary care and will likely remain the providence of the government for at least the near-term. NASA must begin not only to utilize private sector launch enterprises more systematically, its exploration architecture must systematically support private sector capabilities that will make it possible to sustain operations in space. Over time, missions to the Moon, Mars, and beyond will test various methods for finding commercial value in space, including use of in situ or space resources.

(President's Commission Report, 2004: 9)

### **c. Privatization of Space Exploration Missions**

Space exploration missions, once the sole purview of NASA, are being offered to the private-sector. For example, Recommendation 5-2 of the Commission report reads:

The Commission recommends that Congress increase the potential for commercial opportunities related to the national space exploration vision by providing incentives for entrepreneurial investment in space, by creating significant monetary prizes for the accomplishment of space missions and/or technology developments and by assuring appropriate property rights for those who seek to develop space resources and infrastructure.

(The President's Commission Report, 2004: 10 and 32)

On the surface, this does not say much, but when read together with the current on going debate within the space law epistemic community over whether or not property rights are allowed, it becomes clear that this means that the United States has taken decisive action to take sides in this debate. This statement endorses the position that it is legal and in accordance with the international space law to grant property rights to space resources.

The text of this report serves as support for the argument that the function of the New Vision policy, the President's Commission and the publication of the report is to hyper-privatize space exploration, space resources, and outer space development. This will involve phasing out public rights to national space assets by instead granting them to private companies. This includes a mandate "transforming NASA" and allowing greater participation from the private-sector in order to carry out the goals outlined in the President's New Vision fir Space Exploration policy. This is code for hyper-privatizing NASA. By way of further example, Finding 3 of the Commission Report states:

The Commission finds that NASA's relationship to the private sector, its organizational structure, business culture, and management processes - all largely inherited from the Apollo era - must be decisively transformed to implement the new, multi-decadal space exploration vision.

(The President's Commission Report, 2004: 19).

In further support of the argument that the new policy calls for hyper-privatization, Recommendation 3-1 states:

The Commission recommends NASA recognize and implement a far larger presence of private industry in space operations with the specific goal of allowing private industry to assume the primary role of providing services to NASA, and most immediately in accessing low - Earth orbit. In NASA decisions, the preferred choice for operational activities must be competitively awarded contracts with private and non-profit organizations and NASA's role must be limited to only those areas where there is irrefutable demonstration that only government can perform the proposed activity.

(The President's Commission Report, 2004: 19).

In order to ensure the implementation of the President's New Vision, the report sets forth the financing schemata needed to realize the steps outlined in the report needed

in order to make the policy manifest from text to reality. Table 5.2 sets forth the specific monetary requests made by President Bush in conjunction with the New Vision for U.S. Space Exploration. The President, in articulating the New Vision, also simultaneously requested a new NASA budget, which included an increase of \$1 billion over five years<sup>10</sup>. To highlight the seriousness of these political actions, within a year, Congress passed legislation ensuring the funding for the New Vision policy through the passage of the NASA Authorization Bill in 2005.<sup>11</sup> This new legislation endorses the President's new vision by providing the necessary finances to fund its implementation. This report, along with all the other actions outlined in this chapter, are tools which legitimize private-sector control of many space activities, and deferring decision-making power away from NASA. This will create inequities since the initial costs in establishing a new space infrastructure have been and will be paid for by the general public. Space research and development have always been paid for by the general public. During the second epoch, as explained in Chapter 3, many of these public expenditures were transferred over to private firms under the doctrine of economic rationality. As indicated in the Commission Report, the public will bear the brunt of the up-front costs in producing the new space exploration vision.

Furthermore, Recommendation 3-3 states:

The Commission recommends that NASA Centers be reconfigured as Federally Funded Research and Development Centers to enable innovation, to work effectively with the private sector, and to stimulate economic development. The Commission recognizes that certain specific functions should remain under federal management with-in a reconfigured Center.

(The President's Commission Report, 2004: 25).

In addition, Recommendation 4-1 of the President's Commission report suggests that NASA immediately form special project teams for each enabling technology" to "develop a plan for transition of appropriate technologies to the private sectors" along with several other items. Another example of this operating assumption is found in Finding 4 which states:

The Commission finds that successful development of identified enabling technologies will be critical to attainment of exploration objectives within reasonable schedules and affordable costs.

(The President's Commission Report, 2004: 27).

## **2. The New U.S. Space Transportation Policy of 2005**

In addition to the New Vision policy, President Bush another enacted a new U.S. Space Transportation policy in 2005. When read together, it becomes clearer that the overall strategy for the new space policy is to transfer rights to manage and control profits deriving from new uses of space assets over to the private-sector. The text of the new U.S. Space Transportation Policy of January 5, 2005 contains the following passage, which further demonstrates that the private-sector is being constructed as being better suited to carry out the U.S. space exploration goals. It states:

To exploit space to the fullest extent, however, requires a fundamental transformation in U.S. space transportation capabilities and infrastructure. In that regard, the United States Government must capitalize on the entrepreneurial spirit of the U.S. private sector, which offers new approaches and technology innovation in U.S. space transportation, options for enhancing space exploration activities, and opportunities to open new commercial markets, including public space travel. Further, dramatic improvements in the reliability, responsiveness, and cost of space transportation would have a profound impact on the ability to protect the Nation, explore the solar system, improve lives, and use space for commercial purposes.

(U.S. Space Transportation Policy, January 5, 2005).

Although space activities such as space exploration missions have involved the private-sector for quite some time, it is novel that the President's Commission recommended the privatization of NASA. On January 6, 2005, the President also authorized and several weeks later subsequently released, another new U.S. Space *Transportation* Policy. This new policy clearly represents an effort to increase U.S. domination of the outer space territory, increase commercialization of space and increase private-sector participation (privatization) of space assets. When President Bush announced the Vision for Space Exploration, he called for the retirement of the space shuttle fleet following the completion of the International Space Station and the development of a new type of spaceship - the Crew Exploration Vehicle. NASA as a government program was blamed for the Columbia explosion in 2003, similar to the way government was blamed for the Challenger explosion in 1986. This has served as a way to legitimize the determined need to allow the private-sector to take over.

## **B. The Legislative Branch**

In the U.S. the legislative process is supposed to include public hearings so that *different views* can be heard on particular issues prior to the creation of new laws. Proposed bills become laws, if passed by both the House and the Senate. Any such bills achieving this status go on to the President to be signed. If these steps occur, the bill becomes public law<sup>12</sup>. This process is not occurring in the hyper-privatization of outer space. Similar to the President's Commission hearings, testimonies before Congress have not really involved an informed citizenry. Only a few elites are aware that these political and legal activities are occurring.

Moreover, after a careful review of space legislation since 2001, there has been only one objector<sup>13</sup> to the recent push to hyper-privatize outer space activities. Also similar to statements made in the New Vision for U.S. Space Exploration Policy and similar to statements made during the Commission hearings, actors testifying before Congress have asserted the same two-fold constructed need to privatize space exploration, space resources, and outer space development. The two major themes, as stated earlier 1) hyper-privatization of space will benefit everyone; and 2) the private-sector is better able to do outer space development than the government, also appear in the testimonies provided by members of the space transnational capitalist class during the Congressional hearings.

### **1. Congressional Hearings**

Many years of political lobbying activities by the private-sector to the U.S. legislature eventually did achieve the desired effect of legalizing private for-profit space travel through the creation of a new space tourism industry. It was through the process of holding a multitude of hearings on the part of various members of Congress that private space travel was eventually legalized. Therefore, by orchestrating the process of holding hearings and discussions, the U.S. Congress played a key role facilitating the expressed interests of the space transnational capitalist class. Space tourism has been around since the 1950s, but was ignored until Dennis Tito captured the mass media's attention by becoming the first paying space tourist.<sup>14</sup> Most people are not aware that Dennis Tito, the first private space tourist, is also founder and CEO of Wilshire Associates, a trillion-dollar global investment firm. During the same year, he was also actively testifying before the House Subcommittee on Space and Aeronautics and the Senate Committee on



Commerce, Science and Transportation, and the Senate Subcommittee on Science, Technology and Space. Similarly many hearings were held regarding connected issues of the legalization of private space transportation and various aspects of the emerging space industries.

Members of the space transnational capitalist class were also instrumental in arranging the Anarsari X Prize private spaceship competition. The sum of \$10 million dollars was awarded to the first private team to build and fund fly a three-person spaceship with private capital, capable of traveling into outer space (100 kilometers – 62 miles), and repeat the trip within two weeks. It was highly publicized, in all forms of the media, that on October 4, 2004 SpaceShipOne won the X Prize competition. SpaceShipOne became the first *private* manned spaceflight.<sup>15</sup> Before this all trips into space were undertaken by the government. Paul Allen, the billionaire who co-founder of Microsoft, funded the SpaceShipOne project.<sup>16</sup> It was no secret that the main purpose of the *X Prize Competition*<sup>17</sup> was to jumpstart private commercial space transportation as a new industry. It is now an annual event.<sup>18</sup> More recently, as set forth in Table 5.3, many addition Congressional hearings have taken place where members of the space transnational capitalist class are more boldly articulating their interest in seeing that space exploration, space resources, and the outer space territories be hyper-privatized.

## **2. New U.S. Laws to Hyper-Privatize Space**

In addition to all of the U.S. laws passed to facilitate globalization, commercialization, and privatization processes in the Post Cold war, as outline in Chapter 4, two additional new laws have been passed to legitimize the hyper-privatization of space. New law and policies have enabled private space travel by encouraging the

industry through favorable regulation, tax incentives, contracts, grants and technology transfer arrangements. As the result of these extensive legislative processes, two new laws legitimizing the hyper-privatization of space through popularizing new industries: private space tourism and private space transportation permitting for this first time in history private space travel business were recently enacted 1) the Commercial Space Launch Amendments Act of 2004; and 2) the National Aeronautics and Space Administration Authorization Act of 2005 (the NASA Authorization Act of 2005). The Commercial Space Launch Amendments Act, passed by Congress in December of 2004 and subsequently signed by President Bush, is a key piece of enabling legislation for the new private-sector space tourism industry. In short, the purpose<sup>19</sup> of this bill is to promote the development of the emerging commercial human spaceflight industry, to extend the liability indemnification regime for the commercial space transportation industry, to authorize appropriations for the Office of the Associate Administrator for Commercial Space Transportation, and for other purposes. In lobbying for the new law, space activists argued that there was still a need for legislation to clarify “the licensing scheme in order to attract investors who are skittish about regulatory costs and litigation risk. This is true on the most basic level; it would be easier for startups who have not demonstrated technology to attract cash if the technical, insurance, and risk assumption requirements were fully spelled out and applied to commercial passenger vehicles” (Horsley, 2004: 2)<sup>20</sup>. Therefore, after extensive lobbying efforts by space advocacy groups and powerful individuals, in December, Congress passed the Commercial Space Launch Amendments Act of 2004<sup>21</sup> to further enhance the successful growth of the commercial launch and transportation industry (Ryabinkin, 2004). In short, the purpose of this bill is to:

To promote the development of the emerging commercial human spaceflight industry, to extend the liability indemnification regime for the commercial space transportation industry, to authorize appropriations for the Office of the Associate Administrator for Commercial Space Transportation, and for other purposes.

(Commercial Space Launch Amendments Act of 2004, Public Law 108-492)

The implications of this new legislation include relaxing the rules and allowing private spaceships to travel into outer space and back, allowing private experimental spaceships to go into outer space and to return in order to test and perfect their spacecrafts, to allow spaceports to evolved into viable business industries by decreasing the amount of legal, regulatory and insurance restrictions on space launch, transportation and spaceport activities.<sup>22</sup> The rationale offered for this new legislation is that these new legal norms will thereby increase the trust of potential investors. The bill allows more freedom to those operating, testing and flying experimental spacecraft. It is important to understand that prior to October 2004, all private commercial space launch vehicles were unmanned expendable vehicles (disposable vehicles with no people inside).

Space travel used to be for government sponsored astronauts only. Not anymore. Increasing it is beginning to be viewed as a fun thing to do for wealthy paying customers. As the result of political action taken by private-sector political lobbyists, in conjunction with lawmakers, *space tourism*<sup>23</sup> has recently gone through the privatization process. Space tourism is now on it way to becoming a multibillion dollar industry. A number of companies are boldly offering private passenger flights to the general public now. For example, as per their website, Space Adventures, Ltd. “offers a wide range of space experiences, from zero-gravity and high altitude supersonic flights, cosmonaut training and space flight qualification programs on Earth, to actual flights into space”. This

website also provides a list of “destinations” to go on Earth, near Earth and in space<sup>24</sup>. A recent study commissioned by Space Adventures indicated that the sub-orbital space tourism market could generate over a billion dollars a year. By 2004 Space Adventures had booked over 100 sub-orbital reservations.<sup>25</sup> Space tourism, private space transportation and the burgeoning spaceport business are all linked to this current push towards privatization.

The NASA Authorization Bill was initially requested of Congress by President Bush. He requested legislation authorizing the expenditures needed to carry out the New Vision for U.S. Space Exploration Policy. Congress responded by creating a new law, the National Aeronautics and Space Administration Authorization Act<sup>26</sup>, in December 2005, which in turn the new law went into effect upon the signature of the President Bush in December 30, 2005. The new law means that public funds will pay for the implementation of the President’s New Vision policy. It provides the money to carry out this New Vision in accordance with the President’s Commission report.

### **C. The National Aeronautics and Space Administration (NASA)**

When most people think of the U.S. space program, they think of NASA. So, what about NASA? How does it, as a government agency, factor into the new hyper-privatization of space exploration, space resources, and outer space development? It is my contention that NASA administrators and staff must be viewed as workers and bureaucrats. They are not members of the space transnational capitalist class, since they are not playing an active role in influencing the hyper-privation of outer space development. Instead they are serving as passive agents who are being told what to do in

this process. The image of NASA is important in terms of the public acceptance. For this reason, NASA is being allowed to be seen as a key player in outer space development.

NASA has successfully carried out a multitude of missions to the Moon, Mars, Saturn and its Moon Titan, Venus, Jupiter, Uranus, Mercury, and to several asteroids and other small bodies in outer space. Keeping in mind NASA recently, in 2006, sent a probe to Pluto. All of these space exploration missions have resulted in a vast wealth of knowledge about what is out there. NASA has discovered, mapped and located vast amounts of untapped highly valuable natural resources. These were publicly funded missions by a government agency. In spite of over forth years of successes, as a discursive strategy to exercise power, NASA is being talked about in the New Vision policy, in the President's Commission report, in testimonies at the President's Commission hearings and in various testimonies during the Congressional hearings as an inefficient failure. For example, the Commission Report, which provides a step-by-step map for the implementation of the New U.S. Vision for Space Exploration, is replete with narratives articulating the need for the private-sector to take over space exploration, space resources, and the next steps in order to make outer space development happen. The steps outlined in the report call for a heightened push for privatization of the outer space territory and resources in the many findings and recommendations contained within the text of the report, as determined by the Commission members. The heart of the report is that it suggests that the U.S. society wants a new free market approach for its space program. For example, contrary to the legal norms established by the international space law regime during the first epoch, the Report suggests granting private property rights to the private-sector stating that "otherwise there will be little significant private sector

activity associated with the development of space resources, one of our key goals” (2004: 34).

In reality, NASA has been extremely successful. I would not classify NASA as a key actor in this process for several reasons. First, the President demonstrated his power to change the direction for outer space development by creating a new policy and a New Commission. In this process, it is clear that NASA is no more than an institutional puppet. For example, the President’s *A Renewed Spirit of Discovery* document of March 30, 2004: 7, states:

Consistent with *The President’s Vision for U.S. Space Exploration*, NASA has set a new course for exploration and discovery, as summarized in the exploration roadmap. Implementation of the exploration vision will be informed by the recommendations of the Aldridge Commission<sup>27</sup>.

In addition, Pete Aldridge, Chairman of the President’s Commission in his statement during the 1<sup>st</sup> Commission hearing, indicated the following:

Specifically President Bush asked for a space science research agenda, the exploration of technologies, demonstrations and strategies for sustained human and robotic exploration, the criteria to select future designations for human exploration. A long-term organizational options for managing implementation, the roles for appropriate and effective private sector and international participation, methods to encourage youth to study science, math, and engineering, and management of the implementation within the available resources.

(Edward C. “Pete” Aldridge, Jr., Chairman, The President’s Commission hearing, February 11, 2004: 2).

#### **D. The Federal Aviation Administration's AST**

Another institution used as an instrument to facilitate the hyper-privatization of space is the Federal Aviation Administration’s Associate Administrator for Commercial

Space Transportation (the AST). On April 8, 2004 - The FAA Office of Commercial Space Transportation issued the world's first license for a private spaceship to travel into outer space. The license, issued on April 1, is for a sequence of sub-orbital flights spanning a one-year period for Scaled Composites' SpaceShipOne. The AST's mission is to ensure protection of the public, property, and the national security and foreign policy interests of the United States during a commercial launch or reentry activity and to encourage, facilitate, and promote U.S. commercial space transportation. The primary objective of the FAA's licensing program, carried out by the AST, is to ensure public health and safety through the licensing of commercial space launches and reentries, and the operation of launch and reentry sites. The FAA carries out these objectives through the licensing and compliance monitoring and safety inspection processes. The primary objective of AST's commercial space transportation licensing program, carried out by the Licensing and Safety Division, is to ensure public health and safety through the licensing of commercial space launches and reentries, and the operation of launch sites. Protection of public health and safety and the safety of property is the objective of AST's licensing and compliance monitoring/safety inspection processes.

In order to jumpstart the space tourism industry, private entrepreneurs created the X Prize competition. SpaceShipOne was one of several aircraft in the running for the X-Prize competition, when it reached an altitude above 62.14 miles (100 km) on September 29, 2004, SpaceShipOne became the first **private** manned spaceflight.<sup>28</sup> Before this all trips into space were undertaken by the government. Paul Allen, co-founder of Microsoft, funded the SpaceShipOne project.<sup>29</sup> To demonstrate the importance of this new action (licensing a private spaceship) by an old actor (the FAA), when SpaceShipOne was

launched in October of 2004, the political reaction was different than when Sputnik I was launched in October of 1957. In accordance with principles of international law, a custom can arise and be deemed a legal norm or customary law, from acts of conduct. Reactions to such events, such as for example doing nothing, can cause such acts to become established as custom (Metcalf, 1999: 82-84). This was the concern when Sputnik was launched. State actors were aroused by the launching of Sputnik and were interested in meeting, discussing and instituting the passage of international laws pertaining to outer space exploration and development (Doyle, 2002). Hence the momentum began for events leading up to the creation, negotiations and drafting on the international space treaties. State actors took certain actions pressing for the creation of space law (Doyle, 2002). For example, President Eisenhower asked the United Nations assist the international community in shaping space law. With respect to international law governing outer space, during 1958 there were "multiple exchanges of formal correspondence between heads of state of major powers" and "multiple proposals submitted to the United Nations for consideration by the General Assembly"<sup>30</sup> (Doyle, 2002: 83). However when SpaceShipOne was launched on October 4, 2004, the U.S. Congress subsequently passed the Commercial Space Launch Amendments Acts (12/20/04) and the FAA approved licensing of private spacecraft.

It is also important to mention that there is a connection between the FAA, space transportation, and spaceport businesses. Spaceports seem to be popping up all over the world. For example, in the US there are approximately 5 federal launch sites. In 1996 a new pattern emerged wherein the first license was issued by the FAA for the operation of a non-Federal spaceport - California Spaceport. Within a short time thereafter others



followed including: Spaceport Florida, the Virginia Space Flight Center and the Kodiak Launch Complex in Alaska. Many other states have declared themselves as gateposts to space within the next few decades. These states include: Alabama, Montana, Nevada, New Mexico, Oklahoma, South Dakota, Texas, Utah, Virginia, Washington and Wisconsin. The AST has formally stated that "several states are developing commercial spaceports within their borders. These spaceports can provide space transportation service providers and their customers with an alternative to the traditional U.S. Federal Launch sites and ranges operated by either the U.S. Air Force or the National Aeronautics and Space Administration (NASA)".<sup>31</sup> This further demonstrates the close alliance between government and private-sector elites to blend government space activities for commercial purposes along with private commercial interests. The legalization of private space tourism is connected to state FAA/AST regulation, which is linked to the appearance of complying with the international space treaties. For example, according to the Outer Space Treaty of 1967, Article VI<sup>32</sup>, all space activities, even private-sector activities are regulated by the launching state. Consistent with this provision, in the U.S., the AST is the agency responsible for authorizing, licensing and regulating all space activities - both government and private, and it has given a thumbs-up on private space travel. The AST has specifically defined space transportation as "the movement of, or means of moving objects, such as communications and observation satellites, to from, or in space".<sup>33</sup> Included in this definition at part of the commercial space transportation industry is "the development of private or state-operated launch, re-entry, and processing sites known as 'spaceports' ".<sup>34</sup>

#### **D. The U.S. Chamber of Commerce Space Enterprise Council**

In addition to participating in the Coalition for Space Exploration (one of the space super coalitions as further explained in the section on private-sectors actors below), the United States Chamber of Commerce, Space Enterprise Council is a government institution specifically created to help facilitate the hyper-privatization process. It was founded in 2000 “to represent businesses with a commercial interest in space”. The Council's stated purpose is to provide U.S. companies with the opportunity to play a “principle role in developing and advocating policies and programs that ensure that the U.S. continues to be a leader in the space marketplace”.<sup>35</sup> It does this by “advocating a national business strategy for the advancement of U.S. space interests to Congress and federal policymakers”, “facilitating business relationships and networking opportunities between member companies and key Washington space policymakers”, and by “keeping member companies apprised of the very latest activities and news impacting their industry via daily interactions with the Congress, federal agencies and the Bush Administration”. The Space Council is made up of “members and is controlled by the board of directors, industry experts from our member companies execute the programs and efforts on behalf of industry”. It is “a forum for private-sector space companies”, for the purpose of arranging “the collective power of its affiliation with the U.S. Chamber of Commerce and its diverse members into a single, unified voice that is used in advocating member interests to policymakers”.<sup>36</sup> As stated, the “Space Enterprise Council membership offers U.S. companies a unique opportunity to take a leading role in shaping and advocating policies and programs that encourage the commercial development of space”.<sup>37</sup> In addition to these actions taken by various

components of the U.S. government, the section below discusses similar actions taken by the private-sectors.

### **Actions by the Private-Sector to Hyper-Privatize Outer Space**

The new policy for outer space development seems to have been influenced by two factors: 1) relentless private-sector lobbying activity by members of the space transnational capitalist class and 2) 2004 election year politics created a willingness and interest, on the part of the President and members of Congress, to take government action in support of these efforts to hyper-privatize outer space. This section demonstrates that actions taken by new actors in the outer space development regime. These new actors, from the private-sector, have lobbied government, have testified before numerous government hearing tribunals, and have made technological innovations and investments in to hyper-privatize outer space development. The text of the President's new space exploration policy mirrors the text and content of various private-sector advocacy groups' literature and lobbying materials.

#### **A. Lobbying Activities**

There are thousands of space interest groups and organizations. Most of them have been lobbying for a new space policy for years. In recent years, many of these groups and organization have formed in super coalitions and have lobbied the U.S. government as tight units, as detailed in the next section. At the same time, many other political actors have lobbied for new space industries for many years. Around the beginning of the Post Cold War era, many of these actors started becoming more vocal and began publishing literature expressing the view that it is time to begin focusing of applying free market principles to outer space (Reynolds, 1991). For example the U.S.

Chamber of Commerce Space Enterprise Council Along with members of the space transnational capitalist class, as outlined in the section below, this government institution also helped to influence the President's New Vision for U.S. Space Exploration Policy as indicated in this segment of text taken from a U.S. Chamber of Commerce Space Enterprise Council press release<sup>38</sup>, referring to the President's New Vision for U.S. Space Exploration policy announcement, states:

Yesterday's announcement is consistent with the Space Enterprise Council's advocacy for national space goals that reinvigorate the national interest, revitalize the industrial base, and move us closer to understanding the universe in which we live . . .

(U.S. Chamber of Commerce press release dated January 15, 2004).

Another important lobbying organization which has taken action to hyper-privatize space is ProSpace, Inc. It is a nonprofit 501(c)(4) corporation described as "a grassroots organization of American citizens" formed for the purpose of "opening the space frontier for ALL people as rapidly as possible". The members of the ProSpace, Inc., *March Storm* lobby represent a complicated mix between new entrepreneurs, established space companies, space organizations (for-profit and nonprofit), companies, corporations and government entities. These various pro free market space entities have been busy putting forth discourse in the form of websites and literature as well as proposals for pro free market space legislation. Since about 1997 ProSpace, Inc. has carried out a fierce and massive lobbying campaign dubbed March Storm where each March various members of the organization go to the Capitol Hill and directly meet with members of government to lobby for their beliefs about the direction of America's space program. Since its inception, ProSpace, Inc. has held more than 3000 meetings with congressmen, senators, White House offices and other government officials within NASA and other government

agencies.<sup>39</sup> They present to members of Congress what they call “the Citizen's Space Agenda” - a document that each year lays out a clear and concise blueprint for opening the space frontier. This document promotes hyper-privatization of space. For example, it states “The American perception of space must change”, “the economic development of space will facilitate exploration that is more effective and less expensive”, “Space holds the promise of vast new opportunities and untapped resources”, and ProSpace, Inc “believes” several things including that “space is a PLACE, not a government program”, “space is in fact the new frontier”, “space must no longer be seen as the exclusive domain of the government”, and that “private efforts and commercial space ventures must be enabled and encouraged, rather than hindered and thwarted”<sup>40</sup>.

ProSpace, Inc. was organized for the purpose of pushing for hyper-privatization of space exploration, space resources, and the next steps involved with outer space development. More recently, in March 2006, the ProSpace, Inc. lobby requested the passage of the Space Prizes for the Advancement of Commerce and Enterprise (The Space Act of 2006).<sup>41</sup> Their website states that the purpose is for the “use of cash prizes as a means to accelerate the commercial expansion of economic, national security and scientific uses of space and spaceflight”. In actuality, this legislative initiative will establish \$250 million dollars to be awarded to private entities as financial incentives to create innovative technologies from existing space technologies and to take the next steps towards outer space development. The public paid for the research and development costs which created and tested these technologies. However, these initiatives will undoubtedly grant intellectual property rights, such as patents, to elite private-sector interests to encourage slight improvements and new applications to various public space

technologies. Workers have also lobbied Congress for example during the President's Commission hearings, Dr. Michael Balzano, Executive Director, National Industrial Base Workforce Coalition, a group of local unions within about 30 states which includes scientists, engineers, professional and technical workers, production workers and security and logistics workers, testified. This organization "spent a lot of time and effort lobbying Congress" (2004: 12).<sup>42</sup>

Recently, individuals, interests groups, companies and organizations have started to concentrate their space lobbying efforts by forming into super coalitions, and together have petitioned legislators to draft legislation to help privatize space activities. The Coalition for Space Exploration and the Space Exploration Alliance provide important examples. In previous sections I focused on the text of the New Vision for U.S. Space Exploration Policy, the President's Commission hearings and report, various hearings held by Congress and two new U.S. space laws. In order to support my claim that these recent actions were taken to hyper-privatize space exploration, space resources, and outer space development, I applied a critical IR lens to these various government document texts, deconstructing these to elucidate sites of power. In this section I will support my assumption that the new space exploration policy was influenced by a powerful space lobby and by members of a space transnational capitalist class. Together these new and old private-sector actors have created 3 new industries - space tourism, space mining and space settlement. For example, Robert H. Lorsch, President RHL Group testified at a Senate Subcommittee hearing, making these remarks:

I ask this Subcommittee to create a mechanism to get money from the private sector into NASA to enable the next generation of spacecraft to get off the ground", "I have never given up on my dream to get Space Advertising off the ground. I have continued to

share my proposals, ideas and presentations with congressional leaders, representatives of NASA, JPL, and astronauts including . . .”, “Last October, I presented my program to Representative Dana Rohrabacher, Congressional Space & Aeronautics Chairman who recently told me, ‘I wholeheartedly support your efforts to help the U.S. space program and am pleased that the Senate committee is taking such a proactive interest in your ideas’, and “Let’s work as a team to get private sector sponsorships of the space program off the ground so we can deliver on Ronald Reagan’s Challenge and fulfill President Bush’s mission to take our nation back into space”.

(Senate Subcommittee on Science, Technology and Space Field Hearing on President’s New Space Vision, February 18, 2004)

It is clear from the literature of various organizations that the push to privatize space exploration, space resources, and outer space development and the push to create new industries - space exploration, space tourism, space mining and space settlement - predated the President’s 2004 New Vision for U.S. Space Exploration Policy. These waves of political activism have been successive in influencing the passage of the Commercial Space Launch Amendments Act of 2004, the FAA/AST to license private experimental spacecraft in 2004, securing public funding for the New Vision Space Exploration policy through the passage of the NASA Authorization Act of 2005. This explains and supports these assumptions. For example, these examples support the argument that political actors have been exercising power by arguing that the private-sector is better able than government to take over space exploration and outer space development. Yet, they are admitting that they cannot do anything without public resources. These claims that the implementation of the new space exploration policy will benefit all members of society and that the private-sector can successfully accomplish what the public sector cannot.

The Coalition for Space Exploration is a key actor in the process of hyper-privatizing space. As demonstrated in Table 5.4, the Coalition for Space Exploration is made up of thirty-eight business organizations (both large and small), ten trade association and 2 aerospace unions. The majority of the participating members of this super coalition lobby are large corporations several of which are Fortune 500 companies, are on the New York Stock Exchange and/or are large defense contractors. Many are well-established in the established in the space industry and have participated in contracting with the government to perform space activities for many years. For example, member companies Boeing, General Dynamics, Honeywell, Lockheed Martin and Raytheon.

As set forth in the Coalition's 2005 Government Affairs Report, the organization has carried out the following activities: "developed & circulated Congressional White Papers; prepared & distributed House and Senate Letters; met with White House, NASA, OMP, OSTP, members of Congress; hosted House/Senate Staff luncheons & receptions; led group meetings with key Congressional offices; widely circulated Gallup poll results on Capitol Hill; and spearheaded coalition CEO letter to President Bush" (Robbins, 2005: 5).<sup>43</sup> Due to these types of organization activities both before the after the announcement of the New Vision for U.S. Space Exploration Policy, I argue that this coalition is a key actor in the process of hyper-privatization of space. In addition, the Coalition for Space Exploration helped to garner state support for the President's New Vision policy. Many state entities have passed resolutions in support of the new policy<sup>44</sup>. The organization website states that the Coalition for Space Exploration is "dedicated to supporting the nation's Vision for Space Exploration, which will ensure America remains a leader in



space, science and technology – key factors that create jobs, promote the nation's economy, contribute to our national security, and gratify humanity's need to explore”<sup>45</sup>.

The Coalition for Space Exploration works in conjunction with the Space Foundation, a national nonprofit organization founded 1983, is headquartered in Colorado Springs, with offices in Washington, D.C., and Cape Canaveral, Florida. The Space Foundation partners with other organization in holding an annual “Strategic Space” conference<sup>46</sup>. The Coalition for Space Exploration website<sup>47</sup> actively promotes support for the President’s New Vision policy in many ways. Policy makers who have become interested in knowing more about space, upon visiting the website are provide in many types of information. For example, it advertises a 2005 Gallop poll survey indicating general public support for the new policy. It reads:

More than three-fourths (77%) of the American public say they support a new plan for space exploration that would include a stepping-stone approach to return the space shuttle to flight, complete assembly of the space station, build a replacement for the shuttle, go back to the Moon and then on to Mars and beyond . . .

Another super coalition is the Sea Exploration Alliance (SEA), formed in May 2004, after the announcement of the President’s New Vision, “to promote the new Vision for Space Exploration”. This coalition is made up of other coalitions, space interest groups, space organizations and members of the space transnational capitalist class. Membership includes many of the most powerful and influential space coalitions made up of various space interest groups and organizations including for example ProSpace, Space Frontier Foundation and the National Space Society. Most of these organizations were established for the purpose of furthering the privatization of space exploration, space resource extraction or space settlement. SEA’s “Moon-Mars Blitz” campaign

illustrated “the kind of campaigns that SEA members will be undertaking to help insure passage of the budget required to launch the new space initiative”.<sup>48</sup> In July 11-13, 2004 76 representatives of 21 private-sector space activist groups called the Space Exploration Alliance (SEA) went to Capitol Hill, visiting more than 200 Congressional offices to lobby for a common space initiative that will “stimulate and establish private enterprise throughout the Solar System . . .”. (Spellman, 2004: 41). This type of political lobbying activity caused both the House and the Senate to draft and proposed bills, subsequently passed into law – the NASA Authorization Act of 2005 - authorizing \$16,471,050,000 to be given to NASA for fiscal year 2006 in order to carry out the stated plans for implementation of the New Vision. This award from Congress was approximately \$15 million dollars more than the President requested in the 2006 budget.<sup>49</sup>

#### **B. Private-Sector Testimonies: Congressional and President’s Commission Hearings**

In addition to the private-sector lobbying activities mentioned above, members of the private-sector, as new actors in outer space development, have also testified as a large number of hearings. These hearing include the President’s Commission hearings in 2004 and various hearings before the U.S. Congress and the Senate. This section supports the treating of key actors as belonging to one dominant class – the space transnational capitalist class. It outlines concerted actions taken by members of the space transnational capitalist class to hyper-privatize space and to create property rights to space resources, and outer space territories. For example, W.F. Mitchell, Altari Development Corporation testified on February 18, 2004 at the U.S. Senate Committee on Commerce Science and Transportation that the private-sector is needed in order to help the President fulfill the goals of the New Vision for U.S. Space Exploration Policy. He asserted for example that

his company can help protect Earth from the danger of asteroids and comets near earth through a project called NEO Safety International, and stated:

“The project will be financed as a traditional real estate development. Ownership of private property, minerals and natural resources will be an essential ingredient for success”.

The new actions taken to hyper-privatize space by the U.S. government seem to have been influenced by a catalyst that I am calling the space transnational capitalist class. For example, Congressman Dana Rohrabacher (California) testified during the April 3, 2001 House of Representatives Subcommittee on Space & Aeronautics, that “Buzz Aldrin came to me with the idea of trying to have, not just a hearing on the details, but a hearing on vision, and to try to get a good way to kick off this new Congress, and to have a better understanding of the potential for space” (2001: 18). Buzz Aldrin, famous for being the 1<sup>st</sup> person to walk on the Moon in 1979, currently is President of Starcraft Enterprises and Chair of the Share Space Foundation. The space transnational capitalist class is made up of many business leaders, presidents and CEOs of various companies and leaders of many space organizations. All of which are grouped together because of their joint interest and political activities to create private property rights regarding space exploration, space resources, and outer space development. As detailed in Table 5.5 various business leaders took action such as requesting and testifying in congressional hearings and testifying at the President’s Commission on Implementation of U.S. Space Exploration hearings. And, as outlined in the previous section, many of these same actors worked as part of various lobbying coalitions to convince congress to create laws and policies to facilitate the hyper-privatization of space. The new private space tourism industry didn't just spontaneously appear. Instead, the legalization of this industry

resulted from a series of consistent actions taken by members of the space transnational capitalist class.<sup>50</sup> For example, Dennis Tito, President and CEO of Wilshire Associates, a multi-trillion dollar global investment firm, testified on June 26, 2001, before the House Committee on Space & Aeronautics, after his highly publicized \$20 million payment to the Russians for his private spaceflight in 2001. He insisted that space tourism could become a viable, profitable industry if it were not for U.S. legal and regulatory obstacles.<sup>51</sup> Mr. Rick Tumlinson, President, Space Frontier Foundation, testified, along with others, that private development was needed “to create a new evolution in spacecraft design and operation”. They also argued that lower cost of access to space was needed. They critiqued what they called the government’s “monopoly” on access to space.<sup>52</sup>

In addition, as set forth in Table 5.6, many business moguls, have turned to space. For example, Elon Musk, founder and President of SpaceX, a new private spaceship developer (and former founder and President of PayPal & Zip2), provides a further example of actions taken by members of the space transnational capitalist class, testified before the House Subcommittee on Space & Aeronautics that “SpaceX is dedicated to improving the reliability and cost of access to space for the greater purpose of helping us become a true space-faring civilization. Without dramatic improvement in those two inseparable metrics, we will never exceed the great deeds our nation accomplished for all humanity with the Apollo program” (2005: 1).<sup>53</sup>

As illustrated by Table 5.3 business moguls and space entrepreneurs have been testifying before Congress, asserting their interest in creating a system of state assistance to ensure the success of new types of private space businesses. For example, as detailed in Table 5.6, many of these new members of the space elite became billionaires upon

selling successful Internet companies. Today, they have started space companies such as space private transportation development firms. These entrepreneurs have started a process of consistently testifying to the government, along with members of the established space industry industrial base. They have taken action by testifying in Congressional hearing, as well as, many of these same actors testified during the various Commission hearings in 2004. Business moguls, many of whom, as indicated in Table 5.6, became billionaires through the Internet business revolution, along with space enthusiasts and members of various space interest groups and organizations provided similar testimonies. Members of the space transnational capitalist class have played a key role in causing new policy and legislation to trigger the hyper-privatization of space exploration, space resources, and outer space development.

These examples of business leaders invited to provide testimony on future direction of the U.S. space program before the President's Commission, demonstrate the many private-sector attempts to hyper-privatize space. Two underlying themes appear in this venue again. Buried underneath the anesthetic of thousands of words, many of those testifying before the President's Commission on the Implementation of U.S. Space Exploration Policy articulated the two major themes: 1) privatization of outer space will benefit everyone and 2) the private-sector will be a more efficient producer, than the government in space exploration, space resources, and outer space development.

For example, during the "Commercial Space and Economic Feasibility" panel segment of the March 24, 2004 hearing, Michael Kearney, President and CEO of Spacehab, Inc., testified during this hearing stressing the reoccurring theme that the

private-sector is able to do space exploration, space resource development and outer space development better than government. For example Kearney testified stating:

Thank you. Mr. Chairman, members of the Commission, thank you for offering me the opportunity to share our company's experience and perspective on commercial space. I'm going to focus my remarks on the government's goal to attract private investment to deliver commercial service to [?] separation of cargo and crew to the International Space Station and beyond. Spacehab is an entrepreneurial company. We were founded in the 1980s with the intent of using a proven commercial business model to serve a frontier market in low Earth orbit. Although our determination and persistence was tested in the process, we have met that goal over the course of the last 15 years. My first viewgraph illustrates this model. In 1990 NASA awarded us our first contract for the equivalent of 4.5 research laboratory missions on the United States Space Shuttle for a fixed price of \$184 million. Using private equity, we developed the necessary laboratories and flew our first mission in 1993. And we did that, by the way, General, without cutting steps. To illustrate the value of this service, NASA chartered a Price Waterhouse study that concluded our price for these services was less than 20% of the cost that NASA would have estimated for such a service using standard government procurement practices. And that study is available in the public forum.

(Michael Kearney's testimony, President's Commission on Moon, Mars and Beyond Hearing Transcript, March 24, 2004: 115-116).

This testimony also highlights the contradiction which is constantly being admitted by the private-sector. That is, without government, the private-sector would not and could not do anything for further outer space development. The private-sector historically has only been willing to get involved with outer space development if the government provides significant incentives such as huge million dollar public contracts, tax incentives, grants and/or technology transfers. Apparently, the private-sector cannot attract private investment without first being provided with these types of public outlays.

A similar testimony was provided by Stephen Fleming, of EGL Ventures, as part of the “Commercial Space and Economic Feasibility” panel, making the following remarks:

A national railroad program in the 1870s would have been doomed to failure. The railroads got built, but the government didn't build them. The government partnered with railroad companies to get them built. Same for the auto industry. And I apologize; why my titles are screwed up there, I have no idea. Same for the auto industry—a national automobile program in the 1910s wasn't necessary. Henry Ford found the money. He was able to build cars. 122 Next slide—airline industry—same thing—1930s. The government was clearly the largest customer, both from the military and the civilian point of view; but the government didn't build the airplanes. The government didn't run the airlines. Private industry did. So why did we wind up with a national space program in the 1960s? . . .

(Testimony of Stephen Fleming, EGL Ventures, President's Commission Hearing, March 24, 2004).

Another point which needs to be made it that many of those who were supposedly testifying as members of “the general public” in the Commission hearings during 2004 were actually testifying as members of the space transnational capitalist class. For example, Cort Durocher, Executive Director of the American Institute on Aeronautics and Astronautics (AIAA), who defined the AIAA as being “made up of about 35,000 members from over 90 countries” including “engineers, scientists, executives, the educators, leaders in the aerospace field from all levels of industry, academia and government” making this organization, “the largest professional society in aerospace”, testified at the President's Commission hearing stating the following:

We applaud the President's Space Exploration Vision and are very excited about this activity and this panel. We believe that it finally provides a long-term focus for the civil space program and we like the way it integrates robotic and human activity. We also feel that

it will stimulate interest in pursuing careers in science and technology.

The U.S. should encourage private sector involvement in this activity. Private sector development of launch systems and service, can operate new communication satellite and ground systems, they could coordinate operation support, and they could stimulate new and innovative technologies. We also commend NASA on their recently announced Centennial Challenges Prizes program to establish annual prizes for breakthrough accomplishments that enhance solar system exploration.

Testimony of Cort Durocher, Executive Director of AIAA, President's Commission Hearing of February 11, 2004: 57).

On the panel called "Space Entrepreneurs", Dr. Peter Diamandis<sup>54</sup>, Chair and CEO of ZeroGravity Corporation, testified making the following types of remarks:

In the pages of *Investor's Business Daily*, the *Wall Street Journal*, *Wired*, *Popular Science*, people are starting to talk about a new generation of space entrepreneurs. Call them astropreneurs if you want. These are the X Prize teams, companies like XCOR and Space X and ZeroG and Space Adventures. And these companies are in fact the entrepreneurial spirit of America in space, the early days of HP or Apple or Microsoft or Netscape. And I encourage and urge this Commission and the U.S. Government to embrace and support these companies. Most of these companies, like my own, are focused on the public spaceflight, space tourism marketplace. It's quite frankly the only market that we see in the early days that really has a mass market. And the importance of this (next slide, please) is that today, the market for launches is pathetically small. There are only 15 to 25 commercial launches of satellites per year. That's not a marketplace. There's 15 commercial launch vehicles out there. That's an average of one per company. What we need is a vibrant, real marketplace. I call them self-loading carbon payloads. You know, they come with their own money, millions of people who want a chance to fly.

(Dr. Peter Diamandis' testimony, President's Commission on Moon, Mars and Beyond Hearing Transcript, March 24, 2004: 4).



Articulating similar discourse themes, in an effort to hyper-privatize space, Elon Musk, (founder of Zip2, PayPal) CEO and CTO of SpaceX, in addition to testifying before Congress, testified at the Commission hearings. For example part of his testimony transcript reads:

To address this problem, we must create a fertile environment for new space-access companies that brings to bear the same free-market forces that have made our country the greatest economy in the world. If we can create such an environment, I expect that progress in space launch costs and capability will be no less dramatic than in other technology sectors. If you doubt that we can possibly see such progress in space access, please reflect for a moment that the Internet, originally a DARPA- funded project, showed negligible growth for over two decades until a private enterprise entered the picture and made it accessible to the general public. At that point, growth accelerated by more than a factor of 10. We saw Internet traffic grow by more in a few years than the sum of all growth previously.

We are in a crucial turning point today. The vision outlined by the President is absolutely achievable. We've got a current NASA budget and schedule, and in fact I think it can be done quite a bit sooner, but only by making use of new entrepreneurial companies along with the incumbents. It cannot be achieved at all if we simply follow the old paths, which have led us to one canceled program after another following the Space Shuttle. So what strategies are key to achieving the President's vision? And, here I think you'll see a common theme between myself and some of the other panel members, particularly Dr. Diamandis, because I would say first and foremost it is increase and extend the use of prizes. Offering substantial prizes for achievement in space could pay enormous dividends. We are beginning to see how popular it can be by seeing the observing the recent DARPA Grand Challenge on the DoD side as well as the X Prize.

(Elon Musk's testimony, President's Commission on Moon, Mars and Beyond Hearing Transcript, March 24, 2004: 6).

In addition, Jeff Greason, co-founder of XCOR Aerospace – another new private spaceship development company testified:

As to whether or not private companies are interested in going out for something, the answer is not uniquely different, because it is faced in any other arena: Before a private company decides whether they want to pursue it, they want to know if there is going to be a market there. And so when you talk about replacing the Space Shuttle, I mean the Space Shuttle's market right now is negligible. I much—the prizes that my colleagues have spoken about are very exciting and very interesting, but even more exciting and interesting are markets.

Jeff Creason's testimony, President's Commission on Moon, Mars and Beyond Hearing Transcript, March 24, 2004; 11).

On a similar panel called “Developing Public/Private Partnerships” during the March 24, 2004 Commission hearing several actors further testified on behalf of the impetus to privatize outer space development. Tim Huddleston, Executive Director of Aerospace States Association testified:

We have an investment that we need to make into a whole new opportunity, in this case developing space, and that that investment will, in turn, take care of the social ills as far as providing new opportunities, new dollars. Someone asked me, “Are you going to ... states love to propose taxes.” Well not really, but in this particular case we have some tax structures that exist right now, we just need to float dollars through those tax structures that already exist. So if you are off developing space and you are enabling new opportunities and new industries, you're taking existing federal, state tax dollars . . .

(Tim Huddleston's testimony, President's Commission on Moon, Mars and Beyond Hearing Transcript, March 24, 2004: 52).

Many actors provided testimony asserting the view that the U.S. space program must be hyper-privatized to ensure the next stages of outer space development, including space tourism, space mining and space settlement. Table 5.3 details examples of these activities. In addition to the aforementioned political space coalitions, space entrepreneurs, independently and as part of the coalition, have played a key role in causing new policy and legislation for outer space development. For example, many have testified a Congressional, Senate and/or the President's Commission hearings, witnessing that a new free market direction for outer space development is needed in order to secure U.S. leadership on outer space colonization. For example, the Senate Subcommittee on Science, Technology, and Space held a joint hearing with the House Subcommittee on Space & Aeronautics on July 24, 2003<sup>55</sup> to "discuss space tourism, regulatory issues, private sector vehicle technology development, and capital investment considerations"<sup>56</sup>. The session was held on behalf of "wealthy individuals, that are successful in business, have decided to enter the commercial space market. Dennis Tito, who reportedly paid a \$20 million dollars to fly with the Russians to the International Space Station in 2001; Elon Musk, who founded his launch vehicle manufacturing firm by selling his internet companies for \$1.8 billion; Jeff Bezos, the founder of Amazon.com has also started a commercial space research venture called Blue Origin. Bob Bigelow, a real estate and land developer in Nevada founded Bigelow Aerospace; and Andy Beal, V.P. of Proranking.Com, an Internet search engine developer, was involved in the development of a new launch vehicle design are among commercial space entrepreneurs interested in creating commercial space launch ventures".<sup>57</sup> Many Congressional hearings have taken place on similar outer space issues with organic intellectuals and members of the

dominant space transnational capitalist class testifying on behalf of hyper-privatization of outer space.

### **C. Private-Sector Investments and Innovations**

In addition to lobbying and testifying, new actors from the private-sector have also been creating innovative technologies and making financial investments for outer space development. For example, Paul Allen, co-founder of Microsoft, funded the SpaceShipOne, private space travel project.<sup>58</sup> Jim Benson, CEO of SpaceDev, developed the hybrid rocket technology used on the SpaceShipOne spacecraft; it uses "Plexiglas™ and Laughing Gas (nitrous oxide) for propellants. This produces a small, powerful motor that can go from 0 to over 3,000 miles per hour in less than four minutes".<sup>59</sup> As founder of an "innovative space solutions company, Benson has been advocating the importance of a stronger commercial presence in space for years".<sup>60</sup> Benson has been credited for being the one who "started the trend of successful computer entrepreneurs moving into the space development arena", and as having a "long-term vision of building private sector exploration and profitable economic development of space, he has brought to this challenge the fast-moving entrepreneurial development style, which characterized the microcomputer revolution".<sup>61</sup> Another computer industry entrepreneur, Jeff Bezos, founder of Amazon.com, has created a space transportation company called Blue Origin. Other examples of business moguls to have turned to outer space include Robert Bigelow - owner of the motel chain Budget Suites of America, has pledged to invest up to \$500 million over the next decade to develop a commercial space based hotel business<sup>62</sup>. John Carmack, co-founder of Id Software and a key programmer for its games such as Doom and Quake, has support Armadillo Aerospace, a private spaceship development

company.<sup>63</sup> Joe Firmage, prominent business leader including ManyOneNetworks, Co-Founder, Chairman and CEO of USWeb Corporation, and Founder and CEO of Serious Corporation has partnered with the Planetary Society regarding solar sail project, and has sponsored space transportation system projects.<sup>64</sup> Elon Musk, entrepreneur cofounder of two internet companies, Paypal and Zip2, has developed a private space transportation company, SpaceX.<sup>65</sup> In addition to these actions taken by the private-sector, similar actions have been taken by the international space community as outlined in the following section.

### **Actions by the International Space Community to Hyper-Privatize Outer Space**

Across the three epochs of outer space development, the U.S. has played a key role in influencing outer space development regime change. This section supports the argument that key actors within the international space community have acquiesced to the new U.S. led push to hyper-privatize outer space by not acknowledging or challenging the various actions taken by the U.S. government and by the private-sector as set forth above. Regarding the issue of hyper-privatization of outer space several institutions have taken action a) the space law community (COPUOS, IISL and additional actors) b) companies selling space real estate and c) the International Astronautical Federation Congress. A main role played by these institutions has been processing changes and legitimizing acceptance such as space commercialization and the establishment of new space industries. Meetings, discussions and conference themes mirror global events such as the Cold war paradigm during the first epoch and globalization processes during the second and third epochs. It seems that the role of these international institutions is to provide a space for key actors from various states to be convinced to go along with

industry trends, which are usually sold and justified on the basis of economic rationality and the promise of benefiting all of mankind.

Although the United States is a powerful state actor, historically it has always sought acceptance and cooperation from the international space community before taking action in space. The U.S. and image of NASA have gained a great deal of respect from the international space community since the beginning of the space age. This section highlights these activities demonstrating international acceptance.

#### **A. The Space Law Community**

The international space law community is an epistemic community made up from members from two main institutions and organizations: the United Nations Committee on Peaceful Uses of Outer Space, Legal Subcommittee and the International Institute of Space Law. Together they make up a small but powerful subgroup within the outer space development regime. In addition to law, the outer space development regime encompasses a variety of other fields such as science, engineering, medicine, life support systems, space habitats, space transportation, satellites, telecommunications, remote sensing, meteorites, meteorology, risk analysis, space debris, planetary sciences, space exploration, transportation vehicles, technology, electronics, computerized systems, entertainment, commerce and education. Decisions regarding international space law are critical for any and all of the fields which make up the outer space development regime.

The members of the International Institute of Space Law and the UNCOPUOS Legal Subcommittee make decisions on the legal norms for international space law. They decide when to create law, and when to change existing law. Currently international space law is still made up of five international UN space treaties and five UN

declarations, which along with UN resolutions and customary international law. The Outer Space Treaty of 1967 is still seen as The Constitution for outer space activities. It was signed by ninety-eight nations when it opened for signature in 1967. This treaty deems that outer space belongs to the *province of mankind* – a new term specifically created to ensure that both space superpowers (U.S. and U.S.S.R.) would sign the treaty. This term have never been definitively defined by the international space law community. In addition international space law contained two key principles: *non-appropriation* and *freedom of use*. The international space law community has never defined either of these terms. Nor, has it explained whether non-appropriation is to be given more deference than freedom of use or vice versa. Moreover, both principles are to be for the *benefit of all mankind* (Metcalf, 1999). None of these controlling principles have been defined by the international space law community (Metcalf, 1999). Therefore, they remain open to varying interpretations among the space law experts on how they should, be defined. This vagueness was not due to poor draftsmanship or lack of foresight into future space activities. Rather, vagueness was brilliantly and artistically built in to assure that both the U.S. and U.S.S.R. would sign the Outer Space Treaty (1967). it was the result of political compromise influenced by the belief that the specifics of future commercial interests was thought to be best left to a future date when it would be more relevant so as not to risk the pressing concern of that time – preventing colonization of outer space and military installations on the Moon by the superpowers. Thus, no changes have been made to international space law since the first epoch. The outer space development regime has absorbed many changes reflective of changes at the international level such as increased commercialization and globalization. More recently the outer space development regime

has shown signs of absorbing the dominance of free market ideology. For example, the COPUOS adoption of Resolution 51/122 and the International Institute of Space Law's statement regarding property rights in 2004.

### **1. The United Nations Committee on Peaceful Uses of Outer Space**

The various actions discussed in this chapter have not been discussed within the UN COPUOS or its Legal Subcommittee meetings. The United Nations Committee on Peaceful Uses of Outer Space and its Legal Subcommittee meet annually to consider issues presented to them usually by the UN General Assembly or member states through various reports.<sup>66</sup> After a careful review of the official records of meetings for both the COPUOS and its Legal Subcommittee from 1990 to 2006, it is clear that the issue of granting property rights has not formally been addressed by the international community. Nor have they formally addressed the implication of President's Bush's New Vision for U.S. Space Exploration Policy. In other words, the UN has not yet made an official statement on whether or not the free market approach to space exploration, space mining and outer space settlement is prohibited. Although many actions have been taken within the U.S. lawmaking mechanisms including the New Vision for U.S. Space Exploration Policy, various Congressional hearings, new laws and numerous lobbying activities to hyper-privatize space, the issue has not been directly addressed by the UN Committee on Peaceful Uses of Outer Space and its Legal Subcommittee. However, both international organizations seem to be aware that the issue of further privatization of space is important. For example, in April 2006, during a Legal Subcommittee working group session, the topic was raised (although not fully addressed) as "the role of the United



Nations treaties on outer space as the basis for national space legislation, especially in regulating the involvement of the private sector in outer space activities".<sup>67</sup>

Although no affirmative statements or decisions regarding the activities set forth in this chapter to hyper-privatization space have been made by this institution, there is an indication that they may be more likely to lean in a free market direction and towards granting privileges to private industry. For example, in 1996, the COPUOS passed Resolution 51/122 regarding the related issue of to what extent the benefits of space exploration are to be used in order to benefit "the interest of all states taking into particular account the needs of developing countries".<sup>68</sup> On one hand Paragraph One expresses concern for the rights of developing countries in that it states:

International cooperation in the exploration and use of outer space for peaceful purposes (hereafter "international cooperation") shall be conducted in accordance with the provisions of international law, including the Charter of the United Nations and the Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. It shall be carried out for the benefit and in the interest of all States, irrespective of their degree of economic, social or scientific and technological development, and shall be the province of all mankind. Particular account should be taken of the needs of developing countries.

(United Nations Resolution 51/122, 1996)

However, contrarily and consistent with free market principles, Paragraph 2 expresses concern for protecting industry, property rights, economic rationality and free market principles. It states

States are free to determine all aspects of their participation in international cooperation in the exploration and use of outer space on an equitable and mutually acceptable basis. Contractual terms in such cooperative ventures should be fair and reasonable and they

should be in full compliance with the legitimate rights and interests of the parties concerned as, for example, with intellectual property rights.

(United Nations Resolution 51/122, 1996)

In addition, Paragraphs 4 & 5 further demonstrate an overarching concern for protecting the rights of private industry. Similar to the New Vision for U.S. Space Exploration policy, they invoke the principle of economic efficiency and demonstrate recognition that the private-sector is now a key actor in the space race. Paragraphs 4 & 5 state respectively as follows:

International cooperation should be conducted in the modes that are considered most effective and appropriate by the countries concerned, including, *inter alia*, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral; and international cooperation among countries in all levels of development.

International cooperation, while taking into particular account the needs of developing countries, should aim, *inter alia*, at the following goals, considering their need for technical assistance and rational and efficient allocation of financial and technical resources:

(United Nations Resolution 51/122, 1996)

In addition, to UN COPUOS and its Legal Subcommittee also hold a series of regional workshops. The various proceedings and reports from these workshops reveal an acknowledgment of the importance of the issue of private property rights, yet a refusal to deal definitively with the issue. Presentations and discussions during these various workshops reveal that in recent years, the issue of property rights has emerged for discussion. For example, the United Nations together with the Republic of Korea, organized a workshop in Daejeon, Korea in November 2003 on the theme “United

Nations Treaties on Outer Space: Actions at the National Level”. The workshop was “for the benefit of countries of Asia and the Pacific”, and the main objectives of the workshop were “to promote understanding, acceptance and implementation of the United Nations treaties and principles on outer space, especially in Asia and the Pacific, and to discuss the implementation of the United Nations treaties on outer space at the national level”.<sup>69</sup> There were approximately 100 participants from 27 countries including legislators, government officials, practitioners and educators affiliated with government, space agencies, private companies, international organizations, universities and research institutions, from both developed and developing countries. Countries represented included: Australia, Brazil, Cambodia, China, Colombia, Czech Republic, France, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Malaysia, Mongolia, Morocco, Nepal, Netherlands, Nigeria, Myanmar, Republic of Korea, Singapore, Sri Lanka, Thailand, United States of America, Uzbekistan, Vanuatu and Viet Nam. This workshop contained a “space law specialist segment”<sup>70</sup> wherein various space law experts made presentations on the issue of property rights, specifically on key international space law principles contained in Article II and Article VI of the Outer Space Treaty of 1967. Space law specialists presented their views regarding the *non-appropriation* principle in Article II and on the requirement of state supervision for space activities contained in Article VI.

Differing arguments and rationales were asserted and conclusions drawn demonstrating that the space law experts are still undecided on whether or not international space law allows for property rights. The workshop participants did agree however that the “use of resources by any private entity, whether or not specifically authorized, did not impute ownership of territory or resources in situ”. The workshop also

agreed that “development of an appropriate legal framework could encourage and facilitate the private use of space resources in ways that would be fully consistent with the principles of Articles I-III and VI of the Outer Space Treaty”.<sup>71</sup>

A similar United Nations space law workshop was held in Rio de Janeiro, Brazil. Approximately seventy-five participants from eighteen countries including: Antigua and Barbuda, Argentina, Brazil, Canada, Chile, Colombia, Czech Republic, France, Germany, Guyana, Japan, Mexico, Netherlands, Peru, Ukraine, United States of America, Uruguay and Venezuela (Bolivarian Republic of). In addition to many others areas of space law, again the participants discussed the issue of non-appropriation and the “future development of international space law and considered different approaches to addressing questions arising from the growing commercialization and privatization of space activities”. The workshop recognized, among many other points made, the “necessity to further develop international space law to address contemporary questions relating to the exploration and use of outer space, including issues arising from the increasing involvement of private and other commercial entities in space activities”. Again, differing views were presented by space law experts on whether or not to allow further privatization of space. For example, arguments were made for strict adherence to the *res communis* (commons) principle on one hand, and for the allowance of further privatization of space on the other hand.<sup>72</sup> It is important to note, the workshop participants agreed that the principle of “common heritage of mankind” in the Moon Treaty and the principle of “province of all mankind” in the Outer Space Treaty “were two different principles”.<sup>73</sup> In 2005, the United Nations held a space law workshop in

Abuja Nigeria on “Meeting International Responsibilities and Addressing Domestic Needs”.

One of several conclusions drawn as the result of this meeting was stated to be as follows:

activities of States in the exploration and use of outer space (the outer space treaties) would contribute to the orderly use of outer space and ensure the strengthening of rule of law, provide transparency with regard to rights and obligations of States in conducting space activities, increase development of customary behaviour, create a level playing field for all actors, ensure that non-state actors complied with the provisions of the treaties, enhance strategic stability and predictability and safeguard against arbitrary rulings. The workshop therefore recommended that States not yet party to the outer space treaties take the necessary steps to ratify or accede to them”<sup>74</sup>.

A common theme in each of these workshops was the need to increase compliance with international space law, particularly in light of the growing relevance of private industry. These examples demonstrate that the international community has not yet decided which direction to take on the legality of property rights in space. However, the U.S. has decided this issue in the affirmative.

## **2. International Institute of Space Law**

The International Institute of Space Law (IISL) (formerly the Permanent Committee on Space Law 1958 -1960) was founded by the International Astronautical Federation in 1960. The IISL presently has individual and institutional elected members from over 40 countries – specialists in the field of space law. One of the main purposes of the IISL is to carry out of task of “fostering the development of space law and studies of legal and social science aspects of the exploration and use of outer space and the holding of meetings, colloquia and competitions on juridical and social science aspects of space activities”. It has held annual colloquia on space law since 1958 during the first epoch,

and the Proceedings consisting of selected papers published on key issues concerning space law are published by the American Institute of Aeronautics and Astronautics. The IISL has been a key actor in shaping space law since the first epoch. While attending the World Space Congress in Houston, Texas in 2002 and the International Astronautical Federation Congress' International Institute of Space Law panels session in Bremen, Germany in 2003<sup>75</sup>, I witnessed that the members of the IISL community are divided in their stance of the issue of whether or not property rights are permissible according to international space law. This debate involves various positions. For example within the colloquium proceedings, several participants have put forth the argument that international space law should be clarified or changed in order to allow for the granting property rights to space in order to encourage the expansion of new space enterprises and encourage the raising of capital for further space ventures. This debate over whether international space law permits or prohibits private property or ownership rights to outer space resources is ongoing.<sup>76</sup> Often quoted is Article II of the Outer Space Treaty<sup>77</sup> which states: "outer space, including the Moon and other celestial bodies, is not subject to national appropriation [emphasis added] by claim of sovereignty, by means of use or occupation, or by any other means." Many space law interpreters will cite Article II in support of the argument that international space law permits private property rights because it does not explicitly prohibit them<sup>78</sup>. This argument is often intermingled with the contradictory argument that since the Outer Space Treaty does not explicitly mention private appropriation, there is legal uncertainty. This uncertainty is said to create disincentives to private commercial sector investment in space endeavors<sup>79</sup>. In taking this position, some argue that previous drafts distinguished between national and private

appropriation and prohibited both, and that the final draft only contains explicit prohibition against national appropriation. Therefore, they assume that a decision must have been made to permit private appropriation<sup>80</sup>. This assumption overlooks the way in which politics can result in purposeful decisions not to decide on issues involving an ideological or philosophical impasse.

Other space law interpreters will argue that "appropriation" of outer space resources, by any entity or individual, strictly is prohibited<sup>81</sup>. They argue that the term "national appropriation" includes all forms of appropriation whether national, private or otherwise. Some taking this position, include the very concept of private property rights as "appropriation".<sup>82</sup> Within the IISL, there are disparate views on the exact definition of the *province of mankind*, as compared to the *common heritage of mankind*.<sup>83</sup> For some thinkers, the province of mankind is a distinct principle specifically termed for the purpose of getting the U.S. and U.S.S.R. to sign the Outer Space Treaty and to avoid ideological conflict over the common heritage concept. For other thinkers, the common heritage of mankind concept must be applied to activities in space and that it is a part of international space law since, despite the low approval by the international community, the Moon Treaty was negotiated, drafted and enacted into force on July 11, 1984 (Amdem, 1999). Other members of the IISL have expressed the view that applying the Common Heritage of Mankind concept to benefits derived from space, may provide an instrument for "unrealistic demands" for a forced transfer of resources by countries not actively pursuing space exploration programs (Benko & Schrogl, 1996). For example, Benko & Schrogl (1997: 1), both members of the IISL, have argued that UN Resolution 51/122 of 1996, "provides an authoritative interpretation of the cooperation principle in Article I of

the Outer Space Treaty and should thereby put an end to North-South confrontation over the question of shaping the international order for space activities”. This indicates some of acceptance with the IISL consistent with acceptance of the hyper-privatization theme. Therefore, although there is some resistance within the space law community to hyper-privatization of outer space, it seems minimal when you compare several space lawyers to the hegemonic project outlined in Chapters 5 and 6.

More importantly, in July of 2004, the IISL, in an attempt to take a definitive stance on this importance issue, through its Board of Directors issued a formal statement “On Claims to Property Rights Regarding The Moon and Other Celestial Bodies”<sup>84</sup>. It reads in part as follows:

Claims to own the Moon or parts thereof by private parties have been made for many years, but so far such claims have not been taken very seriously. However, this could change, as “deeds to lunar property” have started to appear, raising the opportunity for individuals to be misled. In addition, the scope of such claims has been extended recently to other celestial bodies. Thus, the Board of Directors of the International Institute of Space Law (IISL) has concluded that there is a need for a statement regarding the current legal situation concerning claims to private property rights to the Moon and other celestial bodies or parts thereof. While this issue is only a small part of a much broader context surrounding private sector activities on the Moon and other celestial bodies, this statement is limited only to the topic of claims to private property rights to the Moon and other celestial bodies or parts thereof. . .

Article II of the 1967 Outer Space Treaty states that “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.” The object and purpose of this provision was to exclude all territorial claims to outer space, including the Moon and other celestial bodies. As of March 2004, the Outer Space Treaty has been ratified by 98 nations, and signed by an additional 27 countries. Article VI of the Outer Space Treaty provides that “States bear international responsibility for national activities in outer space, including the



Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities”, that is, private parties, and “for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty” . . .

The prohibition of national appropriation by Article II thus includes appropriation by non-governmental entities (i.e. private entities whether individuals or corporations) since that would be a national activity. . .

(Board of Directors statement, IISL, July 2004).

This statement appears to indicate that the IISL supports the position that property rights are not allowable in outer space. However, paying close attention to the note appearing at the bottom of this statement, it is clear that the IISL has created a legal loophole through which private companies can pursue hyper-privatization of space activities. The note reads:

Notwithstanding matters covered in the above Statement, the Board of Directors of the IISL recognises that other private activities on the Moon and other celestial bodies are permitted. Article VI of the Outer Space Treaty affirms that non-governmental entities, including private individuals, companies, and organizations, have the right to conduct activities in space in accordance with international space law, and subject to the authorization and continuing supervision of the appropriate State Party. The IISL plans to convene a Workshop to explore issues regarding the relationship of government and private sector in space.

This position mirrors the position taken by the U.S. regarding private property rights. In 2004 the U.S. stated its position on this issue property rights very clearly as indicated in this portion of the President’s Commission report:

The United States is signatory to many international treaties, some of which address aspects of property ownership in space. The most

relevant treaty is the 1967 UN Treaty on the Peaceful Uses of Outer Space (the “Space Treaty”), which prohibits claims of national sovereignty on any extraterrestrial body. Additionally, the so-called “Moon Treaty” of 1979 prohibits any private ownership of the Moon or any parts of it. The United States is a signatory to the 1967 Space Treaty; it has not ratified the 1979 Moon Treaty, but at the same time, has not challenged its basic premises or assumptions.

Because of this treaty regime, the legal status of a hypothetical private company engaged in making products from space resources is uncertain. Potentially, this uncertainty could strangle a nascent space based industry in its cradle; no company will invest millions of dollars in developing a product to which their legal claim is uncertain. The issue of private property rights in space is a complex one involving national and international legal issues. However, it is imperative that these issues be recognized and addressed at an early stage in the implementation of the vision, otherwise there will be little significant private sector activity associated with the development of space resources, one of our key goals.

(The President’s Commission Report on Implementation of U.S. Space Exploration Policy, 2004: 33-34).

So far, IISL members and UN COPUOS have not challenged this new policy. Yet, it seems clear that in spite of tremendous dissent within the international space law community, new actions have been taken, at both the U.S. and international level, to hyper-privatize space exploration, space resources, and outer space development and to grant property rights regarding space to private companies. This issue of property rights in outer space is difficult to see because it is buried within the well accepted issue of space commercialization and it dove-tailed into the related issue of private space tourism, which has also been well accepted by the international community. These critical insights are useful in uncovering that an exercise of power is taking place regarding outer space and the legal right to claim space territory. I argue similarly that a

textual analysis of the President's Commission report reveals plans to use the vagueness of the Outer Space Treaty of 1967 as a legal loophole to grant private property rights for corporations to portions of space territory.

### **3. Additional Space Lawmaking Actors**

In addition to the members of the UN COPUOS and the IISL, there is an addition group of academics asserting the need to hyper-privatize outer space. Whether they are members of one or both the UN COPUOS and the IISL, or whether they belong to neither group, they are active participants in the process of articulating discourse on the need to hyper-privatize outer space. Consistent with various members of the UN COPUOS and the IISL, some have participated in this debate by arguing that "appropriation" of outer space resources, by any entity or individual is prohibited and that we should not discount the Common Heritage of Mankind concept (Rana, 1994). Still, the vast majority of academics outside the UN COPUOS and the IISL are making the argument that international space law inhibits commercial development of outer space (Twibell, 1997a & 1997b). Some space law interpreters argue that space law's flaw is its uncertainty on the issue of private property rights (Zullo, 2000; Reynolds, 1992a, Reynolds, 1992b; Reynolds, 1990).

Some blame the on the Outer Space Treaty (Zimmerman, 2000; Risley, 1998; Berkley, 1997a & 1997b). Others blame the CHM principle (Cook, 1999; Keefe, 1995; Husby, 1994). Still others point the blame, for the CHM principle, on "developing countries" (Hoffstadt, 1994). Hoffstadt explicitly states (1994: 35) that it was actually the developed nations who expressed their goals to be transferring wealth and power to the developing nations and granting preferential treatment during the course of various

negotiations. The notion that the strategic use of semantics occurs in the field of politics is not novel. For instance, with the context of the concept of CHM principle, Bueckling (1979) explains that “concealing or exaggerating facts, is as old as time or language itself. Being a vehicle for social communication, language always contains elements capable of intensifying feelings and emotions” (1979: 15).

These academics have created discourse centered on calling for free marketization of international space law. Uncertainty and lack of a clear consensus on the status of the CHM principle is the general complaint. Overall many have complained in recent years that defects in international space law create investor uncertainty, and therefore inhibits or prevents commercial (code for private) space development. The overall argument is that international space law must be changed to suit the new free market Post Cold War era (Heim, 1990; Reynolds, 1990 & 1992). This literature has increased significantly over time (Husby, 1994; Hoffstadt, 1994; Heefe, 1995; Twibell, 1997; Berkeley, 1997; Risley, 1998; Cook, 1999; Pop, 2000; Zimmerman, 2000; Zullo, 2002; Ryabinkin, 2004).

Since the Common Heritage of Mankind principle may or may not be interpreted as being a part of international space law, many of these authors argue that uncertainty about international space law is disturbing because it may inhibit private-sector investments and private commercial space ventures. For example, Hoffstadt (1994: 45-46) argues that private industry, and those with capital should be allowed to take outer space energy and minerals and be allowed to use them as they see fit - in a way that benefits investors.

A textual analysis reveals another assumption – that a private enterprise is guaranteed to blossom, and investors are guaranteed to invest in commercial outer space

venture, if only the international community would dispense with or willfully agreed to ignore the “amorphous concept” of the CHM principle. Authors produces this strain of argument exhibit a tendency to treat the Common Heritage doctrine as something undesirable of a means of re-distributing property, wealth, and technology derived from the *res communis* (Reynolds, 1992). The general public’s ownership of outer space and their investments in space are not mentioned in this discourse. Many argue that to interpret space law as including the *res communis* principle would essentially have the effect of diminishing profits and discouraging the development of the outer space territory (Hoffstadt, 1994: 35).<sup>85</sup>

Today there are many academic articles asserting this argument, and they demonstrate that confusion exists on the issue of whether or not the CHM principle is part of the body of international space law. In another example of this discourse calling for changing space law to a free market direction, Berkeley (1997:2) argues that “the current public law regime in outer space retards private activity in space” and that the primary assumption is being that “these treaties block development”. In support of this argument, Berkeley explains that the field of space law was the product of the space race between the Soviet Union and the United States, as evidenced by the language contained within the key instruments which were negotiated mainly by the United Nations General Assembly and its Special Committee on the Peaceful Uses of Outer Space.<sup>86</sup> Berkley (1997: 2) puts forth the rationale that the original intent of outer space law was to regulate and determine liability for actions taken by governments or their agents in outer space – primarily to prevent or deter them from “secretly militarizing outer space”. Berkley (1997: 23) makes a similar argument. For example:

Because of its genesis in Cold War Superpower considerations of national security and the neutralization of any potential advantage that the adversary might gain, space law has a variety of substantial flaws that hobble private initiatives by businesses or individuals. Although there is a good deal of "slack" in the current body of five major treaties governing space law due to the inherent inability of a large body of States to agree upon principles that might confer advantage on adversaries or rivals, the treaties still impose substantial limitations on private enterprise in space. In its role as principal space power and expert, the United States has begun innovatively using its domestic law to fill in the gaps left by some of the purposeful vagueness of the treaties. However, it has already or will soon reach the limit of innovation before its activities begin to threaten its trading partners and rivals for the exploitation of space resources.

Those taking this position in the space law literature do not seem to realize that the Common Heritage of Mankind principle is not explicitly a part of international space law. The Moon Treaty of 1979 contains this clause, however that treaty is treated as though it is not part of international space law, due to its lack of acceptance within the international community. These examples demonstrate that there is a great deal of confusion over what space law actually states in terms of who owns outer space. Another example of confusion regarding the outer space territory involves private-sector companies who are selling and claiming parcels of land in outer space, as explained below.

#### **B. Companies Selling Space Real Estate**

In addition to producing free market discourse regarding outer space, several companies have started taking new types of action to hyper-privatize outer space. For example, in 1980, Dennis Hope sent letters to the United Nations, the United States government and the government of the former Soviet Union, notifying them that he was attempting to claim ownership of all planets in our solar system, and The Moon (not

including Earth). He assumes that because they never responded that this conveyed legal title to these territories. Therefore, for about twenty years Dennis Hope has been selling pieces of paper indicating that the purchaser has acquired plots on the Moon, Mars and other heavenly bodies. Sales apparently have been in millions of dollars. This business venture enrages most of the space law community. How can he do this if it is not “legal”? It seems that because he charges such a small fee, something like \$19.95 per 1,777 acres<sup>87</sup>, it is assumed that he isn't committing fraud because most people probably are buying the paper certificates and the novelty idea, rather than actually believing that they are making a bonafide land purchase.

Similarly, another company has taken action - Orbital Development Corporation (www.orbdev.com). This company filed a claim of ownership for a particular asteroid named EROS. Sometimes afterwards NASA landed a spacecraft on this asteroid. On February 12, 2001 NASA's unmanned Near Earth Asteroid Rendezvous Shoemaker spacecraft landed on the asteroid known as 433 Eros. A few days later, Gregory Nemitz the company founder, sent a letter to NASA which both congratulated NASA for its successful five-year 160 million mile journey, and also charging NASA twenty dollars as parking fees for landing the spacecraft on 433 Eros (Zullo, 2002; Pop, 2000). Nemitz notified NASA that his company, OrbDev, was claiming ownership and had filed a claim on March 3, 2000 with the Archimedes InstituteArchimedes Institute. Nemitz is apparently operating under the assumption that the Outer Space Treaty only explicitly prohibits nations from appropriating outer space territories. While this may seem ludicrous, it is consistent with the other actions taken by the U.S., by the UN COPUOS and by the IISL.

### **C. The International Astronautical Federation Congress**

The third international actor, that I will discuss, as being involved in the hyper-privatization of space is the International Astronautical Federation Congress. This congress is an annual event organized by the International Astronautical Federation (IAF), a non-governmental association founded in 1951 with members from 45 countries. Membership ranges from government organizations, businesses, professional associations and various other space groups. The IAF works with its associates the International Academy of Astronautics and the International Institute of Space Law to organize the annual congress. Each year a world-wide network of space experts met in a different country to receive information disseminated through the IAF congress.

After attending several congresses and reviewing various materials distributed at these events, as well as the conference programs from 2002, 2003, 2004, 2005 and 2006, it can be argued that this key international organization is playing an indirect role in the hyper-privatization of space. Increasingly the annual the annual IAF Congress includes more formal discussions about private-sector participation. In addition, sponsorship by various corporations and session themes demonstrate that a main function of this annual event is to influence the international community to continue to gradually accept increased commercialization and increased privatization of space. For example, the 53<sup>rd</sup> annual congress in Houston Texas called “The New Face of Space” was sponsored, in part by The Boeing Company, Lockheed Martin Space Operations, Honeywell and the American Institute on American Institute of Aeronautics and Astronautics.

There were many other sponsors in addition to these. However these were participating members in the space super coalitions who lobbied for the hyper-privatization of space, mentioned in the previous section. In addition, as part of the IAF



congress in Houston, many panel sessions and presentations were centered on commercialization and privatization issues. For example, “Commercialization of Space Activities/New Business Opportunities”, “Economics and Commercialization of Space Activities Symposium”, “Launch Vehicles’ Cost Engineering Competitiveness, Launch Market Outlook”, “Space Tourism and other Novel Space Applications”. Similarly, the general theme of the 54<sup>th</sup> International Astronautical Congress in Bremen Germany in 2003, entitled “new.opportunities@space” further demonstrates that the IAF congress is further stimulating acceptance of increased commercialization and privatization of space. One of the major plenary sessions was entitled “Space Business: Emerging Profitability in Space” and other panel sessions were entitled “Space Commercialization and Legal Regulation”, “Space Tourism: A New Opportunity to Manage the Risks”, “Legal Parameters of Space Tourism”. As a further testament to the growing subtle promotion of hyper-privatization of space, the 55th IAF congress in Vancouver, Canada was themed “Infinite Possibilities – Global Realities”, Chairing the “Strategies to Establish Lunar Colonization” was William H. Siegfried of The Boeing Company. Another example was the panel on “Maximizing Both Public and Private Economic Benefits from Space” dealt specifically with the issue of profitability of space commercialization and the involvement of the private sector.

The 2005 IAF Congress in Fukuoka, Japan, “Space for Inspiration of Humankind” featured a special plenary event “Birth of the Personal Spaceflight Revolution” moderated by many of the top business moguls who have turned their sights on space. These included Dr. Peter Diamandis, Chairman and Founder of the X Prize Foundation; Eric Anderson, President and CEO of Space Adventures, Ltd, Anousheh

Ansari, Co-Founder of Prodea, Inc. (linked to the Ansari X Prize private spaceship competition), Takafumi Horie, CEO and President of Livedoor Co., and Professor Patrick Collins, Professor of economics at Azabu University in Japan and Space Tourism Expert. With the exception of Professor Collins these panel members are indicated in Table 5.3, Table 5.4, Table 5.5 or Table 5.6, as members of the space transnational capitalist class who are taking political action to hyper-privatize outer space.

The above sections show how the hyper-privatization initiative has been facilitated through what Cox explains as the process through which “international institutions embody rules which facilitate the expansion of the dominant economic and social forces but which at the same time permit adjustments to be made by subordinated interests with a minimum of pain” (Cox, 1993: 62). All of these actions, when read together can be explained with Gramscian analysis, which provides a unique vantage point from which to analyze the outer space development regime in the third epoch. Cox (1993: 62) explains these forces features by suggesting that international organizations create and maintain the laws and polices which facilitate and become mirrors of “expansive hegemonic world orders” (Cox, 1993: 62). In case, applying Cox (1993) would involve considering the ways in which globalization and as rise in the dominance of free market ideology have impacted the rules, laws and norms within the outer space development regime. For example, the members of the International Federation Congress, including companies and various other institutions, have increasingly used privatization and commercialization themes as norms at the annual conferences, thereby mimicking the post Cold War global order. As such, participant elites from peripheral

countries have begun to accept commercialization and privatization of outer space rather than to resist.

## CONCLUSION

A Gramscian analysis accounts for the silent influence of capital in outer space development regime change, by linking various forces, including the international ideological and political environment. Hundreds of billions of public funds have paid the up-front research and development costs for space exploration. Private-sector lobbying activities and testimonies before U.S. government hearings have influenced new policy and new law to facilitate the hyper-privatization of outer space. This will cause a silent transfer of space assets, natural resources and space territory over to a few private companies with the capital to take advantage of these new initiatives. Even though the process of granting legal property rights to public resources has begun, IR scholars are silent on this important area of development. This chapter highlighted the many invisible strategic actions taken for the express purpose of hyper-privatizing outer space to match the dominant free market mood. Although a private trip to space has been reduced substantially already, from \$20 million in 2001 to \$200,000 in 2005, only the rich can afford to take a trip to space.

More importantly, once legal rights to space resources are granted, only those with capital to taken advantage of the new politics will profit from the new space industries. This is so even though the general public paid the research and development and equipment costs for over 40 years. Therefore, actions taken today are distinct from those taken in the first and second epochs in following ways: 1) a myriad of new space laws and policies have been created in rapid succession for the encouragement of private-

sector participation in a newly proposed free market approach to outer space development; 2) high profile millionaires and billionaires are taking highly publicized actions to create a new image in the public mind for outer space is a place for joyrides and thrill seeking adventure and as an untapped territory with unlimited potential for wealth creation that can benefit everyone; 3) actions are in place to popularize private, for-profit space travel at the cultural level; 4) private actors such as new space entrepreneurs along with established space corporations have been taking bold new types of actions to get government to approve the development of outer space, for private-sector profit; 5) private-sector entrepreneurs, corporations and space organizations have started to combine their efforts. In recent years these space groups, organizations, corporations and individuals have been organizing into coalitions who then take political action such as lobbying Congress to draft bills and pass laws that contain a free market theme to promote the further commercialization and privatization of outer space. These efforts are proving to be extremely successful as evidenced by a new wave of laws and policies matching the wish-lists of space activists from the private-sector; 6) President George W. Bush has taken distinctly new actions in articulating a new vision for U.S. space exploration policy.

The new policy authorizes a new U.S. Space Transportation Policy, and it created the President's Commission on Implementation of United States Space Exploration Policy to provide recommendations concerning the implementation of the new vision for space exploration activities of the United States; 7) space transportation systems are becoming faster and more advanced through private funding, which was encouraged by government incentives; and 8) the apparatus of the state has recently started the process

of encouraging private-sector participation in exploration missions. This includes a Presidential Commission mandate to "transform NASA" and to allow greater participation and investment from entrepreneurs and the private-sector. Using a Gramscian analysis points the focus to the politics involved with these collective actions by a dominant group, using institutions in order to pursue private property rights regarding outer space.

## ENDNOTES

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<sup>1</sup> This term space transnational capitalist class is being used similar to Leslie Sklair (2001) *The Transnational Capitalist Class* wherein he explains that what binds the members of the transnational capitalist class together is their common interest in the protecting property rights of private individuals, and to accumulate capital and property without little or not government interference. I've altered the term by adding the word "space" (*space* transnational capitalist class).

<sup>2</sup> Id.

<sup>3</sup> This is a common term used to space enthusiasts. See Berinstein (2000) in *Making Space Happen: Private Space Ventures and the Visionaries Behind Them.*

<sup>4</sup> This is problematic since the grant of ownership rights to outer space including the Moon or any other celestial bodies, arguably contradicts legal norms established by international law. During the first epoch, international space law treaties and UN declarations agreed upon by an international community of approximately a hundred nations, deemed the outer space territory as a public or commons territory. The international community of nations specifically granted freedom to use outer space to the *province of mankind*, and determined that any such uses would be for the benefit of all mankind.

<sup>5</sup> The President's Commission on Moon, Mars and Beyond held a series of five hearings: February 11, 2004 in Washington, D.C.; March 3-4, 2004 at Wright-Patterson Air Force Base; March 24-25, 2004 in Atlanta, Georgia; April 15-16, 2004 in San Francisco, CA 94109; and May 3-4, 2004 in New York. See [www.moontomars.org](http://www.moontomars.org).

<sup>6</sup> See the President's Commission on Moon Mars and Beyond at [www.moontomars.org/notices/contact/asp](http://www.moontomars.org/notices/contact/asp).

<sup>7</sup> Pursuant to Executive Order 13326 of January 30, 2004 (signed February 3, 2004) the President established the Commission to provide recommendations on how to carry out the goals of the new policy. This Commission, made up of corporate, military and

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academic elites, held hearings during 2004, which resulted in the publication of the Commission Report that outlines the steps which will need to be taken to hyper-privatize outer space development.

<sup>8</sup> Report of the President's Commission on Implementation of United States Space Exploration Policy, "A Journey to Inspire, Innovate and Discover" (ISBN 0-16-073075-9, U.S. Government Printing Office, Washington, D.C.).

<sup>9</sup> The term *in situ* means natural resources located on the Moon, asteroids, planets or any other location in outer space. Publicly funded government missions and space equipment over the years have successfully located abundance quantities of a vast variety of minerals and metals - in higher concentrations than found on Earth. Some are unique and only found in space. Others have drastically higher market values than similar metals and minerals found on Earth. For example, gold, iridium, osmium, aluminum, iron, platinum and other natural resources have been found to exist in outer space. For more information go to [www.nasa.gov](http://www.nasa.gov).

<sup>10</sup> Before the announcement of the President's new vision, NASA's five-year budget plan was \$86 billion. The agency received approximately \$15.4 billion in 2004, and the original plan have factored in an average annual growth rate of 3.5 percent to account for inflation plus "a little bit extra". The new plan provides a five-percent growth rate for the first three years and one percent for the following two years. This amounts to an additional \$1 billion over five years Id.; <http://www.whitehouse.gov/news/usbudget/budget-fy2004/nasa.html>. Also see Leonard David (February 5, 2002) "NASA To Go Nuclear; Spaceflight Initiative Approved", *SPACEe.com* at [http://www.space.com/news/nasa\\_nuclear\\_020205](http://www.space.com/news/nasa_nuclear_020205); Source: SpaceRef.com (January 14, 2004) at <http://www.spaceref.com/news/viewstr.html?pid=11524>.

<sup>11</sup> National Aeronautics and Space Administration Authorization Act of 2005, Public Law 109-155 (109<sup>th</sup> Congress, 1<sup>st</sup> Session); former Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005 was approved by the House with bipartisan support. In delivering a speech on the House floor in support of this bill, Representative Calvert indicated that the bill "represents the first time that the President's Vision for Space Exploration has been fully endorsed by both Houses of Congress . . .". See "NASA Authorization Act Headed to the President's Desk", December 22, 2005 press release by Representative Calvert at [spaceref.com/news](http://spaceref.com/news).

<sup>12</sup> The United States House of Representatives, "The Legislative Process", 109<sup>th</sup> Congress 2<sup>nd</sup> Session at [http://www.house.gov/house/Tying\\_it\\_all.shtml](http://www.house.gov/house/Tying_it_all.shtml).

<sup>13</sup> Congressman James L. Oberstar (Minnesota) on February 8, 2005 introduced H.R. 656 which voiced a concern for "enhancing the safety of the [private] commercial human space flight industry". As of this date, there are no co-sponsors. The bill has been referred to the Subcommittee on Space and Aeronautics.

<sup>14</sup> For more information see <http://www.spacefuture.com/tourism/timeline.shtml>.

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<sup>15</sup> See [www.xprize.org](http://www.xprize.org).

<sup>16</sup> *Business Wire* (December 17, 2003).

<sup>17</sup> This is an international competition open to all teams. Some teams have hired rocket scientists, and others are operating on a shoestring fueled by hobbyists and tinkerers. Currently there are 26 teams from 7 nations actively involved in winning this competition. This competition is said to follow the pattern of more than 100 aviation incentive prizes offered between 1905 and 1935, which created today's multibillion-dollar air transport industry. For instance, in 1927, Charles Lindbergh competed in a \$25,000 aviation prize and won when he was the first to fly solo across the Atlantic Ocean. Dr. Peter Diamanis, Chairman of the X PRIZE Foundation explains that Lindbergh's flight "was a mind-shift breakthrough" for the general public. The teams who were involved in the initial X Prize competition were Scaled Composites (U.S.), Armadillo Aerospace (U.S.), Canadian Arrow (Canada), Starchaser Industries (U.K.), Da Vinci Project (Canada), Pablo De Leon & Associates (Argentina), High Altitude Research Corporations (U.S.), Aeronautics & Cosmonautics (Romania), Advent Launch Services (U.S.), IL Aerospace Technologies (Israel), Interorbital Systems (U.S.), Space Transport (U.S.), American Astronautics (U.S.), Acceleration Engineering (U.S.), Bristol Spaceplanes, Ltd. (U.K.), Discraft Corporation (U.S.), Flight Exploration (U.K.), Fundamental Technology Systems (U.S.), Kelly Space and Technology (U.S.), Lone Star Space Access Corporation (U.S.), Micro-Space, Inc. (U.S.), Pan Aero, Inc. (U.S.), Pioneer Rocketplan, Inc. (U.S.), Suborbital Corporation (Russia), TGV Rockets (U.S.), Vanguard Spacecraft (U.S.). For more information or an update on current X Prize events go to <http://www.xprize.org>.

<sup>18</sup> New Mexico won the bid to host the X Prize Annual Cup in May of 2003 and has established itself as the "premier inland spaceport". Florida, California and Oklahoma were also bidding to host the annual competition. The Governor of New Mexico announced that "New Mexico has officially won its bid to host the X PRIZE CUP, an international space exhibition destined to energize the state's economy through tourism, global public interest and significant job growth". See Press Release of May 11, 2004, "New Mexico Wins Bid to Host X Prize" at [http://www.edd.state.nm.us/PRESS/news.php?\\_fn=view&\\_rn=20001385](http://www.edd.state.nm.us/PRESS/news.php?_fn=view&_rn=20001385).

<sup>19</sup> Nathan Horsley (November 22, 2004) "The Costs and Benefits of Less-Than-Perfect Legislation", *The Space Review: Essays and Commentary About the Final Frontier* at <http://www.thespacereview.com/article/275/1>. Also see Charity Trelease Ryabinkin (Winter 2004) "Let There Be Flight: It's Time to Reform the Regulation of Commercial Space Travel" 69 *Journal of Air Law and Commerce*: 101.

<sup>20</sup> Nathan Horsley (November 22, 2004) "The Costs and Benefits of Less-Than-Perfect Legislation", *The Space Review: Essays and Commentary About the Final Frontier* at <http://www.thespacereview.com/article/275/1>.

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<sup>21</sup> The Commercial Space Launch Amendments Act of 2004, Public Law 108-492; The passage of this law by Congress and the signing by the President resulted after consistent and sustained submission of a series of bills and revised bills over several years backed by lobbying efforts on the part of space organizations and space advocates. For example, former bills included H.R. 5382 and H.R. 3752. For further readings see Charity Trelease Ryabinkin (Winter 2004) "Let There Be Flight: It's Time to Reform the Regulation of Commercial Space Travel" 69 *Journal of Air Law and Commerce*: 101.

<sup>22</sup> Consistent with the burgeoning needs of the commercial, the private space tourism industry will involve sending manned vehicles regularly back and forth from Earth into outer space. The current spaceport infrastructure is equipped to deal with unmanned commercial launches and test flights, but not yet for regularly-scheduled, manned commercial space flights. This was the main discussion during the U.S. House Aviation Subcommittee hearing on February 8, 2005. See House Transportation Committee press release of February 7, 2005, "Future of Commercial Space Transportation to be Focus of Congressional Hearing" at [www.comspacewatch.com](http://www.comspacewatch.com). Retrieved May 17, 2005.

<sup>23</sup> Space tourism is estimated to be a 10 billion dollar plus industry. Many people have expressed an interest through surveys which indicates that they would visit space if given the opportunity. Space tourism involves the notion that space is a place for laypeople (non astronauts) to visit and enjoy by traveling there. This includes parabolic and suborbital flights, going into orbit (like the international space stations), or traveling to asteroids, The Moon, Mars or elsewhere. Space tourism includes suborbital day trips (joyrides), short stays in space-based facilities (low Earth orbit) and longer stays in space – further into space or on other celestial bodies.

<sup>24</sup> These quotes were taken from the Space Adventures website at [www.spaceadventures.com](http://www.spaceadventures.com). Retrieved December 14, 2004.

<sup>25</sup> Id.

<sup>26</sup> National Aeronautics and Space Administration Authorization Act of 2005, Public Law 109-155 (109<sup>th</sup> Congress, 1<sup>st</sup> Session); former Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005 was approved by the House with bipartisan support. In delivering a speech on the House floor in support of this bill, Representative Calvert indicated that the bill "represents the first time that the President's Vision for Space Exploration has been fully endorsed by both Houses of Congress . . .". See "NASA Authorization Act Headed to the President's Desk", December 22, 2005 press release by Representative Calvert at [spaceref.com/news](http://spaceref.com/news).

<sup>27</sup> The President's Commission on Implementation of United States Space Exploration Policy is often called "The Aldridge Commission".

<sup>28</sup> See [www.xprize.org](http://www.xprize.org).



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<sup>29</sup> *Business Wire* (December 17, 2003).

<sup>30</sup> Doyle refers to U.S. Senate, *Documents on International Aspects of the Exploration and Use of Outer Space, 1954-1962*, a Staff Report prepared for the Senate Committee on Aeronautical and Space Sciences, May 9, 1963, GPO, Washington, D.C. at pp. 51-52, 55-56, 62-64, and other communications in those pages for examples of letters exchanged between U.S. President Dwight Eisenhower and U.S.S.R. Premier Bulganin. See also C.Q. Christol, *The Modern International Law of Outer Space*, 12-14 (New York: Pergamon Press, 1982); A.G. Haley, *Space Law and Government*, 313-314 (New York: Appleton Century Crofts, 1963) and M.S. McDougal, H.D. Lasswell and I.A. Vlasic, *Law and Public Order in Space*, 205-210 (New Haven: Yale University Press, 1963).

<sup>31</sup> Id.

<sup>32</sup> This requirement of international space law that the launching state authorize all activities in outer space is fulfilled by the FAA AST's role. Article VI of the Outer Space Treaty of 1967, in addition to other provisions, provides that "activities of non-governmental entities in outer space" "shall require authorization and continuing supervision by the appropriate State Party to the Treaty". Article VI, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

<sup>33</sup> The Commercial Space Launch Act of 1984 ("the Act"); as codified at 49 U.S.C. Subtitle IX--Commercial Space Transportation, Ch. 701, Commercial Space Launch Activities, 49 U.S.C. 70101-70119 (1994), provided a government office to oversee licensing issues regarding private spacecraft. The FAA has primary responsibility for the safety of civil aviation<sup>33</sup>. The FAA has seven lines of business, one of which is commercial space transportation. Through this line of business, the agency regulates and promotes the U.S. space transportation industry. The FAA licenses commercial launches and reentries and launch and reentry site operations. The FAA's Associate Administrator for Commercial Space Transportation (AST) oversees space-related activities within the FAA. Federal Aviation Administration Associate Administrator for Commercial Space Transportation website <http://ast.faa.gov/about.cstl>. Retrieved July 2, 2006.

<sup>34</sup> Id.

<sup>35</sup> These quotes were taken from the U.S. Chamber of Commerce, Space Enterprise Council's website at [www.uschamber.com/space](http://www.uschamber.com/space), pg. 1. Retrieved June 14, 2004.

<sup>36</sup> Id.

<sup>37</sup> Id.

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<sup>38</sup> U.S. Chamber of Commerce press release, “.S. Chamber Applauds White House Space Initiative Chamber's Space Enterprise Council Welcomes New Vision”, January 15, 2005 at [www.uschamber.com/press/releases/2004/january/04-03.htm](http://www.uschamber.com/press/releases/2004/january/04-03.htm). Retrieved July 7, 2007.

<sup>39</sup> ProSpace, Inc. website [www.prospace.org](http://www.prospace.org). Retrieved June 4, 2006.

<sup>40</sup> Id.

<sup>41</sup> The ProSpace, Inc. March Storm lobby is also pressing for the passage of the Invest in Space Now Act (H.R. 2358) and the Zero Gravity Tax Act (H.R. 914).

<sup>42</sup> President’s Commission on Implementation of United States Space Exploration Policy Hearing, Public Meeting Minutes, Atlanta, Georgia, March 24-25, 2004.

<sup>43</sup> See Report of Michelle Robbins, Co-Chair, Coalition for Space Exploration, February 1, 2005, “Government Affairs Report” at <http://www.globalsecurity.org/space/library/report/2005/robbins>.

<sup>44</sup> According to the Coalition for Space Exploration website accessed on 6/8/06 the following state entities have passed state resolutions in support of the President’s New Vision for Space Exploration policy: Alabama Senate, Aerospace States Association, Brevard County in Florida, California Assembly, Georgia Governor, Hawaii Governor, Kansas Senate, Louisiana House, Louisiana Senate, Mississippi House, National Lieutenant Governor's Association, Ohio Senate, Pennsylvania House, South Carolina General Assembly, Texas Senate, and the Utah Governor.

<sup>45</sup> Coalition for Space Exploration website <http://www.spacecoalition.com> (accessed 6/8/06).

<sup>46</sup> Space Foundation website at <http://www.spacefoundation.org>.

<sup>47</sup> Coalition for Space Exploration website at [http://www.spacecoalition.com/docs/2005\\_gallup\\_news\\_release.pdf](http://www.spacecoalition.com/docs/2005_gallup_news_release.pdf) (accessed 6/8/06).

<sup>48</sup> National Space Society press release, “Space Exploration Alliance to Mobilize ‘Moon-Mars Blitz’ on Capitol Hill”, dated May 17, 2004 at <http://www.nss.org/news/releases/pr20040517.html> (accessed 5/28/005).

<sup>49</sup> U.S. House of Representatives, Committee on Science, Subcommittee on Space & Aeronautics hearing, “The National Aeronautics and Space Administration Authorization Act of 2005”, June 29, 2005, 109<sup>th</sup> Congress, 1<sup>st</sup> Session National Aeronautics and Space Administration Authorization Act of 2005, Public Law 109-155 (109<sup>th</sup> Congress, 1<sup>st</sup> Session); former Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005 was approved by the House with bipartisan support. In delivering a speech on the House floor in support of this bill, Representative Calvert indicated that the bill "represents the first time that the President's Vision for Space Exploration has been fully endorsed by both Houses of Congress . . .". See "NASA Authorization Act Headed to the

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President's Desk", December 22, 2005 press release by Representative Calvert at [spaceref.com/news](http://spaceref.com/news).

<sup>50</sup> See *A Space Frontier Agenda*, testimony before The House Subcommittee on Space and Aeronautics, October 1, 1998. Rick N. Tumlinson, President of the Space Frontier Foundation argued before Congress that the high cost of access to space is the main obstacle to allowing outer space to be for all people.

<sup>51</sup> The U.S. government had not at this point endorsed private space travel. Dennis Tito had to pay the Russians the \$20 million dollars, and NASA officials were in disagreement. Space entrepreneurs seemed to suggest that they would start launching their private space vehicles from other countries if the United States did not lighted up its strict restrictions regarding private space tourism. See *Making Space Happen: Private Space Ventures and the Visionaries Behind Them* by Paula Berinstein (2002). The FAA did just that in 2004. After much lobbying activities, the Commercial Space Launch Amendments Act of 2004 was passed allowing private space travel.

<sup>52</sup> Dr. Buzz Aldrin, President, Starcraft Enterprises, Ph.D. in Aeronautics from MIT, served as a USAF Bomber Pilot in the Korean War and a NASA astronaut in both the Gemini and Apollo programs; Dr. Lawrence M. Krauss, Chairman of the Department of Physics, Case Western Reserve University and the author of over 170 scientific publications and several acclaimed popular books, including the national bestseller *The Physics of Star Trek*; Dr. Wesley T. Huntress, Director of the Carnegie Institution's Geophysical Laboratory, earned his BS in Chemistry at Brown University and his Ph.D. in Chemical Physics at Stanford University, past Associate Administrator for Space Science at NASA; and Mr. Allen Steele, author of a large number of science fiction books, received his BA in Communications from New England College and his MA in Journalism from the University of Missouri. See Hearing transcript of the U.S. House of Representatives Subcommittee on Space and Aeronautics Hearing, 107<sup>th</sup> Congress, 1<sup>st</sup> Session, "Vision 2001: Future Space", April 3, 2001, [www.house.gov](http://www.house.gov), and "Space Tourism" Hearing, Committee on Science, Subcommittee on Space and Aeronautics, 107<sup>th</sup> Congress, 1<sup>st</sup> Session. June 26, 2001.

<sup>53</sup> Testimony of Elon Musk, House of Representatives, Committee on Science, Subcommittee on Space & Aeronautics Hearing Transcript, April 20, 2005, 109<sup>th</sup> Congress, 1<sup>st</sup> Session (p. 1).

<sup>54</sup> Dr. Peter Diamandis serves as the Chairman of ZeroGravity Corporation, a commercial space company developing private spaceships. More recently Dr. Diamandis serves as the Chairman of the X Prize Foundation.

<sup>55</sup> "Space Tourism Proponents Hold Congressional Hearing Charter: 'Commercial Human Spaceflight' Before the U.S. Congress and the U.S. Senate", U.S. House of Representatives, Hearing Charter, Commercial Human Spaceflight, July 24, 2003, Senate Committee on Commerce, Science & Transportation Subcommittee on Science, Technology, and Space and the House Committee on Science, Subcommittee on Space &

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Aeronautics Joint Hearing on Commercial Human Spaceflight Thursday, July 24, 2003; See SpaceRef.com, Status Report, July 24, 2003 at <http://www.spaceref.com/news/vewsr.html?pid=9844>.

<sup>56</sup> Id.

<sup>57</sup> Id.

<sup>58</sup> See Leonard David (June 20, 2004) "Paul Allen: Private Spaceflight's Financier" at SPACE.com. Retrieved on January 13, 2007.

<sup>59</sup> See SpaceDev, Inc. press release, "SpaceShipOne: History's First Private Manned Space Program" at [www.spacedev.com](http://www.spacedev.com).

<sup>60</sup> See SpaceDev, Inc. press release on January 24, 2005, "SpaceDev CEO Joins California Space Authority Board of Directors" at <http://www.spacedev.com>.

<sup>61</sup> Id.

<sup>62</sup> Michael Belfiore March 2005) "Space Hotel 2010, A Vegan Mogul Has Grand Plans for Your Next Big Vacation: The Five-Billion-Star Hotel" *Popular Science*, pp. 50-57 & 87).

<sup>63</sup> Leonard David (June 17, 2004) "Armadillo Scores Test Liftoff Success in Bid for X Prize" SPACE.com. Retrieved January 13, 2007.

<sup>64</sup> Joe Firmage's website <http://www.firmage.org>. Retrieved January 13, 2007.

<sup>65</sup> For more detailed information see the SpaceX website at [www.spacex.com](http://www.spacex.com).

<sup>66</sup> For more information on the history, membership or workings of the UN COPUOS and its two subcommittees (in addition to the Legal Subcommittee there is also a Technical Subcommittee) see <http://www.unoosa.org>.

<sup>67</sup> Report (A/AC.105/871) of the Legal Subcommittee on its Forty-Fifth Session, Vienna Austria, April 3-13, 2006, United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, pg. 26.

<sup>68</sup> This issue was placed on the agenda of the Legal Subcommittee in 1988 by a group of up nine developing countries<sup>68</sup> (Benkö & Schrogl, 1997: 140). Counter proposals were submitted by industrialized nations in 1995. In 1996 the two proposals were merged and a compromise was made resulting in UN Resolution 51/122, "The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries December 13, 1996.

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<sup>69</sup> Proceedings of the United Nations/Republic of Korea Workshop on Space Law on the Theme "United Nations Treaties on Outer Space: Actions at the National Level", Report A/AC.105/814, United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, Daejeon, November 3-6, 2003.

<sup>70</sup> Id.

<sup>71</sup> Id.

<sup>72</sup> Proceedings of the United Nations/Brazil Workshop on Space Law on the Theme "Disseminating and Developing International and National Space Law: The Latin America and Caribbean Perspective", Rio de Janeiro, Brazil, November 22-25, 2004 at [http://www.unoosa.org/pdf/publications/st\\_space\\_28E.pdf](http://www.unoosa.org/pdf/publications/st_space_28E.pdf).

<sup>73</sup> United Nations, General Assembly Report (A/AC. 105/847) o the United Nations/Brazil Workshop on Space Law on the theme "Disseminating and Developing International and National Space Law: The Latin America and Caribbean Perspective", February 8, 2005 at 5-6).

<sup>74</sup> Proceedings, United Nations/Nigeria Workshop on Space Law, "Meeting International Responsibilities and Addressing Domestic Needs", United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, Abuja, Nigeria, Report A/AC.105/866, November 21-24, 2005.

<sup>75</sup> I also attended the United Nations Committee on Peaceful Uses of Outer Space, Legal Subcommittee 46<sup>th</sup> annual session from June 6-9, 2003 in Vienna Austria, and this specific issue was not discussed.

<sup>76</sup> Kelly M. Zullo (2002) "The Need to Clarify the Status of Property Rights in International Space Law" Volume 90 *The Georgetown Law Journal*, 2414 at 2424-2425; Virgiliu Pop (November 2000) "Appropriation in Outer Space: The Relationship Between Land Ownership and Sovereignty on the Celestial Bodies" Volume 16: Issue 4 *Space Policy*, 275-282; Nicolas Mateesco Matte (1984) "Space Activities and Emerging International Law" Report of a major research conducted by The Centre for Research of Air and Space Law, McGill University, p. 279-281.

<sup>77</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 (The Outer Space Treaty of 1967).

<sup>78</sup> Pat Dasch, Michael Martin Smith, and Anne Pierce Director of Programs, National Space Society (1999) "Conference of Space Property Rights: Next Steps", p.174-178 and Wayne White, Jr. "Implications of a Proposal for Real Property Rights in Outer Space" p. 366-372, *Proceedings of the 42<sup>nd</sup> Colloquium on the Law of Outer Space*.

<sup>79</sup> Id.

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<sup>80</sup> Wayne White, Jr. "Proposal for a Multilateral Treaty Regarding Jurisdiction and Real Property Rights in Outer Space" p. 245-253, *Proceedings of the 43<sup>rd</sup> Colloquium on the Law of Outer Space*, 2000.

<sup>81</sup> P.M. Sterns and L.I. Tennen (2002) "Privateering and Profiteering on the Moon and Other Celestial Bodies: Debunking the Myth of Property Rights in Space" World Space Conference Paper No. COSPAR 02-A-01933, Houston Texas, October, 2002; Sylvia Ospina (2002) "The Concepts of Assets and Property: Similarities and Differences, and their Applicability to Undertakings in Outer Space", *Proceedings of the 45<sup>th</sup> Colloquium on the Law of Outer Space*; Armel Kerrest (2001) "Outer Space: Res Communis, Common Heritage or Common Province of Mankind" *Proceedings of the 10<sup>th</sup> ECSL Summer Course on Space Law and Policy*, University of Nice, France (August 27 - September 8, 2001).

<sup>82</sup> Pat Dasch, Michael Martin Smith, and Anne Pierce Director of Programs, National Space Society (1999) "Conference of Space Property Rights: Next Steps", p.174-178 and Wayne White, Jr. "Implications of a Proposal for Real Property Rights in Outer Space" p. 366-372, *Proceedings of the 42<sup>nd</sup> Colloquium on the Law of Outer Space*.

<sup>83</sup> The Common Heritage of Mankind principle is derived from the Roman law concept, *res communis*, which that certain property shall be treated as community property - it cannot be owned by any person(s), state, any other entity or combination of entities (Heim, 1990) has been consistently attacked and problematized as a barrier to outer space development. Many argue that the CHM concept is preventing outer space development, this body of treaties making up international space law does not explicitly contain the Common Heritage of Mankind principle. Instead, the Outer Space Treaty of 1967 uses the term "Province of Mankind" in lieu of Common Heritage of Mankind concept, and that this substitution was done deliberately by the framers of the Outer Space Treaty to avoid conflict and delays in signing the treaty. Contrarily, the Moon Treaty does explicitly contain the CHM principle, however, many experts on space law do not view the Moon Treaty of 1979 (the last in a series of five international space law treaties) as part of international space law since it was never really accepted by the international community. Unlike the indirect reference to the Common Heritage doctrine in the Outer Space Treaty, the Moon Treaty explicitly designates the Moon and its natural resources as part of the CHM. These two key points are not clear are usually blurred in the discourse calling for the free marketization and issuance of private property rights for outer space.

<sup>84</sup> <http://www.iafastro-iisl.com>.

<sup>85</sup> Hoffstadt at note 172 quotes Raclin as stating "[The developing nations seek to] effect the transfer of wealth . . . from the industrialized countries to the developing countries."; Grier C. Raclin, "From Ice to Ether: The Adoption of a Regime to Govern Resource Exploitation in Outer Space," *NW Journal of International Law and Business* 7 1986, 727.

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<sup>86</sup> See Edwin W. Parson, III, "Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development." *Michigan Journal of International Law* 14 1993, 487 (1993); United Nations Office out Outer Space Affairs in Vienna at <http://www.un.or.at/oosa-kiosk/>.

<sup>87</sup> For more information see [www.scifidimensions.com/Feb01/dennishope.htm](http://www.scifidimensions.com/Feb01/dennishope.htm). Retrieved March 17, 2004.

## CHAPTER SIX

### CULTURAL ASPECTS OF SPACE HYPER-PRIVATIZATION: ENSURING CONSENT

This chapter demonstrates the various activities which organic intellectuals have participated in order to legitimize the hyper-privatization of outer space development, and to produce public consent. It highlights the relationship between the state and civil society in accordance with a Gramscian analysis, which allows for a wider conception of the state than mainstream approaches to international relations. This chapter develops the links between private capital and the "extended state". My focus is on the production of consent and I analyze various plans for ensuring that the general public will view hyper-privatization as being consistent with their interests. In so doing, it demonstrates how hegemony is in the process of being produced by legitimizing and justifying hyper-privatization in the minds of people. This is also referred to as institutional and symbolic coercion, which is planned to result from new employment and education initiatives, new forms of entertainment and small business prizes to garner consent. This chapter reviews and analyzing these phenomena including U.S. policy statements from the President's Commission Report on Implementation of United States Space Exploration Policy regarding changing the public's perception of space, education policy and the NASA explorers schools concept, prizes, and policy discourse regarding employment, films, popular books and magazines. Ideology is usually shaped at the cultural level. People's cultural and material worlds are usually shaped by ideology. Thus, I see the "popular cultural" efforts as critical in selling acceptance of hyper-privatization of space exploration, space resources and space territories.



Gramsci provides a flexible way of explaining how the state gets civil society to go along with its mandates, whether through coercion or consensus. This chapter discusses how distinctly different sets of discourses are used regarding the planned role of the masses/the general public in the process of hyper-privatization of space. These discourses do not promise property rights or wealth creation. Instead, the discourses outlined in this chapter promise the general public jobs, improvements in education such as adding more math, science and technology to K-12 and university education, prizes, and new types of space movies and computer video games. In addition, new legislation has authorized the creation of new jobs and prizes through a NASA Centennial Prizes program providing an initial \$100 million to be awarded as prizes for private space ventures. Many business moguls have publicly promised to provide million dollar prizes as an incentive to for companies willing to partake in hyper-privatizing outer space development. Thousands of public schools have been converted into NASA Explorer Schools. Labor has been invited to participate in the new hyper-privatization process. Celebrities and millionaires or billionaires have been featured in mass media in connection with space travel themes. As such, outer space is being represented as a fun, exciting place, soon to be open for everyone. Outer space development and private space travel are being popularized at the cultural level in both the U.S. as well as globally.

### **Insights from Gramsci and Other Approaches**

This chapter will address the efficacy of Gramsci's insights on how narratives claiming to serve, benefit or liberate the people, oftentimes are actually intended to control some people into consenting to structural changes which will ultimately place them into subjugated positions. Gramsci's contributions are specifically useful since they

allow us to explain phenomena whose importance may otherwise be overlooked. For example, in this discusses various strategies for getting the general public “excited” about the hyper-privatization of outer space, being deliberately caused at the cultural level through education initiatives, employment strategies and job creation, mass media and publicity and prizes. These efforts are being carried out by organic intellectuals for the purpose of garnering public consent to the hyper-privatization of outer space. Attempts are being made to create consensus from the general public to the hyper-privatization of space initiatives. Gramsci was concerned with how "the subaltern forces" historically tend to get "manipulated" and "rationalized to serve new ends" (Hoare & Smith, 2003: 279).

This chapter demonstrates how the progressive initiative of hyper-privatization of space by the "apparatus of state coercive power" (detailed in chapter five) is scheduled to legally "enforce discipline on groups who do not 'consent' either actively or passively" (Hoare & Smith, 2003: 12). In other words, this chapter discusses various discourses recently put into place to suggest the role of the masse regarding the New Vision for U.S. Space Exploration initiative for space hyper-privatization. Basically, as its reward for going along with the new move to hyper-privatize space, the general public will be provided with what Gramsci describes as "a whole series of jobs of a manual and instrumental character (non-executive work, agents rather than officials or functionaries)" (Hoare & Smith, 2003: 13). This notion is being presented as common sense and has been linked to jobs, education, prize money, and media representations of a new private space tourism industry. Since this seems to be shaping new popular conceptions about space development. Gramsci warned us about narratives directed at "the people", and was

suspicious of messages contained in popular culture and the mass media promising to liberate the people.

Gill & Law's (1993) framework provides a further explanation of this. For example, they assert that a “hegemonic order is one where consent, rather than coercion, primarily characterized the relations between classes, and between the state and civil society” (93). They further assert that “the power of the ruling class, or class fraction over others, was partly exercised through the state. Gill & Law (1993) essentially argue that the exercise of power, or “was not simply dominance through sanctions, punishments or inducements; it also involves ‘intellectual and moral leadership’ ”. Hegemony "was exercised within a wider social and political constellations of forces, or 'historic bloc'" (Gill & Law, 1993: 93 citing Gramsci, 1971: 182, 269). Therefore, in order to understand how power is exercised we must examine this process of securing consent from civil society. As Gramscian scholars have attested, it is necessary to go beyond a superficial understanding of people's material needs, discourse and identity construction, within the international structure. This includes an examination of "hegemony", consensual arrangements (based on both realized and publicized promises of prosperity), economics, politics, cultural, and social and institutional structures. This also involves an examination of coercion and consent.

Brilliant critical analyses exist for situations analogous to what is happening in my study. However, IR scholars have failed to make themselves aware of the hyper-privatization of outer space and the new laws and policies outlined in Chapter 5. For example James N. Rosenau, a prolific writer in IR, has written on many closely related issues. In *Distant Proximities: Dynamics Beyond Globalization*, Rosenau (2003)

examines the Post Cold War era and people, institutions and the state in light of the “epochal transformation” driven by scientific and technological advances. More recently Rosenau (2006) in *Global Capitalism, Democracy and Civil-Military Relations in Columbia*, examines the theory of global capitalism and focuses on contradictory outcomes of “democratic” and economic reforms. In *On the Cutting Edge of Globalization*, Rosenau, Ferguson and Earnest the authors examine the implications stemming from the way globalization has been promoted by diverse groups of elites including public officials, CEOs, technologists, academics, activities, artists and others in society. In *International Regimes for the Final Frontier*, although M. J. Peterson and James N. Rosenau (2005) apply IR theory to outer space regimes and argue that there is a gap in IR theory to such an extent that it is difficult to explain outer space regimes, they limit their analysis to the 1<sup>st</sup> and 2<sup>nd</sup> epoch (1958-1988).

Cynthia Weber (2005 & 2001) argues that the importance of the role played by popular culture is typically undervalued in international relations scholarship. In *Imagining America at War: Politics, War and Film*, Weber (2005) points out the link between film and politics and treats 9/11 as a watershed moment, demonstrating that ten films released after this date are linked to politics. Similarly Jutta Weldes (1999) adds a critique on how the U.S. constructs national interest to suit the political aims of elites in positions of power, and in *To Seek Out New World: Exploring Links Between Science Fiction and World Politics*, Weldes (2003) examines the links between international politics and sci-fi. Weldes (2003) provides a discursive analysis of sci-fi films such as *Blade Runner*, *Star Trek* and *Buffy the Vampire Slayer* and highlights the relationship between representations in film and world politics. Other IR scholars have written similar

pieces, deconstructing power representations involved in sci-fi films. For example, Mark Hamilton (2006), in “Intergalactic Relations and the Politics of Outer Space: Policy Lessons from Science Fiction and Space Fantasy” examines *Battlestar Galactic*, *Stargate SG-1*, and *Stargate Atlantis* critically examines conquest themes, power, otherness, empire, genocide, hyper-sexuality, the “Western modernizing project” among other phenomena, arguing that there is a link between sci-fi and international politics. Consistent with these theorists, in this chapter, I discuss how these links get articulated, planned and carried out in outer space development in ways that are exciting to the general public. This chapter reveals a new political process which has only begun, currently elites in positions of power have articulated plans on how to represent outer space in a new way to the general public. This includes new types of films, which are different from Star Trek and Star Wars, computer games, monetary, prizes highly publicized trips to space, jobs and new education programs.

### **Imagining Outer Space in New Ways: Manufacturing Consent**

#### **A. Old Representations: Sci-Fi and the 1950-1990s**

Critical IR scholars have analyzed the politics of outer space and representations in film. For example, Weldes (2003) suggests that historically, space movies have mirrored the politics of outer space development. However, Weldes exhibits a tendency to limit the focus regarding outer space to the first and second epochs of outer space development. There is a strong tendency to deconstruct the politics of President’s Eisenhower, Kennedy and Reagan, but they stop there. For example during the Cold War period space movies created fears and insecurity about outer space. In the 1950s we were living in a “fear of war” era and space movies served to help frighten the general public

with movies like: *Teenagers from Outer Space* (1959), *Killers from Space* (1954), *Destroy All Planets* (1968), *Killer Klowns from Outer Space* (1988), *Mars Attacks* (1996), *Invaders From Mars* (1953), *Mars Needs Women* (1966), *Robot Monster* (1953) or *Devil Girl From Mars* (1954). A common theme with the initial space films for example, *War of the Worlds* was that outer space meant invasion by weird far out creatures who wanted to do us harm.

Other sci-fi themes emerged inspired by the feel good 1960s and the 1970s - a time when peace, cooperation and goodwill were international themes. This was also the high-time of international space law making with the creation of five international space law treaties. Space movies that were produced reflected this mood. These movies included for example, sweet childlike creatures that, though feared, proved that they could be trusted and just wanted to communicate with us. Prime examples include *ET* (1982) and *Close Encounters of the Third Kind* (1977).

During the 1980s through the 1990s most space movies reflected the geo-politics of the fear of nuclear war between the U.S. and Soviet Union. Most plots dealt with the plots involving disaster, tribulation, and terrible deaths. The plots involved devils, demons, bug-like aliens, evil animals, murderous computers and so on killing the cast. These movies made going to space frightening and undesirable. For example, *Predator* (1987), *Total Recall* (1990), *Battlestar Galactica* (1979) and *Moonraker* (1988) contained these themes. Another example, *SpaceCamp* (1986) involves an adventure where a group of kids attending summer space camp, accidentally get launched into outer space during a routine tour of NASA. Although it has a positive ending, the cast goes through a series of life threatening near disasters – one after the other.

Most of the new movies of the 21<sup>st</sup> century are similar to the old ones - they serve to deter the general public from wanting to have anything to do with outer space. The movie *Red Planet* (2001) takes place in 2057, and the Earth is dying. So, humankind sets out to colonize Mars. A scout team is sent to scope out the possibilities for sustaining life on Mars. Disaster strikes, the Commander stays behind while the others evacuate to Mars. The base structure on Mars containing all the necessities of life has been destroyed. The remaining crew (one died as the result of a spleen injury sustained on impact) fights for air, fight each other, fight the elements, and fight AMEE - a multifunctional robo-assistant which has malfunctioned into a killing machine. Val Kilmer (a crew member) speaks of Mars using four letter words regularly. Thanks to an old Russian Cosmos spacecraft, the one surviving crewmembers is able to rendezvous with the Commander (who has remained in the main spaceship orbiting Mars). After Kilmer survives AMEE, explosions, man-eating insects, and being unconscious, the Commander resuscitates him - saving his life and they appear to live happily ever after – after tons of death and disaster.

The implications of these types of storylines is that the general public would rather stay home than to experience this sort of hell attached to space travel. *Armageddon* (1998) and *Mission to Mars* (2000) also demonstrate this point. I realize space travel bears enormous risks; however, I also realize that the motion picture industry knows how to glamorize or demonize phenomena by either highlighting the pleasures and thrills or by ignoring negative aspects of space travel and outer space development. That's the usual pattern of entertainment. Not with space travel though. Motion pictures dealing

with space themes tend to focus almost exclusively on risks, dangers and hazards involved with space travel.

## **B. Changing Public Perceptions about Space**

### **1. New Movies**

Elites have determined that a new type of movie about space travel is necessary in order to get the general public “excited” about the President’s New Vision for U.S. Space Exploration policy. Unlike the space movies and sci-fi films from the past, these films are planned to promote a positive feeling about the private-sector taking over space exploration, space natural resources and outer space development – including colonization. Images will be displayed on the big screen projecting themes contained in the new space exploration policy, as recommended by the President’s Commission report. For example, in August 2004 during the 7<sup>th</sup> International Mars Society convention, “award-winning filmmaker” Sam Burbank announced that he would be making a motion picture based on Robert Zubrin's book *First Landing*. Burbank compared his plans to make a new film to various Hollywood “horror pictures or shoot-em -ups nominally featuring Mars” Burbank drew a sharp distinction between existing popular films and the “kind of movie ‘First Landing’ will be”.<sup>1</sup>

There never has been a movie actually about the human exploration of Mars. This will be the first." Burbank said, adding: "It will not be set in the glorious science fiction future, but in our own time, and it will show the mission done with all the grungy realism of the kind of space travel we can really do. It's not going to show the Mars mission as being easy. It's not going to show it as being impossible. It's going to show it as being really tough, but doable, by a group of people who have what it takes to do it.



Another movie in pre-production mode is *X Pilots*, by ContiFilms<sup>2</sup>, based upon the X Prize \$10 million dollar private spaceship competition. The subtitle on the ContiFilms website for the film reads: “Fast, hot an uncontrollable . . . love on the edge”. Analyzing the policy discourse and the President’s Commission report on what needs to happen in order to get the general public to think in new ways, these films were designed to go just that. By situating representation of space travel and space colonies in our lifetime, this has the power to shape ideology about outer space so that people think of it as real. New representations of space are being produced to make people see space as a place obtaining wealth, fun and adventure – all popular American themes, transported and increasingly becoming prevalent in the new global economy.

## **2. Business Moguls - Space Celebrities**

In addition to new films in production, efforts to bring outer space development to the forefront of public opinion have recently accelerated. Private space travel is being represented as cool. For example High profile celebrities and well known millionaires are appearing with increasing frequency before the mass media, popularizing for-profit private space travel. This is historical. Never before has the idea of space been associated with joyrides for the wealthy. Recent photos of celebrity Martha Stewart in a space gear, having the time of her life, as she participates in a Space Adventures, Inc., Zero-G flight,<sup>3</sup> reminds us of the eccentric millionaire, Dennis Tito, CEO and founder of Wilshire Associates, who allegedly paid \$20 million dollars to be the first space tourist in 2001.

Another example of private space travel being represented as cool, is the highly publicized SpaceShipOne private trip to outer space on October 4, 2004. On date, this private spaceship won the \$10 million dollars XPrize. SpaceShipOne was one of several

aircraft in the running for the X-Prize competition, When it reached an altitude above 62.14 miles (100 km) on September 29, 2004, SpaceShipOne became the first **private** manned spaceflight.<sup>4</sup> Before this all trips into space were undertaken by the government. Paul Allen, co-founder of Microsoft, funded the SpaceShipOne project.<sup>5</sup> The discourse surrounding this event served to construct the idea that it is time for the private-sector to take over space travel because it will be better and more efficient than the government.

Similarly, the photo of Sir Richard Branson, Chairman of Virgin Galactic and Bill Richardson, Governor of New Mexico are also smiling brightly as Governor Richardson playfully holds up a small toy-like model of Virgin spacecraft. A "new rocket development company recently announced plans to build a spaceport in the United Arab Emirates, costly approximately \$265 million. It seems that the company's spaceships will be designed by a Russian company. Financiers for this new enterprise, Hamid, Anousheh and Amir Ansari helped to finance the new Ansari X Prize competition",<sup>6</sup> which New Mexico recently won the bid to host the now annual Competition. Virgin Galactic "will locate the world headquarters and mission control for its personal spaceflight business at the Spaceport in Upham" New Mexico.<sup>7</sup> Texas has passed new legislation in preparation for creating two new spaceports, and "three telecommunications entrepreneurs from Texas have recently joined Space Adventures, Ltd.",<sup>8</sup> the main space tourism company that is working with Virgin Galactic. Nevada and Singapore have made announcements that they too are going to build spaceport portals soon.

Sir Richard Branson of Virgin Airlines and Virgin Records was recently appearing before the mass media promoting private space travel. During the Super Bowl (2005) Volvo aired an advertisement announcing it will give away a chance to win a seat

on the world's first commercial passenger-carrying spaceship. The 30-second ad made a comparison between Volvo's new XC90 V8 SUV and a rocket blasting into outer space. The billionaire entrepreneur, Sir Richard Branson, founder and chairperson of the Virgin Group of Companies, reveals his face towards the end of the commercial. Virgin Galactic publicized its debut as the "world's first commercial [private] space tourism operator in the next two to three years".<sup>9</sup> Publicity surrounding this extravaganza indicated that Branson's "Virgin company plans to launch commercial space flights over the next few years".<sup>10</sup> Sir Richard revealed these plans for a new space tourism venture to the Royal Aeronautical Society in London in September, 2004.<sup>11</sup>

### **3. Space Exploration/Space Travel**

Space exploration and space travel used to be represented as dangerous and for government trained highly skilled astronauts only. This all changed when Dennis Tito, CEO and Founder of Wilshire Associates, a multi-trillion dollar global investment firm, paid \$20 million to travel to space. This publicity stunt resulted in consistent media coverage on television, radio and print mediums. Conversations at all levels of society were frequent regarding paying to go to space. This is so different from ideology produced in connection to Neil Armstrong and Edwin "Buzz" Aldrin when they were declared to be the first humans to land on the Moon on July 16, 1969 (Apollo 11). There had been fifty-seven prior missions to the Moon by both the U.S. and U.S.S.R., and twenty-two subsequent missions to the Moon. Some were successful, others were unsuccessful. Some were manned, others were unmanned - rovers, orbiters and the like<sup>12</sup>. None received the type of extensive media coverage that Dennis Tito received. Likewise, there have been approximately thirty-one missions to Mars (including "flybys", between

Russia, the U.S., U.S.S.R. and Japan dating from October 10, 1960 to April 7, 2001.<sup>13</sup> These missions were scarcely publicized and were not paraded before the general public. Recently, and in conjunction with current political activities to hyper-privatize space, new missions to other planets are highly publicized in all forms of the media. For example, NASA photos taken during the Cassini-Huygens' Trip to Saturn and Titan<sup>14</sup> appeared on the front page of *Newsweek*, *Time* and various other popular magazines and websites. A further example is on January 4 and January 25, 2004 twin robots *Spirit* and *Opportunity* landed on Mars. The general public was constantly bombarded with images of the Mars rover named Spirit touching down on the red planet, after an interplanetary cruise of almost half a year and 487 million km (303 million miles) on the planned landing site, Gusev Crater. The Mars rover named Opportunity traveled 7.8 million miles before arriving at Mars, after an interplanetary cruise of more than 6 months it too successfully touched down on Mars January 25, 2004 at its intended landing site at Meridiani Terra. In addition, many manned and unmanned missions been sent to asteroids and several comets. For example, NASA landed a spacecraft on 433 Eros On February 12, 2001. NASA's unmanned Near Earth Asteroid Rendezvous Shoemaker spacecraft landed on the asteroid known as 433 Eros.<sup>15</sup>

There is an extensive history of humans going and/or sending robots and spacecraft to examine and to take photos or video images on, at and near these small bodies.<sup>16</sup> The result is that humankind has acquired a knowledge base about these bodies. The knowledge exists on how to get there and what minerals, gases and the like might be found there. NASA has been extremely successful. However, NASA is being constructed as incapable, as a failed government bureaucracy . . . as effeminate.<sup>17</sup> In addition, there is

a trend wherein private companies, contracted with the government, are gradually beginning to take over the business of space missions.<sup>18</sup> These processes regarding space exploration/space travel are consistent with my argument that part of the hyper-privatization mandate is to transfer many of NASA's assets over to the private-sector. Space missions to other celestial bodies, large and small, in the past were carried out by government entities.

## **Getting the Public to Consent**

### **A. Decisions Articulated by Organic Intellectuals**

Theorists have written about how imagination serves as a cultural force at the hand of political elites (Appadurai, 2001; 1996; 1988). In this section, I will show how this process is operating to create public consent to the hyper-privatization of space. Throughout the various President's Commission on Moon, Mars and Beyond hearings during 2004, elites, academics, artists, teachers, organization leaders, labor and industry testified, attesting to the assertion that in order to implement the President's New Vision for U.S. Space Exploration policy, it is necessary to get the general public to become involved. This was a major theme throughout the President's Commission proceedings. The President's Commission report outlines various suggested (proven) ways for elites to garner that public support. This section outlines key portions of the policy related to articulated plans for creating consensus from the masses.

Overall, it seems that the new space policy initiative and the President's Commission report calls for exciting, inspiring and encouraging the general public to accept the New Vision policy, but only as it relates to promised improvements in education, an increased amount of technical jobs, prizes for a few high tech firms, new

space movies and more engaging space video games. The new policy and accompanying laws reserve the promise of wealth creation for members of the space transnational capitalist class. The President's Commission on Implementation of United States Space Exploration Policy report contains several sections which are concerned with garnering consent from the general public regarding the change pursuant to the New Vision for U.S. Space Exploration policy. For example the section on "Public Engagement" states that the "entire nation, indeed the world, will be watching as we explore new frontiers and answer profound questions on our journey into space", that "in fact, public participation is critical to sustaining the space exploration vision", and that "the American people – the taxpayers who pay the bill – must assert ownership of the space program that transcends politics and the political environment".<sup>19</sup> This demonstrates that the state is consciously aware of its need to get public consent. It also demonstrates the detailed plans for getting the general public to go along. The President's Commission report states:

Contemporary story-telling techniques should be used to persuade people to make an investment in the space frontier. Robust marketing, advertising, and recruitment campaigns that attract and hold the attention of the American public should be created and implemented.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 46).

Furthermore, as demonstrated in this segment of text from the President's Commission report, conscious, deliberate efforts have been put forth by organic intellectuals in order to manufacture consensus from "the people" so that they will accept the New Vision for U.S. Space Exploration policy as common sense.

Based on the testimony of witnesses involved in education, outreach, and the media – as well as on public comments received – the Commission believes a new model is needed to expand the

role of space exploration in our culture. Working together, the White House, NASA, industry, and professional organizations can forge a new model for public engagement built on grass roots support. Such support requires sustainable, systematic, effective marketing and communication programs, employs professionals who are trained in the art and science of communication, and uses new and even novel means for communicating with the public about space.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 44).

## **B. Producing Consent**

In this section I will demonstrate the stated plans in the New Vision policy have been called by those using a Gramscian approach “producing hegemony” (Rupert, 1995) and how this type of process operates to produce consent regarding the hyper-privatization of outer space. Many scholars have established that there is a link between popular discourse production, power and ideology formation. For example Herman and Chomsky (2002: xi) explain that “In our view, the same underlying power sources that own the media and fund them as advertisers, that serve as primary definers of the news, and that produce flak and proper-thinking experts, also play a key role in fixing basic principles and the dominant ideologies”.

### **1. Employment Workforce Policy**

Political actors involved in the process of hyper-privatizing space have apparently agreed that in order to get the general public to consent to the New Vision policy, jobs must be promised. The new legislative initiatives and the surrounding policy discourse are full of references to the importance of jobs creation and workforce training. It speaks of menial labor and technical jobs creation as a pacifier

to be provided to the working class as a reward for going along with the new policy.

For example, the President's report reads as follows:

The Commission fully supports your vision and finds that this journey of exploration will sustain vital national objectives here on Earth. It will provide inspiration for our youth to enter technical fields, generate economic benefit to our nation through the creation of additional technical jobs, improve the competitiveness of our industrial base in the world marketplace, provide clear recognition of America's leadership, and improve prosperity and the quality of life for all Americans. We conclude that fundamental changes must take place in how the nation approaches space exploration and manages the vision for success. This national effort calls for a transformation of NASA, building a robust international space industry, a discovery-based science agenda, and educational initiatives to support youth and teachers inspired by the vision.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 2).

Another example, House Bill 5356,<sup>20</sup> the Research for Competitiveness Act, in addition to other provisions provides a "NASA Workforce Training" provision. Senate Bill 610 which later became Public Law No 108-201, amended Title 5 of the U.S. Code to provide certain "workforce flexibilities" relating to NASA.<sup>21</sup> Similarly, House Bill 5388, to establish an interagency aerospace revitalization task force to develop a national strategy for aerospace workforce cultivation, training and recruitment, was introduced on November 18, 2004.<sup>22</sup>

During the President's Commission hearings, on March 25, 2004 under the panel session called "Building Space Jobs", Dr. Michael Bolzano, Executive Director, National Industrial Base Workforce Coalition, a group of local unions within about 30 states which includes scientists, engineers, professional and technical workers, production workers and security and logistics workers, testified suggesting that "there is a need to educate and excite the next generation of workers" (2004: 13) and that there is "a need to "sell the



vision” (2004: 12). Dr. Bolzano asserted that the general public needs to understand that “many of the benefits we enjoy in our everyday life are rooted in the country’s space program” (2004: 12), and that NASA is often treated as being an opposite of entitlement programs when it is not (2004: 13).<sup>23</sup> Mr. Charlie Buffering, Executive Director of the Council of Engineering and Scientists made up of several unions made of engineers, scientists, and technical and professional employees working in both the private and public sectors, testified and provided a counter response to the question: Why put people in space when there are thousands of homeless people. His response was “by putting people in space we’re developing out technological based, we’re creating jobs, we’re pushing the envelopes of technologies, and those frankly are the core and essential elements of a thriving economy, and one that’s going to take on the rest of the world” (2004: 59). In other words he testified that space commerce will boost the economy and that this will enable us to solve other social issues. Mr. Jeff Rainey, Business Representative of District 166, International Association of Machinists and Aerospace Workers also testified that nations dominating certain arenas such as the seas, the air and space, dominant the world, and that he would prefer that it be the U.S. should to dominate outer space. He also testified that it will take a workforce to enable this to happen (2004: 60-61). On April 15, 2004 on a panel called “Sustainability for the Long Haul” Reece Greece, President of the United Auto Workers Union (UAW), Local 848 of Texas testified on behalf of the employees at Vought Aircraft Industries and the employees at Lockheed Martin Missiles and Fire Control that “although the workforce is diversified in its efforts, it is unified in support of new space programs, that there are “many positive benefits of a robust space program”, that “jobs are created by the space program are here

on Earth”, and that the “creation of jobs is extremely important because every workforce in the industrial base has suffered from downsizing” (2004: 11).<sup>24</sup>

Dean Zorach, President of the UAW Local 887, testified on behalf of Rockwell International workers in Southern California (Rockwell was purchased by Boeing in 1996). He testified that the President’s new space initiative would have a positive impact on the “next generation of workers” (2004: 11) and that there “must be a national commitment to an educational curriculum from kindergarten through college degree programs to educate and train the next generation of workers; and there must be action and commitment from the administration, Congress, industry, workers, and citizens”, and that “American workers could be the allies and defenders of the President’s space exploration initiative” (2004: 11)<sup>25</sup>. David Goodyear, Chairman and Co-founder of the Small Manufacturers Association of California, a statewide organization of about 1,000 small companies uniting small and mid-sized manufacturers, testified that “there must be leadership from both government and the private sector to rebuild and energize private sector participation in process improvement programs by creating grants opportunities” to change the way society perceives manufacturing science and technology careers, and that there needs to be programs which integrate mechanical skills with math and science theory, “creating a modernization program for manufacturing science and technology classrooms, increasing funding from programs that integrate manufacturing and science and technology, establishing public/private teams to support the education and training programs, and dedicating funding to encourage retired manufacturers to mentor youth” (2004: 12). In addition, the following two sections of the President’s Commission report

demonstrate the use of a dominant free market ideology being linked to the public interest in seeing new jobs created. It reads:

The long-term, ambitious space agenda advanced by the President for robotic and human exploration will significantly help the United States protect its technological leadership, economic vitality, and security. This ambitious path of exploration and the achievements made along the way will inspire the nation's youth, yield scientific breakthroughs, create high technology jobs, improve our industrial competitiveness, demonstrate America's leadership, and improve prosperity and the quality of life for all Americans.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 4).

Further space exploration will generate new jobs within current industries and will likely spawn entire new markets involving leading-edge manufacturing and flight support services. The vision requires a large, high-tech manufacturing base and a skilled workforce. As one impressive labor leader testified to the Commission, "every dollar spent on space is a dollar spent here on Earth." This focus is good for jobs, good for the economy, and good for American families. Moreover, the positive economic effects of this national effort will not be limited to the aerospace industry. The public record is rich with data about how aerospace technology and pure space research routinely spur other tangible advances and unrelated economic opportunity. Thousands of inventions and manufacturing breakthroughs derived from our space program now find uses in everyday life. They range from insulin pumps based on technology used in the Mars Viking spacecraft, to forest firefighting tools derived from space-based infrared camera technology.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 12).

As in past epochs of outer space development, outlined in previous chapters, the necessity of creating new industries which will benefit everyone is again the justification for this recent push to hyper-privatize space. It is clear for the actions outlined in this

chapter that the space transnational capitalist class has exercised power to create several new space industries - *space tourism*, *space mining* and *space settlement*. In this overall process of quietly pressing for the hyper-privatization of outer space, there is a tendency to articulate two types of rationales legitimizing and defining a new need to privatize space resources, space exploration and outer space development: 1) that a transfer of public resources to the private-sector space interests is the only way to ensure that outer space development will happen since government cannot be trusted to do it; and 2) that by granting private property rights to members of the space transnational capitalist class free up space resources in such a way as to generate multi-trillion dollar industries which will trickle down and benefit all of humankind. In this scenario the public is promised jobs – not riches for “developing” outer space.

## **2. Education Policy**

A determination has been made by political actors that an important part of getting the general public to consent to the New Vision for U.S. Space Exploration policy is to promise educational benefits such as training more teachers in science, math and technology and to encourage more students to study science, math and engineering. The President’s Commission report mentions education approximately 40 times. It promises new educational opportunities, increased priority on teacher training to excite students (K-12 and college) about entering into technical fields related to space exploration and into fields requiring training in science, math and technology, solve the problem of American lack of competitiveness in math, science, computer literacy and engineering in comparison to other countries, combine resources from government agencies to provide workforce training. Those acting to hyper-privatize space have invested time, energy and

effort into getting the general public to believe that the New Vision for Space Exploration is for the general public. For example, Senate Bill 1281 which later became Public Law No. 109-155 on December 30, 2005, speaks to the issue of education. It reads:

From amounts appropriated to NASA for educational programs, the Administrator shall ensure continuation of the Space Grant Program, the Experimental Program to Stimulate Competitive Research, and the NASA Explorer School to motivate and develop the next generation of explorers.

(Senate Bill 1281, Section 150. Continuation of Certain Educational Programs).

During the President's Commission hearings, several teachers and other professional educators testified regarding what needs to happen within U.S. educational institutions in order to get the general public to accept the President's New Vision for U.S. Space Exploration policy. For example, Dr. Patricia Arnold, Vice President Education, U.S. Space Foundation testified that it is time to "reignite that passionate interest in space and science education" (2004: 3), and expressed a concern over the relatively small number of American college students earning degrees in science, technology, engineering and math compared to India, China and Japan and asserted that this may cause the U.S. to lose its technological leadership and its ability to compete in the global space marketplace (2004: 3-4). Dr. Arnold also proposed a new NASA office specifically for educational outreach activities that would be more highly focused specifically on exciting young people about America's new space exploration policy (2004: 4).<sup>26</sup> Barbara Morgan, testified as an "educator/astronaut" that the new U.S. space policy can "reach and motivate America's students" by first engaging the classroom teachers (2004: 26). Morgan suggested during her testimony that teachers be inspired and

engaged by making “sure from the very beginning that teachers see themselves as fully involved partners in this grand endeavor” (2004: 26).<sup>27</sup> Dr. Jerry Wheeler, Executive Director of the National Science Teacher’s Association<sup>28</sup> further testified that the Commission should consider establishing science, technology, engineering and mathematics education as the core component of the President’s New Vision policy, develop “a unifying vision to guide all education contributions for the exploration activities” for “stakeholders” from the private sector, NASA and teachers; to significantly increase the number of teachers and university faculty engaged in high-quality professional development through space exploration; enhance the content knowledge of educators through their intellectual engagement; create “a compelling national understanding for the importance of STEM” (science, technology, engineering and mathematics) and to “include the science teaching workforce in all workforce considerations and discussions”. Jim McMurtray, Executive Director of the National Alliance State Science and Mathematics Coalitions also testified regarding the need for change in the U.S. educational system. He stated that we must immediately design a replacement to the present system which will “share our scientific legacy and leave no child behind” (2004: 8).<sup>29</sup>

In addition to various testimonies presented during the President’s Commission hearings the President’s Commission report suggests garnering public consent through educational programs for K-12 as well as higher education. It recommends “the extensive education initiatives of the NASA Education Enterprise” to engage young people in their studies through the excitement of space exploration” (2004: 42). The report further states that NASA, the Department of Education and the National Science Foundation should

work together “with state and local political leaders to infuse the excitement associated with exploring space into science, math, and technology education programs across the country”, and that “they should collectively establish a more aggressive approach for encouraging youth to enter math, science, and engineering professions” (2004: 42).

Regarding universities the President’s Commission report states that “a new alliance between NASA and universities should be formed. This alliance will provide hands-on training to future space scientists and engineers and produce the next generation workforce required to implement the space exploration vision”. It also states that “NASA and interested universities should work together to create a “virtual” space academy, the goals of which are: 1) to provide tangible experiences that prepare students for a future in a space-related field, and 2) to bridge the divide between engineering and science training” and suggests that the space academy be funded by NASA, but would take advantage of the “bricks and mortar” as well as intellectual infrastructure already in place in America’s universities, allowing both a rapid start to the program and for it to be infused throughout the nation’s higher education system. The program would consist of university-based science and engineering experiments to train young scientists and engineers, and summer internships. The experiments would be designed to provide senior undergraduate and/or graduate-level experience for integrated engineering/science teams that teach systems engineering and science/engineering integration through conceptual designs relevant to both robotic and human space missions. Through the space academy program, students would develop projects with science and exploration objectives and engineering implementation, culminating in a mission design. By participating in academy programs, affiliated universities would develop curricula and facilities and

produce a workforce imbued with state-of-the-art capabilities. In report also states that “many NASA Centers currently implement successful educational programs that could be adapted to the space academy program, but it is expected that the content would be driven by a shared vision – between NASA and participating institutions – of the skills needed to train future space scientists and engineers” (2004: 43-44).

### **3. Entertainment Policy**

As part of the overall scheme to hyper-privatize space with public support, the entertainment industry will be used as an additional way to get the general public to support the New Vision for U.S. Space Exploration Policy. This will include movies, DVDs and videos, television, video games, music, IMAX films and mass marketing and advertising campaigns. During the President’s Commission hearings several testified as part of an “Entertainment and Space Exploration” panel on what needs to happen in order to get consent from the general public regarding the New Vision for U.S. Space Exploration policy. For example, Ray Bradbury, author of popular science fiction novels, testified that “we must try to do it, try to imagine that the Moon is a base and Mars as a new landing place, and a creation for civilization that will burgeon in the next 500 years, 1,000 years and 10,000 years, and become the center of a new frontier” (2004: 4). However, Dr. Paul Spudis, one of the Commissioners, in taking Bradbury to task, asked about the selling point to the general public, pointing out that “Americans tend to be very pragmatic people or very practical people” who “embrace innovation, engineering, hard-headed facts, the bottom line” (2004: 7). Dr. Spudis further suggested that the New Vision might be sold to the American public as a source of “virtually unlimited wealth”, and argued that it “seems to me something that would appeal to the American public



much more than an aesthetic appreciation” (2004: 7). John Bernardoni, Executive Producer of the Ancient Mariner Media – a multimedia production company, testified based on his 30 years experience as a producer in the entertainment industry that the purpose of his testimony is to “re-ignite excitement about the human space program with children first, and the public second, and Congress” third (2004: 10). He agreed that by having the entertainment industry, media and the advertising world coming together to back the President’s space initiative in a very tangible way to reach millions-tens upon millions-of people both here and internationally” (2004: 10). He further stated:

What’s needed is to make the new space initiative “cool for the kids” (2004: 12), and that “you want to get kids pumped up, you got to have a vision. . .”, “you get them pumped up through MTV. You get them pumped up through videogames. You get them pumped up through the Simpsons. You got to go where they live. You got to go to the music that they dig, what their peers are. That’s how you get to kids. You cannot get to kids through job fairs. And if you want to light a fire under the youth of America and the world, we’ll get U2 to do a song about going to Mars, and you’ll have 25 million zealots on your hands ready to sign up. That’s how you get to kids. Make it cool.” Music industry: you get songs, video images at concerts, what you are doing major production now when you go to arenas.

He further testified that he is close to ClearChannel which owns 1,200 radio stations in the U.S. and that there public service announcements mandate could be used for the purpose of exciting the general public about the new space initiative. This demonstrates the link between discourse production and power. He also stated that what’s needs are major specials on television and cable which are “not boring” like “dry documentaries”, specials that can actually get people “wound up and excited about what is to come” (2004: 12). He suggested that the Commission do what the Fortune 500 companies do “spend billions of dollars advertising, pushing their products during the year”. Lawrence

Holland, game designer since the 1980s and founder of Totally Games in 1995, testified before the Commission that the greatest challenge to fulfilling President Bush's new space initiative is "gaining broad public support for this endeavor that will last for decades" (2004: 15). He further stated that we need to inspire the whole nation and that in order to do that "we must tap into people's emotions very deeply" (2004: 15). He suggested that this might be achieved by using "the power and the drama of entertainment". He also stated the following:

We must use entertainment to get people fired up about the future space program, not just logically convince them. We must use entertainment to demonstrate the power of possibilities of space exploration, and finally we must create a personal connection for people to this enterprise, even though it's years in the future. When it comes to entertainment, I'm sure you can identify with the power of film to tell gripping stories of human achievements.

In addition, Holland further suggested that films like Apollo 13 and various space documentaries are very popular, but should be supplemented by "a new form of entertainment, literally, the new game in town. This is the world of computer games and videogames" (2004: 15). He pointed out that "the male population between the ages of 18 and 34 spends more time playing video games and surfing on the Internet than they do watching television", and that therefore, this population can best be reached through this medium, since millions of them play games for "10 to 20 hours in a single game and sometimes in a single sitting" (2004: 16). For him, games are "a way of making the future space program here is now believable, alive and real" because a good game can "engage you on multiple levels – both physically, intellectually, strongly emotionally and psychologically" (2004: 16). Craig Covault, senior editor of Aviation Week and Space Technology, who has written about 2,500 major articles on space and aeronautics and has

been with the magazine over 30 years, Rich Gelfond, co- Chairman and co-CEO of IMAX Corporation and David Levy, discoverer of 21 comets, author of 31 books, who writes for Sky and Telescop magazine and is the science editor of Parade magazine all testified as part of the “Media – the Big Picture” panel. The focus of the panel was involved getting the general public to accept the new space initiative. Covault indicated that we will have to “rebuild the human side” (2004: 22). Gelfond states that to get people excited they must be allowed to feel as though they themselves are going, and Levy testified that the Web can play an important role in getting people interested in the new space initiative (2004: 23).<sup>30</sup>

In addition to testimonies from various entertainment and media professionals, the President’s Commission report endorsed many of these suggestions as indicated by the following statements contained therein:

The Commission believes that great opportunities exist to engage the public through cutting edge multi-media products. Moving images are to today’s students what books were to students in generations past. Movies can bring technical space subjects to life for people who have no interest at all in mathematics or science. From IMAX films to Hollywood blockbusters, millions of space enthusiasts look to the big screen (and subsequent video distribution) for the latest in space “stories.” The techniques employed by the film industry, applied to actual space science, can result in dynamic narratives that inspire and educate people.

Similarly, video and simulation games are not only a multi-billion dollar industry, they are proving to be effective as learning devices for people of all ages. Space flight simulators have long been used at the various NASA Centers, but only recently have similar programs been incorporated into smaller, hand-held “amusement” versions and made available for public use. The potential for converting hobbies and amusements to more educational pursuits is enormous. NASA could collaborate with video game producers to create live-action learning modules that give players the chance to experiment with orbital mechanics, the principles of spaceflight, and other space-related subjects. A new model for public engagement, which seeks broad

grass roots support through coordinated efforts of government, industry, and non-profit institutions, uses professional communicators to formulate its messages, and incorporates exciting multi-media products to infuse space exploration into our culture as never before. Thus, such an effort is well aligned with the goals of the space exploration vision itself, which seeks to vastly expand our presence in space.

(The President's Commission on Implementation of United States Space Exploration Policy, 2004: 46).

The text is clear. The purpose of these planned activities is, in Gramscian terms, to usher in "the consent of the broad masses" (Hoare and Smith, 1971, 2003: 210). Gramscians such as Gill & Law (1993: 93) focus on hegemony, coercion and consent. Accordingly, they argue that ideas build broader systems of thought "which condition the way individuals and groups are able to understand their social situation, and the possibilities of social change" (Gill & Law, 1988: 74). The case study of the space law and outer space development regimes exemplifies this relationship - the power of symbolic and institutional coercion and how they invoke consent. This represents a subtle exercise of power.

Moreover, *hegemony*, *consent*, *coercion* and *organic intellectuals* are necessary to explain this very complex phenomenon. For example, different processes were used during the first, second and third epochs. Perceptions, identities, interests and intersubjectivities are distinctly different during the Post Cold War era than during the Cold War or New Cold War eras. Furthermore, actions taken by entrepreneurs are distinctly bolder during this new era. *Hegemony* here is defined as "the process of moral, philosophical, and political leadership that a social group attains only with the active consent of other important social groups" (Artz and Murphy, 2000: 1). In addition,

*ideology* is the way people think and in turn behave. This in turn shapes our reality. Entrepreneurs and private corporations have been gaining increased influence in the space law and outer space development regimes. Hegemony depends on consent gained through material benefits (promised or perceived) and material, cultural and political conditions are interrelated (Artz & Murphy, 2000). In addition, coercion can be very subtle, symbolic and carried out through institutions. These aspects of politics and power must be addressed to more fully understand the space law and outer space development regimes. The concept of hegemony addresses the way social practices, relationships, and structures are negotiated between multiple social forces.

#### **4. Prize Policy**

In addition to the various educational and employment initiatives and new plans to spark the public interest in the hyper-privatization of outer space. Various prizes are being offered to the small business community. This section outlines several important prizes being offered for the purpose of getting the general public to consent by outer space privatization.

##### **a. NASA's Centennial Challenges Prizes**

The private-sector with the government has started to award monetary prizes to spur the hyper-privatization of space. In addition to other laws, encouraging space hyper-privatization, legislation is in process to provide large cash awards for those who will “develop” outer space. For example, on February 9, 2005 an important hearing by the U.S. House Aviation Subcommittee took place to discuss the status and future of the U.S. In October 2004 a bill was introduced the Space and Aeronautics Prize Act (H.R. 5336)

to create a "National Endowment for Space and Aeronautics" to oversee a \$100 million contest, and much more.

**b. The X Prize**

New space entrepreneurs were instrumental in arranging the Ansari X Prize - was a \$10,000,000 prize awarded to the first private group to build and fly a three-person spaceship to 100 kilometers (62 miles), and repeat the trip within two weeks. This annual prize competition is funded by private capital. It was highly publicized, in all forms of the media, that on October 4, 2004 SpaceShipOne won the X Prize competition, proving that it was possible to raise private funds in order to successfully fund private spaceships was influential in changing FAA regulations regarding experimental space travel. Just a few months earlier, in April of 2004 the Federal Aviation Administration Office of Commercial Space Transportation issued the world's first license for a private sub-orbital manned rocket flight to Burt Rutan's Scaled Composites, Mojave, California. The license issued is for a sequence of sub-orbital flights spanning a one-year period. SpaceShipOne was one of several aircraft in the running for the X-Prize competition. When it reached an altitude above 62.14 miles (100 km) on September 29, 2004, SpaceShipOne became the first *private* manned spaceflight.<sup>31</sup> Before this all trips into space were undertaken by the government. Paul Allen, co-founder of Microsoft, funded the SpaceShipOne project.<sup>32</sup> The stated purpose of these new businesses in organizing the *X Prize Competition*<sup>33</sup> is to jumpstart private commercial space transportation as a new industry. It is now an annual event.<sup>34</sup>

### **c. The American Prize (\$50,000,000) – For a Commercial Space Hotel**

Robert Bigelow, millionaire and owner of the motel chain Budget Suites of America, announced a \$50-million prize for the development of an orbital space transport, Aviation Week reported in its latest issue. The "America's Space Prize" would award \$50 million for the first company to develop a vehicle that could place five to seven people in orbit by the end of the decade. Bigelow himself is expected to contribute half of the prize purse, with the other half coming from an unnamed donor who is in final negotiations with Bigelow. The prize would allow the use of existing and non-US boosters for launching the spacecraft. Bigelow's space company.<sup>35</sup>

### **d. Heinlein Prize (\$500,000)**

The Heinlein Prize<sup>36</sup> a major new award for “practical accomplishments in commercial space activities” was announced Monday at the 54th International Aeronautical Congress underway in Bremen, Germany. Trustees of the Robert A. and Virginia Heinlein Prize Trust revealed that the first Heinlein Prize award has been set at \$500,000 USD. The Heinlein Prize honors the memory of Robert A. Heinlein, a renowned American author. Through his body of work in fiction spanning nearly fifty years during the commencement of man’s entry into space, Mr. Heinlein advocated human advancement into space through commercial endeavors. After his death in 1988, his widow, Virginia Gerstenfeld Heinlein, established the Trust in order to further her husband’s vision of humanity’s future in space. Funding for the Heinlein Prize came from Mrs. Heinlein’s estate after her death earlier this year.

The Heinlein Prize may be given as frequently as annually to one or more individuals who have achieved practical accomplishments in the field of commercial

space activities. The Trustees emphasize that the award is for effort by an individual - not corporate or government sponsored activities - and that the Heinlein Prize is intended to be world-wide in scope. "The purpose of the Heinlein Prize is to provide an incentive to spur the advancement of the commercial use of outer space," explained Arthur M. Dula of Houston, Texas, USA, one of three Trustees. "In order to accomplish that goal, the Trustees will establish an Advisory Board drawn from respected persons in space activities from around the world. The Advisory Board will keep abreast of developments in space commercialization and will review nominations and propose its own candidates for the Heinlein Prize. The Trustees will select recipients of the Prize based upon recommendations from the Advisory Board. The Heinlein Prize will be awarded on July 7th of those years in which the Prize is given." The Trustees are currently in the process of selecting the Board of Advisors.

**e. Commercial Space Settlements Prize (\$1,000,000)**

The NASA Ralph Steckler/Space Grant Space Colonization Research and Technology Opportunity involved awards totaling \$1 million to implement Mr. Steckler's testamentary direction and to "make a lasting impact on the field of space colonization". This is stated to mean that "space colonization is understood to be the establishment of a broad range of human activity in space that, for the most part, is not reliant on Earth". The goals are set forth as defined by NASA for the Steckler Fund:

- To make a meaningful contribution to enabling the colonization or the settlement of space,
- To leverage activities, where appropriate, through teaming and resource sharing, and
- To implement Mr. Steckler's dream in innovative and enduring ways.



These actions to change the public ideology regarding outer space are analogous to what Gramsci refers to as going from a “superior elaboration of structure into superstructure in the minds of men”. Once these proscribed activities go forth into the popular media, they will have the power to cause this new vision of private space travel to go from “structure” to “superstructure”. When this process is finished, opportunities for resistance or alternation will be hard pressed.

### CONCLUSION

Currently a qualitative change regarding outer space development is in process. Driven by technological revolutions, the U.S. House of Representatives (statesmen), various private-sectors space companies and new space entrepreneurs (capitalists) have taken political steps to reconstruct legal norms and commercial practices to further neoliberal free market ideology regarding the final frontier. Studying this process is important and consistent with Gill’s (1993: 16) suggestion a “new historical materialist research agenda for the study of global politics might consistently and systematically involve”, for example, “on going attempts to reconsider epistemological and ontological aspects of world order, in the context of past, present and future [emphasis added]”.

This chapter provides current examples of phenomena discussed by Gramscians. The examples provided herein highlight relationship that Gill (1990: 6) analyzed – how “ideology, ideas and institutions” work with an historical order involving “a combination of coercive and consensual aspects of power”, and how this “helps to structure the relationships between states, class, and group forces and social movements”. Gill (1990: 6) further notes that “any given order may benefit some more than others” and that “a particular order may be defined by some groups and political leaders as being in the

'national interest' ". This chapter sets forth to explain how this process occurs and the significance of the current manufacture of new legal and political norms for outer space, in light of these insights from Gramsci's historical materialism thesis.

This chapter applied insights from IR theorists critical of the development paradigm, Gramsci and IR theorists who analyze how the transnational capitalist class operates. These insights offered by the discipline of international relations are extremely valuable, and it is time for them to be applied to the field of outer space development. As outer space is developed, it is clear that the outcomes cannot be credited to "spontaneous" free market forces, or to Adam Smith's invisible hand. Political and economic elites have taken strategic action for the express purpose of forging outer space development into a free market direction.

The actions taken by government and the lobbying efforts of the private-sector support the proposition that there is a dominant class of political and economic elites using the "apparatus of state coercive power" is creating laws to make things happen in such a way as to impose "discipline" on the general public who "do not 'consent' either actively or passively" (Hoare & Smith, 1971, 2003: 12). Gramsci's concepts "hegemony" and "consent", along with various other insights regarding "ideology", help us to explain this current international phenomenon. Of particular importance in this chapter is Gramsci's focus on the relationship between the state, the "apparatus or mechanisms of hegemony of the dominant class" and civil society as these phenomena related to "politics, ethics and ideology to production" (Cox, 1993: 49-51). Gramsci uses the term "catharsis" to explain a political moment wherein things pass from being "purely economic" to hegemonic (Hoare & Smith, 1971, 2003: 366-367). One way to explain

what is happening is that outer space is in the process of going from the "superior elaboration of the structure into superstructure in the minds of men" (Gramsci, 1973: 366-67)<sup>37</sup>. A dominant class has presented the aforementioned incentives to the general public. This suggests what Gramscians refer to as consent.

## ENDNOTES

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<sup>1</sup> "Mars Society Convention a Smashing Success" (August 24, 2004), *The Mars Society News* accessed from the Mars Society website 9/1/06 at <http://www.marssociety.org/news/2004/0824.asp>.

<sup>2</sup> See ContiFilms website at <http://www.contifilms.com/projects.html>. at pg. 1. Accessed October 17, 2006.

<sup>3</sup> See "NASA, Let Us Help You Help Yourself: The Founder of the Ansari X Prize, the X Prize Cup and Zero- Corporation offers NASA a little unsolicited advice" by Peter H. Diamandis, *Ad Astra* (Spring 2006) pp. 25 & 30-31.

<sup>4</sup> See [www.xprize.org](http://www.xprize.org).

<sup>5</sup> *Business Wire* (December 17, 2003).

<sup>6</sup> John Schwartz (February 18, 2006) "More Enter Race to Offer Space Tours" *NYTimes.com*.

<sup>7</sup> This photo appears on pages 2-3 of the (Spring 2006) *Ad Astra*, explaining that "on December 13, 2005, Sir Richard Branson and Governor Richardson announced a partnership to build the world's first Spaceport in the state".

<sup>8</sup> *Id.*

<sup>9</sup> See "Volvo and Virgin Galactic Team Up in Space" (February 4, 2005) <http://www.spacedaily.com/news/tourism-05d.html>.

<sup>10</sup> See Associated Press release (September 27, 2004) "Virgin Galactic to Offer Public Space Flights" at [http://www.space.com/missionlaunches/virgin\\_space\\_04097.html](http://www.space.com/missionlaunches/virgin_space_04097.html).

<sup>11</sup> See "Virgin Boss in Space Tourism Bid: Virgin Boss Sir Richard Branson Has Signed a L14m Agreement Which Will See His Company Take Passengers into Space" BBC News, World Edition (September 27, 2004).

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<sup>12</sup> For a complete list of the various missions to the Moon, including, orbiting, missions, manned landings on the Moon as well as unmanned missions spacecraft see <http://www.planetary.org/learn/missions/moonmissions.html>.

<sup>13</sup> For a full list of missions to Mars see <http://marsprogram.jpl.nasa.gov/missions/log> or <http://www.sciencedaily.com/directory/Science/Technology/Space/Missions>.

<sup>14</sup> In July 2004 NASA's Cassini-Huygens spacecraft arrived at Saturn and its Moon Titan and sent new information regarding the two celestial bodies. Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. For more information about the Cassini-Huygens mission, visit <http://saturn.jpl.nasa.gov> and the Cassini imaging team home page, <http://ciclops.org>.

<sup>15</sup> A few days after NASA landed on Eros 433, Gregory Nemitz the founder of OrbDev, sent a letter to NASA which both congratulated NASA for its successful five-year 160 million mile journey, and charged NASA twenty dollars as parking fees for landing the spacecraft on 433 Eros. Accordingly, Gregory Nemitz notified NASA that OrbDev has owned the property since Nemitz established a claim on March 3, 2000, and filed a Class D property claim with the Archimedes Institute. Nemitz has been quoted as saying "It is the wild frontier up there". "Since there are no laws governing private property claims in Outer Space, the first claimant gets ownership of it." Nemitz is apparently operating under the assumption that the Outer Space Treaty only explicitly prohibits nations from appropriating outer space territories. Many people are making this argument. However, many others argue to the contrary, that international space law prohibits any individual, state, corporation or other entity from claiming that they own outer space territories. For more information see [www.permanent.com/archimedes](http://www.permanent.com/archimedes). Also see Kelly M. Zullo (2002) "The Need to Clarify the Status of Property Rights in International Space Law" Volume 90 *The Georgetown Law Journal*, 2414 at 2424-2425 and Virgiliu Pop (November 2000) "Appropriation in Outer Space: The Relationship Between Land Ownership and Sovereignty on the Celestial Bodies" Volume 16: Issue 4 *Space Policy*, 275-282.

<sup>16</sup> Go to <http://nssdc.gsfc.nasa.gov/planetary/planets/asteroidpage.html> for a list of these missions.

<sup>17</sup> See Chapter 5 for examples of members of the space transnational capitalist class who provided testimony during the U.S. Congress and the President's Commission hearings asserting the view that NASA (the government) is not as competent as entrepreneurs to manage the New Vision policy, including the next steps towards outer space development. For example, Congressman Dana Rohrabacher (CA) testified during a Congressional Space Subcommittee hearing that "NASA and DoD also must establish investment strategies that promote innovative ideas from the private sector". The "DoD has a long history of giving a fair shot to emerging launch providers like SpaceX. Unfortunately, NASA does not share this track record. NASA should also become zealous in its approach in supporting space entrepreneurs. Only then can we expect real process in supporting industry", March 18, 2004 108<sup>th</sup> Congress 2<sup>nd</sup> Session, p. 1.

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Another example, Business Mogul Elon Musk testified during the same hearing that “I am also optimistic that the success of SpaceX will result in other entrepreneurial companies entering the space business, both in launch and the manufacture of lower cost spacecraft” p. 1.

<sup>18</sup> See Rex Ridenoure and Kevin Polk (April-May, 1998) "Private, Commercial and Student-Oriented Low-Cost Deep-Space Missions: A Global Survey of Activity", Proceedings of the 3<sup>rd</sup> International Academy of Astronautics Conference on Low-Cost Planetary Missions, Pasadena, California.

<sup>19</sup> Quotes from the report of the President’s Commission on Implementation of United States Space Exploration Policy, “A Journey to Inspire, Innovate and Discover” pg. 44-46 (June, 2004). Superintendent of Documents, U.S. Government Printing Office Internet: bookstore.gpo.gov Washington, DC 20402-001 ISBN 0-16-073075-9.

<sup>20</sup> H.R. 5356 entitled “To authorize the National Science Foundation and the Department of Energy Office of Science to Provide Grants to Early Career Researchers to Establish Innovative Research Programs and Integrate Education and Research, and for Other Purposes”, introduced May 11, 2006 by Representative Michael T. McCaul of Texas. In addition, a related bill, H.R.5357, “To authorize the National Science Foundation and the research, development, demonstration, and commercial application programs of the Department of Energy to provide grants to early career researchers to conduct high-risk, high-return research in areas relevant to industry” was introduced May 11, 2006 by Representative Michael T. McCaul.

<sup>21</sup> S. 610 entitled “A bill to amend the Provisions of Title 5, United States Code, to provide for Workforce Flexibilities and Certain Federal Personnel Provisions Relating to the National Aeronautics and Space Administration, and for Other Purposes”, became Public Law No. 108-201 on February 24, 2004.

<sup>22</sup> H.R. 5388, To Establish an Interagency aerospace Revitalization Task Force to Develop a National Strategy for Aerospace Workforce Cultivation, Training, and Recruitment”, 108<sup>th</sup> Congress, 2<sup>nd</sup> Session, November 18, 2004. On February 10, 2005 a related bill, H.R. 758, was introduced during the 109<sup>th</sup> Congress, 1<sup>st</sup> Session, “To Establish an Interagency Aerospace Revitalization Task Force to Develop a National Strategy for Aerospace Workforce Recruitment, Training, and Cultivation”. It was referred to the Senate on 10/26/2005.

<sup>23</sup> President’s Commission on Implementation of United States Space Exploration Policy Hearing, Public Meeting Minutes, Atlanta, Georgia, March 24-25, 2004.

<sup>24</sup> President’s Commission on Implementation of United States Space Exploration Policy Hearing, Public Meeting Minutes, Atlanta, Georgia, April 15-16, 2004.

<sup>25</sup> *Id.*

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<sup>26</sup> President's Commission on Implementation of U.S. Space Exploration Policy (President's Commission on Moon, Mars and Beyond) hearing, March 3, 2004, Wright-Patterson Air Force Base, Ohio.

<sup>27</sup> President's Commission on Implementation of U.S. Space Exploration Policy (President's Commission on Moon, Mars and Beyond) hearing, April 15, 2004, San Francisco, California.

<sup>28</sup> Id.

<sup>29</sup> President's Commission on Implementation of United States Space Exploration Policy, Public Meeting Minutes, San Francisco, California, April 15-16, 2004 pg. 8.

<sup>30</sup> President's Commission on Implementation of United States Space Exploration Policy, Public Meeting Minutes, hearing, New York, New York, May 3-4, 2004.

<sup>31</sup> See [www.xprize.org](http://www.xprize.org).

<sup>32</sup> *Business Wire* (December 17, 2003).

<sup>33</sup> This is an international competition open to all teams. Some teams have hired rocket scientists, and others are operating on a shoestring fueled by hobbyists and tinkerers. Currently there are 26 teams from 7 nations actively involved in winning this competition. This competition is said to follow the pattern of more than 100 aviation incentive prizes offered between 1905 and 1935, which created today's multibillion-dollar air transport industry. For instance, in 1927, Charles Lindbergh competed in a \$25,000 aviation prize and won when he was the first to fly solo across the Atlantic Ocean. Dr. Peter Diamanis, Chairman of the X PRIZE Foundation explains that Lindbergh's flight "was a mind-shift breakthrough" for the general public. Go to <http://www.xprize.org>.

<sup>34</sup> New Mexico won the bid to host the X Prize Annual Cup in May of 2003 and has established itself as the "premier inland spaceport". Florida, California and Oklahoma were also bidding to host the annual competition. The Governor of New Mexico announced that "New Mexico has officially won its bid to host the X PRIZE CUP, an international space exhibition destined to energize the state's economy through tourism, global public interest and significant job growth". See Press Release of May 11, 2004, "New Mexico Wins Bid to Host X Prize" at <http://www.edd.state.nm.us/PRESS/news>.

<sup>35</sup> "Report Bigelow to offer orbital space prize" (September 27, 2004) *SpaceToday.Net* at <http://www.spacetoday.net/Summary/2574>.

<sup>36</sup> See Science Fiction and Fantasy Writers, Inc., SF/F Publishing News of September 30, 2003 press release at <http://www.sfwaweb.org/news/heinprize.htm>.

<sup>37</sup> Gramsci explains that to establish a cathartic moment is "a starting-point for all the philosophy of praxis, and the cathartic process coincides with the chain of syntheses which have resulted from the evolution of the dialectic" (Hoare & Smith, 2003: 367).

## CHAPTER SEVEN

### CONCLUSIONS AND IMPLICATIONS REGARDING THE HYPER-PRIVATIZATION OF OUTER SPACE

This dissertation has used a Gramscian analysis to discuss political activities regarding space law across three distinct historical epochs. I have addressed the key actors, both old and new, influencing the hyper-privatization of outer space, the mechanisms of influence, and the cultural practices being used to gain legitimacy and consent in public discourse. The outer space development regime is increasingly being influenced by free market ideology and globalization processes, which have gained new fervor and momentum in the post Cold War era. In this chapter, I conclude the dissertation by stating the findings of my research and by discussing its theoretical and policy implications.

This dissertation suggests that the United States has been a trendsetter during each epoch, influencing periods of change within the outer space development regime. New U.S. laws and policies have been put into place to influence the hyper-privatization of space. This is occurring today at a historical epoch where the troika of globalization, capitalism, and free market ideology are dominant operators in the global arena with the US as one of its key proponents. Chapters 2, 3 and 4 demonstrate that since the beginning of the space age, the U.S. has played the role of what Gramscians call “the hegemonic state actor” influencing outer space development regime change. As discussed in Chapter 5, the New Vision for U.S. Space Exploration policy of January 14, 2004 mandates unprecedented levels of private-sector participation and divestiture of publicly owned space assets, space equipment, natural resources and space territories.

I have demonstrated in this chapter that the creation of a new policy initiative to influence outer space hyper-privatization was influenced by new actors namely private-sector groups and business moguls. These groups used old actors such as state institutions to facilitate space hyper-privatization. As detailed in Table 5.3, the U.S. Congress and the Senate have acted to facilitate the hyper-privatization of outer space territory. Similarly, Table 5.4 demonstrates that many important space corporations have combined into super coalitions in order to lobby the U.S. government for hyper-privatizing outer space. Table 5.5 outlines the many business leaders who have testified before the President's Commission and before the Congressional and Senate Subcommittees on Space. In addition, Table 5.6 provides a list of business moguls and how they are participating in space hyper-privatization.

This tendency towards hyper-privatization appears at both the U.S. domestic level as well as at the international level. The professed need for increased reliance on private corporations for space activities has already become one of the dominant themes for many international space conferences such as the International Astronautical Federation Congresses, the International Institute of Space Law, and the United Nations Committee on Peaceful Uses of Outer Space workshops. Since actions by old and new actors are syncretic, I have treated the key actors in the third epoch as belonging to one space transnational capitalist class, a dominant group who are pressing for the hyper-privatization of outer space. In addition to the New Vision for U.S. Space Exploration policy, members of the space transnational capitalist class have given testimonies before the U.S. House of Representative, Committee on Science, Subcommittee on Space & Aeronautics, and the Senate Subcommittee on Science, Space and Technology.



During the same time period, the U.S. Congress passed new laws to facilitate increased privatization of outer space which include the Commercial Space Launch Amendments Act of 2004 and the NASA Authorization Bill of 2005. In addition, the free market policy implementation program outlined in the President's Commission Report of 2004 matches the mood of UN Resolution 51/122 (1996), the IISL Board of Directors Statement of 2004, and many themes at the annual International Astronautical Federation Congress.

My findings in the dissertation are as follows: 1) hyper-privatization of outer space is occurring in the third epoch because a dominant group, the space transnational capitalist class, led by business moguls and private-sector businesses have systematically lobbied the U.S. government to create new policy and new laws, 2) the hyper-privatization of outer space is occurring in the third epoch through the creation of new U.S. laws in conjunction with the New Vision for U.S. Space Exploration policy of 2004, and key actors within the international space community have not challenged this new movement, 3) there are old and new actors influencing this hyper-privatization, including the U.S. government, private-sector business moguls and space industry leaders, along with actors within the international space community, and 4) to secure the consent of civil society vis a vis hyper-privatization, several cultural practices have been put in place by the space transnational class in concert with the U.S. state. These include education and employment initiatives, small business prizes, mega conferences, and new entertainment strategies.

I further found that the U.S. government has used the following mechanisms to influence hyper-privatization of outer space: 1) the New Vision for U.S. Space

Exploration Policy of 2004, 2) the President's Commission Report of 2004; 3) the U.S. Space Transportation Policy of 2005; 4) the Commercial Space Launch Amendments Act of 2004; the NASA Authorization Act of 2005.

Another finding is that the private-sector, as a key actor in the hyper-privatization of outer space used these mechanisms of influence: 1) lobbying activities and 2) testimonies at government hearings before the executive legislative branches of the U.S. governments. This includes the congressional subcommittee and senate subcommittee on space during 2001-2004 and the President's Commission hearings in 2004. The private-sector has also taken various other actions to influence outer space development regime change including funding private space transportation companies, awarding million dollar prizes for privatization of space projects and by business moguls appearing before the mass media in spacesuits and as excited by private space travel.

The key actors within the international community have helped to influence space hyper-privatization by doing the following: 1) allowing international space law to remain vague on the issue of property rights; 2) consistently increasing its Congress focus towards emphasizing the relevance of the private-sector industries, privatization and commercialization; and 3) publishing a Board of Directors Statement in 2004, which contained a caveat clause permitting private entities "to conduct activities in space in accordance with international space law".

Asserted in Gramscian terms, these findings suggest that a dominant class of actors, working to facilitate the hyper-privatization of outer space have established hegemony by legitimizing their dominance through the formal U.S. state apparatus and by getting civil society to consent to these processes. Hence, I have argued that a

Gramscian analysis best explains these relationships and how they have worked over time and at specific historical moments to influence and legitimize regime change. This analysis includes an explanation of how hegemony, consent, symbolic and institutional coercion, the extended state, organic intellectuals and historic bloc work together as an exercise of political and ideological power by a dominant group. Chapter 2 and 3 utilize this framework to examine the first and second epoch of the outer space development regime. Chapters 4, 5 and 6 analyze the third epoch using this framework. In these chapters, a Gramscian analysis allows us to see that seemingly random or unrelated acts are part of a collective pattern being carried out by this dominant group using state and international institutions. This analysis has further allowed me to demonstrate how taking of public resources to profit a dominant group is legitimized so that the public consent to the process, which does not benefit the public in any significant way.

### **Significance and Implications**

As stated in Chapter 1, this dissertation has significant implications for both theory and policy. Theoretically, this dissertation provides a Gramscian analysis of regime change in outer space development. While Gramscians have contributed to a burgeoning literature on important issues in international relations, the outer space development regime has not been addressed by them. By showing the influence of the space transnational capitalist class and its success in hyper-privatization of outer space in the third epoch, this dissertation provides an important additive to the Gramscian literature.

In addition, the regime literature in international relations which includes realist, neorealist, neoliberal institutionalist, cognitivist and constructivist contributions,

generally does not include the role of private capital in regime creation, maintenance or change. By using a Gramscian analysis that interrogates the links between hegemony, state and civil society, and the manufacturing of consent, this dissertation is able to center the role of neoliberal ideology and private capital in outer space development regime change. This dissertation thus provides important insights for both regime theory in general and the literature on the outer space development regime in particular.

This dissertation has significant policy implications as well. By focusing on the increasing role of private capital and the new conquest paradigm, I suggest in the following sections that global structural inequities may be exacerbated if the hyper-privatization of outer space continues to go unchallenged. The following section discusses these issues in greater detail.

### **The Increasing Role of Private Capital**

As stated above, this research provides a documented analysis of the politics of space law and changes in the outer space development regime in the third epoch, which has theoretical and policy significance. This includes showing the invisible links between the role of private capital, its interconnections with the US state, and the influence of a neo-liberal global order regarding the changes in the outer space regime which have not been systematically documented. By pointing out the various links between private-sector business interests and the hyper-privatization of outer space, this dissertation suggests that the role of capital is central to understanding outer space development regime change. It further provides a unique vantage point

for understanding the influence of neoliberal ideology and the power of private capital in the politics of international regime change.

Consistent with the critique of neoliberalism and trickle down theory, this new hyper-privatization policy promises to benefit everyone, yet, the legal and policy provisions only seem to serve the interests of members of the space transnational capitalist class. This will most likely lead to an increase in inequality gaps between rich and poor, as well as between North and South. I am suggesting that without explicit provisions to benefit other members of society, those outside the dominant space transnational capitalist class will not significantly benefit from the hyper-privatization of outer space. Perhaps a few people will receive marginal short-term benefits such as menial or management level jobs. A few schools may be able to call themselves “NASA explorer” schools. A few people may win small business prizes to help in the hyper-privatization of outer space. A few people may be excited during a new movie about outer space. However, in order to benefit from the new policies and new laws pertaining to outer space requires significant amounts of capital in order to invest in space equipment - the means for space travel.

A *new space race* is underway involving billionaires who have turned their interests to private space travel. This is distinct from the U.S. – U.S.S.R. Cold War space race, which involved governments in competition for national prestige. For example, on October 4, 2004, SpaceShipOne won the 1<sup>st</sup> annual ten million dollar \$10,000,000 Ansari X Prize. A few months earlier, the Federal Aviation Administration Office of Commercial Space Transportation (U.S.) had issued the world’s first license for the private sub-orbital trip to outer space. This was the first time in history that a privately

funded, private spaceship has traveled into outer space. This event received wide media coverage and was spoken of as being akin to the historic Charles Lindberg flight. But, when Sputnik was launched on October 4, 1957 this alerted global panic. State leaders immediately took action calling for meetings, discussions to institute the passage of international space laws (Doyle, 2002; Metcalf, 1999).<sup>1</sup>. Shortly thereafter debates on space law took place in the United Nations from November 17-24, 1958. During these debates states pressed the United Nations to create a body of law to govern the new territory. In comparison, the SpaceShipOne launch, although the first of its kind (private) in 2004, did not arouse global panic or *international* lawmaking activities. It seems no one rushed to the United Nations out of fear or concern. Apparently no one requested the COPUOS or its Legal Subcommittee to pass international laws to govern private trips to space. This is because privatization, like commercialization, is increasingly seen as the norm. All space trips prior to SpaceShipOne were public/government operations.

In contrast, this private space trip can be regarded as a signifier that private investment and private space trips are increasingly being promoted and accepted as the norm. A surprising number of business moguls, many of whom became billionaires during the internet revolution, have testified before the U.S. Senate Subcommittee on Science, Technology, and Space, the House Subcommittee on Space & Aeronautics, and the President's Commission on Implementation of U.S. Space Exploration, asserting that it is time to expand the role of the private-sector. This includes a mandate to "transform" NASA. Political lobbying activity by new space entrepreneurs is happening concurrently with similar activities by members of the established space industrial base, who have also provided similar testimonies before these tribunals. The new space race is being run by

space entrepreneurs who are seeking public support through the legalization of private space travel. Why? One answer may be the fact that unique and natural resources such as the platinum group metals are virtually untapped and abundant in outer space, and are fairly easy to get to. The high technology applications for these types of natural resources make them priceless - worth trillions of dollars. Having the means to get to outer space assures the private control of such resources.

Space resources were once thought to have been deemed the "province of mankind" according to the international space law treaties<sup>2</sup>. Since no one can say definitively what the term *province of mankind* really means, there is still a gap in international space law. This is important to address because, as described above, in the third epoch, the dominant ideology gravitates towards applying a free market approach to outer space. It is also important to note that the U.S. has historically played the role of the hegemonic state, setting the trend for space commercialization and privatization. Therefore, it seems highly likely that President Bush's New Vision for U.S. Space Exploration Policy may establish a legal loophole to facilitate the hyper-privatization of outer space at the international level. For example, Recommendation 5-2 of the Commission report<sup>3</sup> reads:

The Commission recommends that Congress increase the potential for commercial opportunities related to the national space exploration vision by providing incentives for entrepreneurial investment in space, by creating significant monetary prizes for the accomplishment of space missions and/or technology developments and by assuring appropriate property rights for those who seek to develop space resources and infrastructure.

(President's Commission Report of 2004 at pg. 32)

For years now, the members of the International Institute of Space Law have debated the issue of whether or not private property rights are allowable in accordance

with international space law. Now it appears from a reading of the above passage of the President's Commission report that the U.S. may have, began to assert a new pattern for granting private property rights regarding outer space resources. The likelihood of a trend being established is great if we consider this significant new action taken coupled with the caveat note appearing at the bottom of the IISL Board of Directors Statement of July 2004 entitled "On Claims to Property Rights Regarding the Moon and Other Celestial Bodies"<sup>4</sup>. The statement itself basically says no to private property rights in outer space. However, the note appearing at the bottom of this statement may arguably be treated as a legal loophole. The note reads:

Notwithstanding matters covered in the above Statement, the Board of Directors of the IISL recognises that other private activities on the Moon and other celestial bodies are permitted. Article VI of the Outer Space Treaty affirms that non-governmental entities, including private individuals, companies, and organizations, have the right to conduct activities in space in accordance with international space law, and subject to the authorization and continuing supervision of the appropriate State Party. The IISL plans to convene a Workshop to explore issues regarding the relationship of government and private sector in space.

(IISL Board of Directors Statement of July, 2004)

The phrase "including private individuals, companies, and organizations, have the right to conduct activities . . ." could serve as a legal loophole. In addition, the phrase, "in accordance with international space law" could serve as an additional legal loophole since the issue of whether or not international space law allows or prohibits private property rights is currently stuck in debate status within both the UN COPUOS and the IISL. In addition to all of the new actions outlined in Chapter 5 and Chapter 6 and these possible legal loopholes, millions of dollars are being offered through various prizes to spur increased privatization of space. This is all linked to space tourism, space mining,



and space settlement. In addition to the \$10 million dollar Ansari X Prize, many other cash prizes are being offered to spur space entrepreneurship - space privatization – for brave souls willing to take the space commercialization to higher heights. Examples, as stated elsewhere include but are not limited to the NASA Centennial Challenges Prizes (\$100,000,000), the America's Space Prize (\$50,000,000 million), the Heinlein Prize for Practical Accomplishments in Commercial Space Activities (\$500,000) and the NASA.

### **A New Conquest Paradigm**

The President's New Vision for U.S. Space Exploration Policy contains many themes reminiscent of the New World, Christopher Columbus expressing the need for exploration and conquest. Discourse surrounding the possession of the North American Continent relied heavily on Christianity as a governing ideology. The discourse surrounding the current process of possessing outer space relies heavily on the dominant ideology of free market capitalism. Several international relations theorists have critiqued the Christopher Columbus paradigm, but as of now there is no such critique of current attempts to justify the taking of public space resources through recent doctrines of discovery, exploration and conquest regarding outer space. This dissertation fills the vacuum by suggesting that the Columbus paradigm is now being extended to outer space.

Shiva's (1997) critique of the Columbus paradigm of exploration and discovery resonates well with a Gramscian approach. It helps us understand the ways in which the 1492 type of exercise of power is occurring in the *new new world* – the outer space territory. This critique provides critical conceptual tools to understand the current exploration of outer space territories to extract space resources. According to Shiva, when Europeans first colonized the non-European world, they felt it was their duty to “discover

and conquer,” to “subdue, occupy, and possess” (Shiva, 1997: 3). Shiva's analysis points out how colonies have now been extended to the interior spaces, the “genetic codes” of life-forms from microbes and plants to animals, including humans”. In addition, Shiva critiques the grant of title to land and private property rights of public domain property to corporations. Shiva's (1997) central argument is that the creation of private property rights for global elites occurs at the expense of the global poor. This dissertation has suggests that the definition of colonies is now being expanded to include outer space.

Christopher Columbus desired to find a new route to India and the Far East in order to get precious metals and valuable resources to attain wealth. It is important to note that Columbus secured funding for his journey from King Ferdinand and Queen Isabella of Spain. They provided him with money, three ships, and about 90 people for this exploration journey of 1492<sup>5</sup>. The rest was history. This dissertation has demonstrated that in the third epoch of outer space development, U.S. Congress has granted the funding for various private sector activities through the NASA Authorization Bill (2005). This will provide money from tax revenues, spaceships, and astronauts. The rest may soon be history. Publicly funded space equipment such as telescopes have found planets around other stars and have stated that celestial bodies within the solar system including the Moon and asteroids contain all sorts of minerals and metals - in higher concentrations than found on Earth. This means that they are far more valuable and have a higher market value. For example, oxygen, helium 3, silicon, aluminum, iron, platinum metals, calcium, magnesium and many others are found in higher concentration in space. The next step is extracting and using space resources such as water on the Moon or Mars for oxygen to breathe and hydrogen to burn as fuel, or platinum from asteroids for

various uses. This knowledge was provided by NASA which has conducted hundreds of successful missions to most of the key celestial bodies in our solar system. Today experts know what resources are out there and where they are because of this government program, which is being constructed as incapable of carrying out the President's New Vision. Thus, this sort of insinuation about the inefficiency of government programs to manage outer space affairs promotes the efficacy of the private-sector in handling outer space development.

Several critical IR theorists have explained the process through which global capital has operated to reinforce global power hierarchies (Chowdhry & Nair, 2002). This includes explaining the role played by race, class, gender and class in processes which guarantee increased levels of inequality. In addition, this literature has suggested that the causes of inequity gaps between North and South are usually obfuscated. Once these inequities are established, it becomes very difficult to overcome them. This dissertation demonstrates that paradigm of discovery as it is being applied to outer space, will most likely increase global inequities. This is not widely publicized and very few people are aware of the President's New Vision Policy and the political actions outlined in Chapter 5.

As stated earlier, the Columbus paradigm that is used by Shiva resonates well with a Gramscian analysis. Unlike realism, neorealism or neoliberal institutionalism, a Gramscian analysis provides an explanation for the discourse of conquest being utilized in the outer space development regime. For Gramscians, the push to privatize outer space development will mainly benefit the transnational outer space class. However, U.S. government and private space entrepreneur rhetoric seeks to gain legitimacy and

manufacture consent by addressing the ways in which this push to colonize outer space will benefit *all* members of society.

## CONCLUSION

New U.S. law and policy have been put into place to influence the hyper-privatization of space. This is occurring today in a historical epoch where globalization, capitalism, and free market ideology are dominant operators in the global arena. Historically, the U.S. as a state actor has always led the process of change in the international space law and outer space development regimes. However, it is now unabashedly leading the way in the hyper-privatization of outer space. In addition, companies and entrepreneurs are also taking political action to shape the direction and nature of outer space development along hyper-privatization lines. This will more than likely spread inequality gaps between people and between nations, at the same time as the benefits of the space transnational capitalist class increase. The same forces that created structural phenomena producing patterns of inequality are currently and silently at work to perpetuate similar patterns of dominance for the final frontier – humankind’s next territory for colonization<sup>6</sup>. Similar to the era of colonization where patterns of global inequality and dominance were institutionalized, it is likely that we may see an increase in these patterns as the new space transnational capitalist class succeeds in the hyper-privatization of outer space and dominates the *new*, new frontier.

While significant efforts to resist colonization have been documented by scholars, there is very little or no resistance to these efforts to colonize outer space. The reasons for these are obvious. First, very little is known even by scholars, much less ordinary people, about the laws, policies and political activities which have been established to hyper-

privatize outer space. In fact, the mention of the hyper-privatization of outer space generally evokes giggles from most people. They see it as a far fetched and funny idea. Given this widespread reaction, it would be hard to imagine a resistance to this process. Second, since most people view space as uninhabited, mysterious, other worldly and “out-there”, they are really not concerned about its colonization. Unlike colonies where people were impacted by the ill effects of colonization, there are yet no known inhabitants in outer space. Thus, it is difficult for ordinary people to feel any concern regarding that territory, even though it belongs to them. In addition, since there is no populace inhabiting outer space, there is no possibility of a resistance from outer space! Finally, while there are some international space lawyers who have tried to halt the hyper-privatization, particularly as it relates to the province of mankind, the disciplinary power of a global, neoliberal agenda which promises immeasurable wealth and access to untapped resources, makes the possibility of resistance difficult and unlikely.

## ENDNOTES

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<sup>1</sup> Refer to U.S. Senate report, *Documents on International Aspects of the Exploration and Use of Outer Space, 1954-1962*, a Staff Report prepared for the Senate Committee on Aeronautical and Space Sciences, May 9, 1963, GPO, Washington, D.C. at pp. 51-52, 55-56, 62-64, and other communications in those pages for examples of letters exchanged between U.S. President Dwight Eisenhower and U.S.S.R. Premier Bulganin. See also C.Q. Christol, *The Modern International Law of Outer Space*, 12-14 (New York: Pergamon Press, 1982); A.G. Haley, *Space Law and Government*, 313-314 (New York: Appleton Century Crofts, 1963) and M.S. McDougal, H.D. Lasswell and I.A. Vlasic, *Law and Public Order in Space*, 205-210 (New Haven: Yale University Press, 1963).

<sup>2</sup> This may later prove to be problematic since the grant of ownership rights to outer space including the Moon or any other celestial bodies, arguably contradicts legal norms established by international law. During the first epoch, international space law treaties and UN declarations agreed upon by an international community of approximately a hundred nations, deemed the outer space territory as a public or commons territory. The international community of nations specifically granted freedom to use outer space to the

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*province of mankind*, and determined that any such uses would be for the benefit of all mankind. This includes both the resources and the territories.

<sup>3</sup> See the Report of the President's Commission on Implementation of U.S. Space Exploration Policy: *A Journey to Inspire, Innovate and Discover*, ISBN 0-16-073075-9, (U.S. Government Printing Office, Washington, D.C.) (June 16, 2004). In February 2004, President Bush announced a New Vision for U.S. Space Exploration Policy. He also created a commission, the President's Commission on Implementation of United States Space Exploration Policy to advise him on matters of space travel including the Moon, Mars and other celestial bodies, and mandating the holding of a series of public hearings regarding the future of the U.S. space program in addition to creating a new U.S. Space Transportation Policy in January 2005.

<sup>4</sup> <http://www.iafastro-iisl.com>.

<sup>5</sup> See Adams, Herbert Baxter, and Henry Wood. *Columbus and His Discovery of America*. New York: AMS Press, 1971; Bradford, Ernle Dugate Selby. *Christopher Columbus*, New York: Viking Press, 1973; Bedini, Silvia A., ed. *The Christopher Columbus Encyclopedia*. New York: Simon & Schuster, 1992.

<sup>6</sup> The geostationary orbit has already been colonized. There are approximately a thousand satellites orbiting in this region. Slots in the geostationary orbit were allocated to various states through the International Telecommunications Union during the second epoch. This activity has resulted in a lucrative industry due to a multitude of goods and services stemming from satellite telecommunications.

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## APPENDIX 1

### Primary and Secondary Documents

#### CHAPTER TWO

##### United Nations Documents

###### **The Outer Space Treaties:**

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty", adopted by the General Assembly in its resolution 2222 (XXI)), opened for signature on 27 January 1967, entered into force on 10 October 1967, 98 ratifications and 27 signatures (as of 1 January 2003)

The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement", adopted by the General Assembly in its resolution 2345 (XXII)), opened for signature on 22 April 1968, entered into force on 3 December 1968, 88 ratifications, 25 signatures, and 1 acceptance of rights and obligations (as of 1 January 2003)

The Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention", adopted by the General Assembly in its resolution 2777 (XXVI)), opened for signature on 29 March 1972, entered into force on 1 September 1972, 82 ratifications, 25 signatures, and 2 acceptances of rights and obligations (as of 1 January 2003)

The Convention on Registration of Objects Launched into Outer Space (the "Registration Convention", adopted by the General Assembly in its resolution 3235 (XXIX)), opened for signature on 14 January 1975, entered into force on 15 September 1976, 44 ratifications, 4 signatures, and 2 acceptances of rights and obligations (as of 1 January 2003)

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Agreement", adopted by the General Assembly in its resolution 34/68), opened for signature on 18 December 1979, entered into force on 11 July 1984, 10 ratifications and 5 signatures (as of 1 January 2003)

**UN Declarations and Legal Principles Regarding Outer Space:**

The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space (General Assembly resolution 1962 (XVIII) of 13 December 1963)

The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (resolution 37/92 of 10 December 1982)

The Principles Relating to Remote Sensing of the Earth from Outer Space (resolution 41/65 of 3 December 1986)

The Principles Relevant to the Use of Nuclear Power Sources in Outer Space (resolution 47/68 of 14 December 1992)

The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (resolution 51/122 of 13 December 1996)

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National Space Law: The Latin America and Caribbean Perspective”, February 8, 2005 at 5-6).

Proceedings, United Nations/Nigeria Workshop on Space Law, “Meeting International Responsibilities and Addressing Domestic Needs”, United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, Abuja, Nigeria, Report A/AC.105/866, November 21-24, 2005.

United Nations Committee on Peaceful Uses of Outer Space, Legal Subcommittee 46<sup>th</sup> annual session from June 6-9, 2003 in Vienna Austria.

## **U.S. Executive Branch Policies**

### **Policy Reports, Statements Speeches**

President George W. Bush’s Speech at NASA Headquarters, January 14, 2004 announcing the New Vision for U.S. Space Exploration Policy

U.S. Space Transportation Policy Fact Sheet, January 6, 2005 at <http://ostp.gov/html/SpaceTransFactSheetJan2005.pdf>

Presidential Policy Report: “A Renewed Spirit of Discovery”, White House document of February 17, 2004, The President’s new Vision of U.S. Space exploration Policy; White House press release regarding the New Vision Policy: [http://www.whitehouse.gov/space/renewed\\_spirit.html](http://www.whitehouse.gov/space/renewed_spirit.html).

Report of the President's Commission on Implementation of United States Space Exploration Policy, "A Journey to Inspire, Innovate and Discover" (ISBN 0-16-073075-9, U.S. Government Printing Office, Washington, D.C.),

National Aeronautics and Space Administration, *Budget for Fiscal Year 2004* pp. 271-278 quoted in White House Press Release entitled “National Aeronautics and Space Administration” at <http://www.whitehouse.gov/news/usbudget/budget-fy2004/nasa.html> (accessed 9/25/04).

### **Hearing Transcripts**

**The President’s Commission on Moon, Mars and Beyond, Hearing on February 11, 2004, National Transportation Safety Board Conference Center, Washington, D.C., Testimony Transcripts pp. 1-66.**

#### ***Testimonies of Witnesses Reviewed:***

Ray Ernst, Chairman of the Aerospace Industries Association Space Council

Mark Bitterman, Chairman of the U.S. Chamber of Commerce, Space Enterprise Council

Norman Augustine, Chairman of the Advisory Committee on the Future of the U.S. Space Program

General (retired) Tom Stafford



Cort Durocher, Executive Director of the American Institute of Aeronautics and Astronautics

**The President's Commission on Moon, Mars and Beyond, Hearing on March 3-4, 2004, U.S. Air force Museum, Wright-Patterson Air Force Base, Ohio, Testimony Transcripts pp. 1-163.**

***Testimonies of Witnesses Reviewed:***

*March 3, 2004*

*Inspiring Youth and Improving Science/Math Literacy*

Dr. Patricia Arnold, Vice President Education

US Space Foundation

Mrs. Margaret G. Finarelli, Vice President North American Operations

International Space University

Dr. June Scobee Rodgers, Founding Chairman

Challenger Center for Space Science Education

Mr. Brett Williams, Teacher

Fredericksburg High School Aerospace Program

*Creating Prosperity and Fostering a Competitive Environment*

Dr. Daniel J. Curran, President University of Dayton

Mike Cross, Project Manager Ball Aerospace

Richard J. Omlor, President & CEO, YSI, Incorporated

Dr. Vincent J. Russo, Retired Sr. Executive in the Military Service

*Human Sustainability for Long Term Spaceflight*

Wright State University School of Medicine

Dr. Stanley Mohler, Professor of Aerospace Medicine

Dr. Mary Ann Frey, Professor Emeritus in Aerospace Medicine

*Thursday, March 4, 2004*

*Science and Technology*

Gen. Lance W. Lord, Commander, Air Force Space Command

Gen. Gregory S. Martin, Commander, Air Force Materiel Command

MGen. Paul D. Nielsen, Commander, Air Force Research Laboratory

*Science and Technology*

Dr. Roger Angel, Professor of Astronomy & Optical Sciences, University of Arizona

Dr. Andy Cheng, Sr. Staff & Supervisor of the Planetary Exploration Group, Johns Hopkins Applied Physics Laboratory

Dr. Michael Duke, Director of Space Combustion Center, Colorado School of Mines

*Management and Sustainability*

Senator John Glenn

*Science and Technology*

Col. Joseph F. Boyle, Associate Director of the Propulsion Directorate

Dr. Charles E. Browning, Director, Materials & Manufacturing

Col. Michael B. Leahy, Jr., Director, Air Vehicles

Col. William N. McCasland, Director, Space Vehicles

*Management and Sustainability: Issues and Opportunities Regarding the U.S. Space Program*

Lennard A. Fisk, Chairman, Space Studies Board  
National Research Council

*Management Techniques for a "System of Systems"*

The Boeing Company  
Lockheed Martin  
Northrop Grumman

**The President's Commission on Moon, Mars and Beyond, Hearing on March 24-25, 2004, Georgia Centers for Advanced Telecommunications Technology, Atlanta, Georgia, Testimony Transcripts pp. 1-159.**

***Testimonies of Witnesses Reviewed:***

*March 24, 2004*

*Space Entrepreneurs*

Mr. Elon Musk, Founder, Zip2 and PayPal  
Dr. Peter Diamandis, Chair & CEO, ZeroGravity Corp.

Mr. Jeff Greason, XCOR Aerospace  
Georgia Institute of Technology

Dr. Narayanan Komerath, Professor, School of Aerospace Engineering  
- Field of Research: Developing Space-based Economy

Mr. Daniel Hegeman, Student, Aerospace Engineering  
- Student government representative and research member of  
"Mars Desert Research Station"

Dr. Paul Ohme, Director, Center for Education Integrating Science,  
Mathematics, and Computing

*Developing Public/Private Partnerships*

CAPT Winston Scott, (USN, retired) Executive Director, Florida Space  
Authority

Mr. John Hager, Homeland Defense, Virginia

Mr. Tim Huddleston, Executive Director, Aerospace States Association

*March 25, 2004*

*Building Space Jobs*

Dr. Michael Balzano, Executive Director, National Industrial Base Workforce Coalition

Mr. Charlie Bofferding, Council of Engineering and Scientists

Mr. Jeff Rainey, Business Representative of District 166,  
International Association of Machinists and Aerospace Workers

*Lessons Learned Regarding Managing a "System of Systems"*

Mr. Gary Payton, Deputy for Advanced Systems  
Missile Defense Agency

*National Research Council Report: "Safe on Mars"*

Mr. Frederick H. Hauck, President & CEO, AXA Space

Professor Harry Y. McSween, Jr., University of Tennessee

Dr. Ronald E. Turner, Principal Physicist, ANSER Corporation

Mr. Buzz Aldrin, Apollo 11 Astronaut

*Commercial Space & Economic Feasibility*

Mr. Michael E. Kearney, President & CEO, Spacehab, Inc.  
Mr. Marco H. Caceres, Senior Analyst & Director Space Studies  
The Teal Group  
Mr. Stephen Fleming, EGL Ventures

*Media Panel*

Mr. Daniel Stone, President & CEO, Space Holdings (Space.com,  
Space News, Starry Night)  
Mr. Miles O'Brien, CNN  
Mr. Gary Robbins, Orange County Register  
Mr. Scott Heiferman, Meetups (invited)

**The President's Commission on Moon, Mars and Beyond, Hearing on April 15-16,  
2004, Galileo Academy of Science and Technology, San Francisco, California,  
Testimony Transcripts pp. 1-163.**

***Testimonies of Witnesses Reviewed:***

*April 15<sup>th</sup> Hearing*

Ray Bradbury, Writer  
John Bernardoni, Ancient Mariner Media  
Lawrence Holland, Totally Games  
Educating Tomorrow's Astronauts  
Barbara Morgan, Educator/Astronaut  
Dr. Jerry Wheeler, Executive Director, National Science Teacher's  
Association  
Jim McMurtray, Executive Director, National Alliance State Science  
and Mathematics Coalitions  
Dominic Farrar, Odyssey Program

*Sustainability for the Long Haul*

Reecie Giesecke, President UAW Local 848  
Dean Zvorak, President UAW Local 887  
David Goodreau, Chairman and Co-founder Small Manufacturers  
Association of California

*April 16<sup>th</sup> Hearing*

*Propulsion Requirements*

Byron Wood, Boeing Rocketdyne  
Michael F. Martin, Aerojet  
James Mosquera, US Navy (Naval Reactors)

*Prospects for Space Prosperity*

Dr. Stan Rosen, California Space Authority  
James Benson, SpaceDev

*Planetary Science*

Dave Morrison, NASA Ames Research Center  
Michael Carr, US Geological Survey, Astrogeology Dept.  
Jonathan Lunine, University of Arizona

*Robotics*

William L. "Red" Whittaker, Carnegie Mellon Robotics  
Provost M.R.C. Greenwood, University of California

**The President's Commission on Moon, Mars and Beyond, Hearing on May 3-4, 2004, The Asia Society, New York, New York, Testimony Transcripts pp. 1-178.**

*Testimonies of Witnesses*

*May 3<sup>rd</sup>*

*International Space Partnerships*

Daniel Sacotte, European Space Agency

M. Philippe Berterottière, Arianespace

Kiyoshi Higuchi, JAXA

*Lunar and Other Space Science*

Stu Nozette, National Aeronautics and Space Administration

Dr. Tony Tether, Defense Advanced Research Projects Agency

John Delano, University at Albany (State University of New York)

Ariel Anbar, University of Rochester

*Space to the People!*

George Whitesides, National Space Society

Nick Eftimiades, Federation of Galaxy Explorers

Frederick Hauck, Association of Space Explorers

Louis Friedman, Planetary Society

*Tuesday, May 4, 2004*

*Sustainability and Management*

Roger Krone, Boeing

*Astrophysics for the Beyond*

Catherine Pilachowski, American Astronomical Society

William Smith, Association of Universities for Research in Astronomy

David Spergel, Princeton

10:30 a.m. Space Prosperity and Resource Development

John Higginbotham, SpaceVest

Joel Greenberg, Princeton Synergetics

Myles Walton, Morgan Stanley

*International*

Marc Garneau, Canadian Space Agency

Representative, German Space Agency

*Media – The Big Picture*

Rich Gelfond, IMAX

David Levy, *PARADE*

Craig Covault, *Aviation Week*

Sean O'Keefe, NASA Administrator

**Hearings Transcripts: U.S. House of Representatives**

**House of Representatives, Committee on Science, Subcommittee on Space & Aeronautics**

April 3, 2001, "Vision 2001: Future Space", 107th Congress, 1st Session

May 15, 2001, “The Aerospace Industrial Base”, 107th Congress, 1st Session

June 26, 2001, “Space Tourism”, 107th Congress, 1st Session

March 7, 2002, “A Review of Civil Aeronautics Research and Development, 107th Congress, 2nd Session

July 24, 2003, “Commercial Human Spaceflight”, 108th Congress 1st Session

November 5, 2003, “H.R. 3245 – The Commercial Space Act of 2003”, 108th Congress 2nd Session

March 18, 2004, “NASA-DoD Cooperation in Space Transportation”, 108th Congress 2nd Session

July 15, 2004, “Contests and Prizes: How can they help advance space exploration?”, 109th Congress 1st Session

March 16, 2005, “The Future of Aeronautics at NASA”, 109th Congress 1st Session

April 20, 2005, “Future Markets for Commercial Space”, 109th Congress 1st Session

June 29, 2005, “The National Aeronautics and Space Administration Authorization Act of 2005”, 109th Congress 1st Session

October 27, 2005, “Financial Management at NASA: Challenges and Next Steps”, 109th Congress, 1st Session

**Senate Committee On Commerce, Science & Transportation and the Subcommittee on Science, Technology and Space**

July 24, 2003           Hearing on “Space Commercialization”

October 29, 2003       Hearing on “Future of NASA”

November 6, 2003     Hearing on “Lunar Exploration”

January 28, 2004      Hearing on “NASA’s Future Space Mission”

February 18, 2004     Hearing on “Field Hearing on the President’s New Vision”

April 7, 2004          Hearing on “Near Earth Objects (NEO)”

May 5, 2004           Hearing on “Space Shuttle and the Future of Space Launch Vehicles”

September 8, 2004    Hearing on “NASA’s Space Shuttle Program”

April 20, 2005         Hearing on “International Space Station Research”

May 18, 2005          Hearing on “Human Spaceflight: The Space Shuttle and Beyond”

**U.S. Legislation**

National Aeronautics and Space Administration Authorization Act of 2005, Public Law 109-155 (109<sup>th</sup> Congress, 1<sup>st</sup> Session); former Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005

The Commercial Space Launch Amendments Act of 2004, Public Law 108-492, December 2004

The Commercial Space Launch Act of 1984 ("the Act"); as codified at 49 U.S.C. Subtitle IX--Commercial Space Transportation, Ch. 701, Commercial Space Launch Activities, 49 U.S.C. 70101-70119 (1994),

Bill H.R. 5122 introduced in the 109<sup>th</sup> Congress, 2<sup>nd</sup> Session, on April 6, 2006 (amended and proposed May 5, 2006) proposes the See H.R. 2420 and H.R. 2601.

Senate Bill 1281 (and former House bill H.R. 3070) passed on 12/17/2005

Invest in Space Now Act (H.R. 2358), the Zero Gravity, Aero Tax Act (H.R. 914).

### **Websites**

Coalition for Space Exploration website <http://www.spacecoalition.com> (accessed 6/8/06).

Space Foundation website at <http://www.spacefoundation.org>.

<http://www.prospace.org/tiki-index.php>.

<http://ast.faa.gov/about.cstl>.

<http://www.unoosa.org>.

<http://dir.yahoo.com/Science/Space/Exploration/Missions>.

[http://www.whitehouse.gov/space/renewed\\_spirit.html](http://www.whitehouse.gov/space/renewed_spirit.html)

<http://www.lucent.ca/gov>.

President's Commission on Moon, Mars and Beyond go to  
(<http://www.moontomars.org/about/members.asp>)

[www.moontomars.org/notices/contact.asp](http://www.moontomars.org/notices/contact.asp).

<http://www.spacefuture.com/tourism/timeline.shtml>.

[http://www.house.gov/house/Tying\\_it\\_all.shtml](http://www.house.gov/house/Tying_it_all.shtml).

[www.spaceadventures.com](http://www.spaceadventures.com).

[www.interorbital.com](http://www.interorbital.com)

[spaceref.com/news](http://spaceref.com/news).

[www.xprize.org](http://www.xprize.org).

<http://www.iafastro-iisl.com>.

[www.spacedev.com](http://www.spacedev.com)

### **Web Reports**

SpaceRef.com, Status Report, July 24, 2003 at

<http://www.spaceref.com/news/vewsr.html?pid=9844>.

"Space Tourism Proponents Hold Congressional Hearing Charter: 'Commercial Human Spaceflight' Before the U.S. Congress and the U.S. Senate", U.S. House of Representatives, Hearing Charter, Commercial Human Spaceflight, July 24, 2003, Senate Committee on Commerce, Science & Transportation Subcommittee on Science, Technology, and Space and the House Committee on Science, Subcommittee on Space & Aeronautics Joint Hearing on Commercial Human Spaceflight Thursday, July 24, 2003;

National Space Society press release, "Space Exploration Alliance to Mobilize 'Moon-Mars Blitz' on Capitol Hill", dated May 17, 2004 at <http://www.nss.org/news/releases/pr20040517.html> (accessed 5/28/005).

U.S. Chamber of Commerce press release, ".S. Chamber Applauds White House Space Initiative Chamber's Space Enterprise Council Welcomes New Vision", January 15, 2005 at [www.uschamber.com/press/releases/2004/january/04-03.htm](http://www.uschamber.com/press/releases/2004/january/04-03.htm).

Michelle Robbins, Co-Chair, Coalition for Space Exploration, February 1, 2005, "Government Affairs Report", <http://www.globalsecurity.org/space/library/report/2005/robbins.pdf#search='Coalition%20for%20Space%20Exploration%20and%20government%20affairs%20report'>.

## **APPENDIX 2**

### **Tables**



**Table 5.1**

The President's Science and Technology Advisory Committee

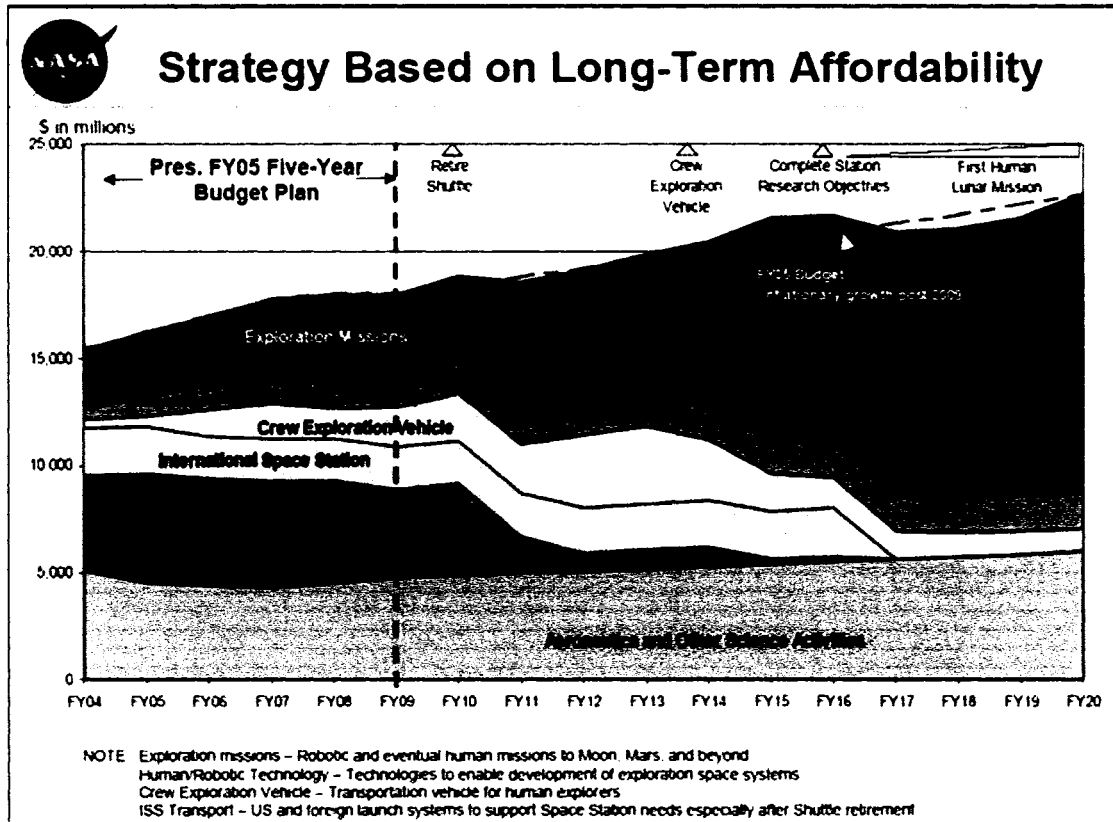
Commission Members	Background	Business Affiliation
<p><b>Edward C. "Pete" Aldridge, Jr., Chairman</b></p>	<p>18 years with Department of Defense: Under Secretary for Acquisition, Technology and Logistics, operations research analyst, Under Secretary and later Secretary of the Air Force under President Ronald Reagan. Previously CEO of The Aerospace Corporation and former President of McDonnell Douglas Electronic Systems Company.</p>	<p>The Aerospace Corporation, McDonnell Douglas Electronic Systems Company</p>
<p><b>Steven Schmidt, Executive Director</b></p>	<p>Steven Schmidt, Deputy Center Director for NASA's Dryden Center Schmidt has served as special assistant to NASA Administrator Sean O'Keefe since January 2002. He currently is serving as executive director for the President's Space Commission and also served as executive secretary for management on the Columbia Accident Investigation Board and as executive assistant for the International Space Station management and Cost Evaluation Task Force. Before joining NASA, Schmidt was once employed by Rockwell International.</p>	<p>Rockwell International Corporation (*Rockwell International no longer exists. In 1979, it started a series of spin-offs, selling most of its defense and all of its space business to Boeing Integrated Defense Systems, including Rocketdyne in December of 1996. The company began to spin-off its semiconductor manufacturing as Conexant, additionally spinning off the automotive and truck business as Meritor, which then merged with Arvin Industries to form Arvin Meritor; the remainder of the company finally split into two totally separate companies: Rockwell Collins, (COL), and Rockwell Automation, (ROK).</p>
<p><b>Michael P. Jackson</b></p>	<p>March 10, 2005, Michael P. Jackson was confirmed by the U.S. Senate to serve as Deputy Secretary of the U.S. Department of Homeland Security (DHS). He serves as DHS' chief operating officer, with responsibility for managing day-to-day operations. Jackson served as Deputy Secretary of the U.S. Department of Transportation (DOT) from May 2001 to August 2003. As Deputy Secretary, Mr. Jackson was the Department's chief operating officer, with responsibility for day-to-day operations of an organization that, following the terrorist attacks of 9/11/01, grew to a \$68 billion annual budget supporting over 179,000 employees<sup>1</sup>. AECOM Technology Corporation, where he was responsible for AECOM government relations globally and served as Chief Operating Officer of AECOM's Government Services Group Michael P. Jackson left his post with the U.S. Department of Transportation to serve as Senior Vice President for AECOM Technology Corporation from 8/1/03 until 3/10/05 when he was appointed as Deputy Secretary of the DHS.</p>	<p>AECOM Technology Corporation (* AECOM is a "Global Company that Delivers Outstanding Solutions" which includes global projects such as designing and building large structures and transportation facilities through a family of operating companies. AECOM also offers specialized services to the operations and maintenance, mining and power, and international development<sup>2</sup>).</p>
<p><b>Robert S. Walker</b></p>	<p>Congressman Robert S. Walker retired from the U.S. House of Representatives after serving Pennsylvania's 16th District for twenty years. During that service he became Chairman of the Science Committee, Chief Deputy Republican Whip, Chairman of the Republican leadership and Speaker Pro Tempore. He currently serves as Chairman of Wexler &amp;</p>	<p>Wexler &amp; Walker Public Policy Associates</p>

<p>General Lester L. Lyles</p>	<p>Retired Oct. 1, 2003 after a distinguished career in the U.S. military. Gen. Lester L. Lyles is Commander, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. On October 22, 2003, MTC Technologies, Inc. announced "the appointment of the recently retired commander of the Air Force Materiel Command at Wright-Patterson Air Force Base, Ohio, to the Company's Board of Directors"<sup>5</sup>. Administration confidante having been asked to serve as Chairman of the Commission on the Future of the United States Aerospace Industry, as a member of the President's</p>	<p>MTC Technologies, Inc. ("MTC Technologies, Inc. (MTC) provides a wide range of sophisticated system engineering, intelligence, information technology, and program management solutions, primarily to the Department of Defense and various intelligence agencies"<sup>6</sup>).</p>
	<p>Commission on the United States Postal Service and Implementation of the United States Space Exploration Policy; was appointed to the Aviation and Space Engineering Board of the National Research Council; appears regularly on CNN and Fox News; is a lecturer at the Brookings Institution, the Georgetown University Government Affairs Institute and the Kennedy School at Harvard University; is a commentator and resource for CNBC, PBS, NBC and several major national as a member of the Presidential Commission on the newspapers; and is a writer of books and articles.</p>	
<p>Carleton S. "Carly" Fiorina</p>	<p>President and CEO of Hewlett-Packard Company since 1999 until February 2005. Formerly spent nearly 20 years at AT&amp;T and Lucent technologies holding a variety of leadership positions. B.A. in philosophy and history from Stanford University, B.A. in Business administration from Robert H. Smith School of Business, University of Maryland and an M.S. from MIT's Sloan School. Fiorina is a member of the boards of directors of the Kellogg Company, Merck &amp; Co. Inc., the U.S. China Board of Trade and PowerUp, a coalition of business, non-profits and government to give underserved children access to technology and guidance on how to use technology. Previously, she held positions on the boards of directors of the USA Republic of China Economic Council; Goldstar Information &amp; Communications, Inc. of Seoul, Korea; and AT&amp;T Taiwan Telecommunications of Taipei. She also served on the board of the Telecommunications Industry Association. For several years Fiorina topped Fortune magazine's list of the most powerful women in American business<sup>3</sup>.</p>	<p>Hewlett-Packard Company, AT&amp;T, Lucent Technologies, Bell Labs (* Lucent Technology is a global operation; their website informs that "Lucent Technologies has a tradition of excellence in network innovation, technology and leadership for the government. Backed by Bell Labs, Lucent delivers on the promise of ensuring mission-critical, converged communications for the Department of Defense, Homeland Security, civilian and intelligence agencies and their missions"<sup>4</sup>. Bell Labs "the innovative engine behind Lucent Technologies" designs communications technology products and services. Their website informs that "More than any other institution, Bell Labs has helped weave the technological fabric of modern society. Its scientists and engineers have made seminal scientific discoveries, have launched technological revolutions that have reshaped the way people live, work and play, and have built the most <i>advanced and reliable communications networks in the world</i>".</p>

<p>Dr. Laurie A. Leshin</p>	<p>Laurie Leshin is The Dee and John Whiteman Dean's Distinguished Professor of Geological Sciences, and the Director of the Center for Meteorites Studies at Arizona State University. She received her B.S. in Chemistry from ASU in 1987, and her M.S. and Ph.D. in Geochemistry from the California Institute of Technology (1989, 1994, respectively). After Caltech, she spent four years at UCLA before returning home to take up her current appointment at ASU. Dr. Leshin is a cosmochemist focusing her research primarily on locating water on objects in our solar system – she has 15 years experience performing quantitative analyses of extraterrestrial samples in the laboratory and participating in space missions. She has worked extensively on both Martian and asteroidal meteorites, as well as micrometeorites and interplanetary dust particles. She studies meteorites from Mars to assess the history of water, and the potential for life on the red planet. Dr. Leshin's research concludes "The crust of the planet Mars may hold two to three times more water than scientists had previously believed"<sup>7</sup>. The International Astronomical Union recognized her contributions to planetary science with the naming of asteroid 4922 Leshin. Dr. Leshin is the lead of the Sample Collection for Investigation of Mars (SCIM) mission team, which was a finalist for the 2007 Mars Scout competition, and will be proposed again in the near future. If selected by NASA, her mission would be the first spacecraft to go to Mars and return to Earth, bringing with it the first samples of martian dust and atmospheric gas for study in labs on Earth. She was a team member of the Mars Polar Lander (MPL) mission. She is a member of the science team for a comet sample return mission and has several instruments being proposed to the 2009 Mars mission.</p>	<p>Arizona State University</p>
<p>Dr. Paul D. Spudis</p>	<p>Dr. Paul D. Spudis is a planetary scientist at the Johns Hopkins University Applied Physics Laboratory. His specialty is the geology of the moon. He has also studied the geology of Mars, Mercury, and many other worlds. He was the deputy leader of the science team for the Clementine lunar mission in 1994. Spudis remains active with NASA and National Academy of Sciences committees. His B.S. in geology is from Arizona State University; an M.S. from Brown University, and his Ph.D. is from Arizona State University<sup>8</sup>. His research indicates that there is ice on the Moon. He was the Deputy Leader of the Clementine Science Team in 1994. His book, <i>The Once and Future Moon (1998)</i>, describes the history of man's study of the Moon, Earth's nearest neighbor in space. He was instrumental in assessing the near-term future of the space program and where the Moon fits into a long-term strategy of space exploration.</p>	<p>Johns Hopkins University</p>
<p>Dr. Neil deGrasse Tyson</p>	<p>Neil deGrasse Tyson is the Director of the Hayden Planetarium where he also teaches. Tyson's professional research interests include star formation, exploding stars, dwarf galaxies, and the structure of our Milky Way. Dr. Tyson was appointed by President Bush to serve on a prior 12-member commission that studied the Future of the US Aerospace Industry. The final report was published in 2002</p>	<p>Hayden Planetarium</p>

	<p>and contained recommendations (for Congress and for the major agencies of the government) that would promote a thriving future of transportation, space exploration, and national security. Dr. Tyson is a prolific writer on space who writes mainly for the public. He is a monthly essayist for <i>Natural History</i> magazine under the title "Universe." And among Tyson's many books are <i>The Sky is Not the Limit: Adventures of an Urban Astrophysicist</i>; and <i>Origins: Fourteen Billion Years of Cosmic Evolution</i>. <i>Origins</i> is the companion book to the PBS-NOVA 4-part mini-series <i>Origins</i> in which Tyson serves as on-camera host. The program premiered on September 28 and 29, 2004. Tyson's contributions to the public appreciation of the cosmos have recently been recognized by the International Astronomical Union in their official naming of asteroid "13123 Tyson."</p>	
<p><b>Dr. Maria T. Zuber</b></p>	<p>Dr. Zuber is a Griswold Professor of Geophysics and Planetary Sciences at the Massachusetts Institute of Technology and leads the Department of Earth, Atmospheric, and Planetary Sciences. Zuber has been involved in more than half a dozen NASA planetary missions aimed at mapping the moon, Mars, Mercury, and several asteroids and on a large number of projects involving the structure, topography and contents of Mars. She received her B.A. in astrophysics from the University of Pennsylvania and her Sc. M and Ph.D. in geophysics from Brown University. She has taught at Johns Hopkins University and served as a research scientist at Goddard Space Flight Center in Maryland.</p>	<p>Massachusetts Institute of Technology</p>

Table 5.2 (Reproduced from the President's Commission Report, 2004: 59)



**TABLE 5.3****U.S. CONGRESSIONAL HEARINGS**

\*This table outlines Congressional hearings which represent of the space transnational capitalist class articulated an interest in space exploration of space.

House of Representatives Committee on Science, Space and Technology		
Date	Title	Stated Purpose
April 3, 2001 107 <sup>th</sup> Congress, 1 <sup>st</sup> Session	<i>Vision 2025: Future Space</i>	To examine issues regarding space travel and the potential for science fiction fantasies to become reality.
May 15, 2001 107 <sup>th</sup> Congress, 1 <sup>st</sup> Session	<i>The Aerospace Industrial Base</i>	To discuss the U.S.' ability to competitively maintain U.S. leadership in aerospace. Of concern was that the U.S. "aerospace industry is in danger of losing its leadership role due to a combination of factors . . ."
June 26, 2001 107 <sup>th</sup> Congress, 1 <sup>st</sup> Session	<i>Space Tourism</i>	To review the issues and opportunities for flying non-professional [privately funded] astronauts in space, the appropriate government role for supporting the nascent space tourism industry, use of the Space Shuttle and Space Station for tourism, safety and training criteria for space tourists, and the potential commercial market for space tourism.
March 7, 2002 107 <sup>th</sup> Congress, 2 <sup>nd</sup> Session	<i>A Review of Civil Aeronautics Research and Development</i>	To consider the Federal Government's proposed FY03 budget and strategy for aeronautics research. The hearing also included witnesses from the private sector who provided a private-sector perspective on aviation and aeronautics issues. Information developed at this hearing was to help the Committee draft legislation reauthorizing NASA and the FAA's
July 24, 2003, 108 <sup>th</sup> Congress 1 <sup>st</sup> Session	<i>Commercial Human Spaceflight</i>	Joint Hearing between the Senate Science, Technology, and Space Subcommittee and the House Subcommittee on Space and Aeronautics) to examine barriers to investing in entrepreneurial space ventures. Topics included the market potential of space tourism, regulatory issues, private sector vehicle technology development, and capital investment considerations.
November 5, 2003 108 <sup>th</sup> Congress 2 <sup>nd</sup> Session	<i>H.R. 3245 - The Commercial Space Act of 2003</i>	To address the legal, regulatory, and public policy ramifications of the Commercial Space Act of 2003. The hearing was called for space entrepreneurs planning to provide round trips into space for paying customers. The new law proposed to regulate and license domestic emerging private commercial human space flight businesses via the FAA/AST. The bill also proposed to provide government indemnification to the private-sector for certain liabilities incurred from accidents.
March 18, 2004 108 <sup>th</sup> Congress 2 <sup>nd</sup> Session	<i>"NASA-DoD Cooperation in Space Transportation</i>	To examine how well NASA and the Department of Defense collaborate on the development of launch vehicle technology, including "how NASA and DoD can do a better job in encouraging the emergence of entrepreneurial space launch companies". Also the Committee focused on President Bush's 2004 announcement and referred to it as beginning "a new chapter in the American space experience" and referred to improving U.S. launch operations as "a critical step in achieving the President's goal of

<p>July 15, 2004 109<sup>th</sup> Congress 1<sup>st</sup> Session</p>	<p><i>Contests and Prizes: How can they help advance space exploration?</i></p>	<p>exploring new worlds". To examine whether and how NASA could use prizes to spur innovation. At the insistence of private-sector lobbyist, NASA requested permission to begin a small prize program and is seeking legislative authority. The type of prizes NASA would offer are known as "inducement prizes" – prizes offered to induce someone to undertake research with a particular goal – as opposed to prizes given for previous achievements.</p>
<p>March 16, 2005 109<sup>th</sup> Congress 1<sup>st</sup> Session</p>	<p><i>The Future of Aeronautics at NASA</i></p>	<p>To focus on the proposed 2006 fiscal year NASA budget, which proposed significant changes in NASA's aeronautic programs, including, over the next five years, dramatic cuts in funding and staffing, closure of facilities, and redirection of research priorities. NASA argued that these proposed changes "would enable NASA to focus on the highest priority areas in aeronautics while freeing up agency funds for space exploration programs, the agency's highest priority".</p>
<p>April 20, 2005 109<sup>th</sup> Congress 1<sup>st</sup> Session</p>	<p><i>Future Markets for Commercial Space</i></p>	<p>To examine the future of the [private-sector] commercial space market and the government's role in that future. Considering the 2004 passage of the new Commercial Space Launch Amendments Act, "regulating one aspect of commercial space – private, human suborbital flights, which are generally intended for space tourism", the hearing examined the potential for space tourism as a viable market with a focus on the 2004 flight into outer space by SpaceShipOne, "the world's first privately-built and human-piloted spacecraft" that won the Ansari X Prize, a \$10 million raised by space enthusiasts to stimulate entrepreneurial interest in space flight. Virgin Galactic, founded by the Virgin companies owner Richard Branson, has announced plans to buy a fleet of spacecraft based on SpaceShipOne's design to carry tourists into suborbital space (an altitude not sufficient to orbit the Earth), possibly as early as 2008.</p>
<p>June 29, 2005 109<sup>th</sup> Congress 1<sup>st</sup> Session</p>	<p><i>The National Aeronautics and Space Administration Authorization Act of 2005.</i></p>	<p>To discuss H.R. 3070 a bill that directs NASA to take several actions including: returning Americans to the Moon no later than 2020; launch a Crew Exploration Vehicle as close to 2010 as possible; and conduct research on the impacts of space on the human body to enable long-duration space exploration; to retire the Shuttle at the end of 2010; to conduct competitions for cash prizes, "modeled after the X-Prize won last year by famed airplane designer Burt Rutan and his SpaceShipOne, to stimulate innovative [private] [emphasis added] technology development"; and the bill extends NASA's indemnification authority, and requires programs addressing near-Earth asteroids and comets. The bill also authorizes \$16,471,050,000 to be given to NASA for fiscal year 2006, approximately \$15 million above the President's FY 2006 request.</p>
<p>October 27, 2005 109<sup>th</sup> Congress, 1<sup>st</sup> Session</p>	<p><i>Financial Management at NASA: Challenges and Next Steps</i></p>	<p>This joint hearing was to examine the "difficulties that the National Aeronautics and Space Administration (NASA) faces in managing and reporting on its finances, the effects these difficulties have on NASA's ability to manage its programs, and NASA's current and planned efforts to address these challenges".</p>

Hearings in the Senate Committee On Commerce, Science & Transportation  
and the Subcommittee on Space, Aeronautics and Space

July 24, 2003	<i>Space Commercialization</i>	To hear testimony on the future of commercial human space flight.
October 29, 2003	<i>Future of NASA</i>	To discuss NASA's future plans for the U.S. space exploration program.
November 6, 2003	<i>Lunar Exploration</i>	To hear testimony from Interlune-Intermars Initiative, Inc. and colleagues regarding future plans for space exploration of the Moon.
January 28, 2004	<i>NASA's Future Space Mission</i>	To discuss President George W. Bush's New Vision (2004) and NASA's role.
February 18, 2004	<i>Field Hearing on the President's New Vision</i>	To hear testimony on President Bush's recent proposal to return astronauts to the Moon and to expand human space exploration to Mars.
April 7, 2004	<i>Near Earth Objects (NEO)</i>	To hear testimony on strategies for identifying and responding to NEOs. NASA conducts the Near Earth Object Observation Program to discover the larger sized asteroids (greater than 1 kilometer or 0.62 miles in size) and periodic comets that pass relatively close to the Earth and may one day pose a collision hazard with our planet.
May 5, 2004	<i>Space Shuttle and the Future of Space Launch Vehicles</i>	To hear testimonies on the U.S. launch capabilities to fulfill the 2004 <i>New Vision</i> mandate.



**Table 5.4**

Participating Organizations	Date	Mission Statement Purpose Clause
American Astronautical Society	1954 (US)	Science and Technical organization "for the advancement of space science and exploration".
Aerospace Industries Association of American, Inc.	1919 (US)	Manufacturers and suppliers of civil, military, and business aircraft and space related equipment .Organized "to shape public policy that ensures the U.S. aerospace, defense, and homeland security industry remains preeminent and that its members are successful and profitable in a changing global market".
Aerospace States Association	1989 (US)	ASA was formed to "promote a state-based perspective in federal aerospace policy development and to support state aerospace initiatives that enhance student/teacher education outreach and economic development opportunities. ASA is an effective vehicle for the formulation of ideas, initiatives and partnerships to benefit member states and their aerospace industries."
American Institute of Aeronautics and Astronautics	1963 (US)	To "advance the arts, sciences, and technology of aeronautics and astronautics, and to promote the professionalism of those engaged in these pursuits."
California Space Authority	1986 (US)	To retain, grow and create California space enterprise and to provide California space enterprise voice, visibility, and a competitive edge and to facilitate the development of California based space-ports.
Florida Space Authority	1989 (US)	To lead Florida to be the world's premier center for space enterprise and to develop Florida as the world's primary space enterprise center by Fostering Research and Education, Enhancing the Business Climate, Improving Space Transportation and Coordination Policy.
The Mars Society	1998 (US)	To "further the goal of the exploration and settlement of Mars by broad public outreach to instill the vision of pioneering Mars, support of ever more aggressive government funded Mars exploration programs around the world and by conducting Mars exploration on a private basis".
The Moon Society/The Artemis Society International	2000 (US)	To "to further scientific study and development of the moon".
National Coalition of Spaceport States	2001 (US)	to ensure inland, entrepreneurial space facilities "have a voice in national policy." Issues of common interest include flight safety standards, FAA regulations, unfair advantages if national launch ranges are turned over to private or other nongovernmental entities and commercial space legislation.
National Space Society	1987 (US)	To promote social, economic, technological, and political change, to advance the day when humans will live and work in space.

The Planetary Society	1989 (US)	To demonstrate "the public strongly supported planetary exploration and the search for extraterrestrial life and to wave that fact in the faces of politicians and policy makers around the world".
ProSpace	1993 (US)	To "expand human access to space; To facilitate the development of commercial space, enterprise; To identify and eliminate barriers hindering that development; To promote space exploration that provides real, relevant and measurable benefit to the American people".
Space Access Society	1992 (US)	Dedicated to "increasing the viability and reducing the cost of commercial access to space travel".
Space Frontier Foundation	1988 (US)	"To unleash the power of free enterprise to enable human migration into space. in the development of commercial Earth-orbit transportation, which will lead to economically sustainable (and thus permanent) space settlements".

**Table 5.4**

**Organizations Supporting Space Exploration**

Participating Organizations	Date	Products Services Mission Purpose
Aerospace Industries Association	1919 (US)	Formed "to foster, advance, promulgate and promote: aeronautics, and "generally, to do every act and thing which may be necessary and proper for the advancement" of American aviation".
International Association of Machinists Aerospace Workers. Some members of this group are not in agreement with the President's New Vision policy)	1888 (US)	An AFL-CIO/CLC trade union representing over 730,000 workers in more than 200 industries. "to professionally negotiate contracts that guarantee secure, well-paying jobs which members can perform in safe workplaces where they would be free from harassment or intimidation".
American Institute of Aeronautics and Astronautics	1919 (US)	Manufacturers and suppliers of civil, military, and business aircraft and space related equipment .Organized "to shape public policy that ensures the U.S. aerospace, defense, and homeland security industry remains preeminent and that its members are successful and profitable in a changing global market".
American Astronautical Society	1954 (US)	To "strengthen the space community, influence the development of space policy, promote international dialogue on space activities, and inspire students to undertake space-related careers while serving the professional needs and interests of its members, both individual and corporate.
California Space Authority	1986 (US)	To retain, grow and create California space enterprise and to provide California space enterprise voice, visibility, and a competitive edge and to facilitate the development of California based space-ports.
Electronics Industries Alliance	1984 (US)	A partnership of electronic and high-tech associations and companies whose mission is

		mission is to "promote the market development and competitiveness of the U.S. high technology industry through domestic and international policy efforts, including serving as a common voice for the industry to educate and inform policy makers and the public; addressing issues that are important to the industry; mobilizing the industry on critical issues; coordinating policies and strategies with all allied associations; expanding the Alliance by recruiting and developing new affiliates, sectors, and corporate members; and promoting standards that serve the industry". It brings together members of the electronics industry, Fortune 500, e-commerce and cyber security arenas.
Space Foundation	1983 (US)	Formed as a "credible source of information" for space professionals and the general public regarding "America's developing space community" in order "to foster, develop and promote, among the citizens of the United States of America and among other people of the world ... a greater understanding and awareness ... of the practical and theoretical utilization of space ... for the benefit of civilization and the fostering of peaceful and prosperous world." * See Table 5.
Space Transportation Association	1989 (US)	This association is made up of corporate members who are launch manufacturers and launch service providers to support "policies that advance robust, affordable space transportation for NASA, DOD, and commercial markets".
United Auto Workers (The International Union, United Automobile, Aerospace and Agricultural Implement Workers of America - UAW)	1935 (US)	The UAW union is one of the largest and most diverse unions in North America. Represents workplaces range from "multinational corporations, small manufacturers and state and local governments to colleges and universities, hospitals and private non-profit organizations". Has "approximately 640,000 active members and over 500,000 retired members in the United States, Canada and Puerto Rico. There are more than 800 local unions in the UAW, and it has about 3,100 contracts with some 2,000 employers". A main objective of the organization is "to improve working conditions, create a uniform system of shorter hours, higher wages, health care and pensions; to maintain and protect the interests of workers under the jurisdiction of this International Union".
US Chamber of Commerce, Space Enterprise Council	2000 (US)	To represent businesses with a commercial interest in space, and it "brings the collective power of its affiliation with the U.S. Chamber of Commerce and its diverse members into a single, unified voice that is used in advocating member interests to policymakers".

AAI Corp	1950 (US)	To provide "practical and innovative solutions that protect and defend our nation and its allies", and is a "global corporation whose products and services include an array of innovative defense technologies".
AeroAstro	1988 (US)	Microsatellite and nanosatellite system design and fabrication company which promotes "the development of low-complexity space systems and their applications; develops enabling technologies that lower the cost and complexity of space systems while delivering high reliability and performance; providing space customers with exceptional service by exceeding their budget, schedule and performance expectations; building awareness of the value of microspace, as well as pioneering both new methods of accomplishing space missions and new ways of using space. . . "
Aerojet	1942 (US)	Developer and manufacturer of advanced solid rocket propulsion systems, gas generators and auxiliary rocket motors for both space and defense applications. Founded in 1942 by a small group of scientists and a professor. The first product was a rocket motor for U.S. military planes during World War II. Government contracting continued during intense space exploration activity in the 1960s (Gemini and Apollo missions). In the 1970s and 1980s, Aerojet moved into the field of space electronics, including satellite sensors for weather forecasting and missile detection. Aerojet and its subsidiary, Aerojet Ordnance Tennessee, Inc. (AOT), also became leaders in the development of specialized warheads, air-dispersed munitions systems, and medium-caliber ammunition. Aerojet developed "smart" weapons for use against tanks and other armored vehicles. Aerojet also designed and builds propulsion systems such as the Space Shuttle Orbital Maneuvering System engines, and it acquired the General Dynamics' Space Systems business in 2001.
ATK	1990 (US) ATK acquired Hercules Aerospace Company in 1995 and Thiokol Propulsion in 2001	Their mission strategy is "to build on our core businesses to grow as a leading provider of advanced weapon and space systems". Also they believe that "with steady, predictable revenues, earnings, and cash as well as long-term contracts, strong backlog, and organic growth opportunities, our core conventional munitions and rocket motor businesses provide a solid foundation for our growth. Both national franchises, they provide capabilities that are critical to national security and access to space". ATK is a leading provider of advanced weapon and space systems with \$3.4 billion in annual sales, approximately 15,000 employees, and operations in 22 states. The company is the world's leading supplier of solid rocket motors and the nation's largest manufacturer of ammunition.

Ball Aerospace	1956 (US)	Provides imaging, communications, and information systems, products, software, and services to government and commercial aerospace customers. Products include antennas, cryogenics, electronic supplies, electro optic systems and equipment, GPS equipment, laser communications, optic systems and equipment, satellite payloads, satellite remote sensing services, spacecraft, space systems and subsystems, systems engineering services, tracking systems, and video products.
Bechtel Corp	1898 (US)	Bechtel Corporation is an international engineering, construction and project management company that builds complex structure including: roads and rail systems, airports and seaports, fossil and nuclear power plants, refineries and petrochemical facilities, mines and smelters, defense and aerospace facilities, environmental cleanup projects, telecommunications networks, pipelines, oil and gas fields. It has 40 offices around the world and 40,000 employees with revenues of \$18.1 billion in 2005.
Boeing	1917 (US)	The founder, William Boeing made "his fortune by trading forest lands around Grays Harbor, Washington" long before signing its first major contract with the Navy for \$116,000 to build 50 HS-2Ls during WWI. An aerospace company and manufacturer of commercial jetliners, military aircraft, electronic and defense systems, missiles, satellites, launch vehicles and advanced information and communication systems. 1918 The Boeing Airplane Co.
Computer Sciences Corporation	1959 (US)	Consult with private aerospace firms and the military and design or improve computer systems. Its mission is "to help clients achieve strategic goals and profit from the use of information technology." CSC provides business transformation and IT consulting; systems integration and professional services; enterprise application development and management; application software for the financial services industry; business process outsourcing; and application and IT infrastructure outsourcing. CSC serves Fortune Global 1000 companies in fifteen industries and national and local governments. CSC employs about 90,000 people in 88 countries.
Constellation Services International	1998 (US)	CSI provides instruments for space cargo to the International Space Station delivery and they consults on how to provide affordable ways to send humans to Low Earth Orbit, orbital tourism, satellite retrieval, maintenance, repair and exploration including to the Moon. They also provide "private commercial orbital human spaceflight services such as cargo logistics to low Earth orbit (LEO) space stations", and is "developing the LEO Express <sup>SM</sup> Space Cargo

		System, an innovative, patented method for re-supplying space stations using existing technology”, and they “use existing, proven technology to accomplish our mission. Most of the components identified by our engineering professionals are ‘off-the-shelf’ and proven in orbit”. CSI is designing a way to travel to the Moon faster and cheaper.
EDS (Electronic Data Systems)	1962 (US)	Provides technology services, such as information data, retrieval and processing services, network management, billing and finance and card processing to both the government and commercial sectors in the field of communications, manufacturing, energy, consumer industries and retail, financial services, healthcare and transportation. Founded by Ross Perot, as one of the first Information Technologies companies by designing a system to process insurance claims for Texas’ state Medicare program shortly after the passage of the Social Security Act of 1965. Pioneered the global network of information processing centers and became one of the largest private voice and data networks. In 2004 EDS acquired the Feld Group, Dallas-based IT consultancy. Recently awarded contracts with Medicare and Medicaid, Homeland Security, Bank of America, In 2004, EDS sold its UGS PLM Solutions unit to a group of three private equity firms: Bain Capital, Silver Lake Partners and Warburg Pincus.
GenCorp	1915 (US)	GenCorp is a major technology-based manufacturing company. Its two businesses, concentrate on two principal market areas: 1) aerospace including liquid, solid, chemical and electric propulsion systems for launch vehicles, trans-atmospheric vehicles and spacecraft and defense programs including propulsion for strategic and tactical missiles and missile defense interceptors and boosters and 2) real estate. Aerojet is its subsidiary.
General Dynamics	1952 (US) official date, however there were preceding companies since that 1800s	Handles both private commercial and government aerospace designs, manufactures and provides services combat systems including land and amphibious combat machines and systems, including armored vehicles, power trains, turrets, munitions and gun systems. Also provides information systems and technological expertise on specialized data acquisition and processing, in advanced electronics, and in battlespace information networks and management systems. Also provides marine systems designs and builds submarines, surface combatants, auxiliary ships and large commercial vessels

Gulfstream Aerospace Corp	1958	A subsidiary of General Dynamics, it produces "technologically advanced" aircraft for more than 1,500 corporate, government, private and military customers around the world. More than one-quarter of Fortune 500 companies its aircraft products. Its planes have a unique engine performance and advanced communications capabilities powered by two Rolls-Royce BR710 turbofan engines, the Gulfstream V has the ability to travel non-stop for 6,500 nautical miles and at speeds up to Mach 0.885.
Hamilton Sundstrand	1926	Hamilton Sundstrand, a subsidiary of United Technologies Corporation, is one of the largest global suppliers of technologically advanced aerospace and industrial products. It designs and manufactures aerospace systems for commercial and military aircraft, and is a major supplier for international space programs. Products include hydrocarbon, chemical and food processing to construction and mining. This company consists of four separate companies: Pratt & Whitney, Sikorsky Aircraft, Otis Elevator Company and Carrier Corporation.
Harris Corporation	1895 as Harris Automatic Press Company,	An international communications and information technology company serving government and commercial markets in more than 150 countries. It provides communications products to commercial and government markets including RF communications, broadcast communications, and microwave communications. In the mid-1950's, expanded into electronic communications 1967 merged with Radiation Incorporated, a manufacturer of miniaturized electronics for space and military customers. Radiation Inc. became the foundation for Harris' current Government Communications business. Harris sold its remaining printing businesses in 1983. In 1999, Harris sold its semiconductor business, refocusing all of its resources on the global communications equipment market.
Honeywell	1906 (Honeywell Heating Specialty Co, incorporated)	Provides aerospace technology and advanced design and manufacturing processes for industry, academia, and government in many countries; automation and control solutions; sensing and control expertise; specialty materials & high performance materials; provides vehicle enhancement service to increase vehicle performance, efficiency, and appearance through state-of-the-art technologies such as engine boosting systems, better spark plugs, brake systems etc.; innovative technology in advanced materials and devices, global controls, communications and systems architecture, information and decision technology, and software solutions.

Jacobs Engineering	1951	Jacobs Engineering Group Inc. is one of the world's largest providers of scientific and specialty consulting including engineering and construction services to industrial, commercial, and government clients. Primary markets include: Aerospace and Defense, Automotive and Industrial, Buildings, Chemicals and Basic Resources, Consumer Products, Forest Products, Infrastructure, Oil and Gas, Pharmaceuticals and Biotechnology, Refining, Technology Our global network includes more than 60 major offices in over 15 countries. Annual revenues exceed \$6 billion.
Kistler Aerospace Corporation	2006 (became Rocketplane Kistler Ltd., Inc.)	Kistler provided satellite and robotic missions services for the government and commercial sectors since the mid-1980s. They developed the K-1 fully reusable aerospace vehicles, designed to send spacecraft into outer space as a low-cost alternative to single-use launch vehicles. It provided low-cost launch services for commercial, civil, and military payloads destined for Low Earth Orbit (LEO), Medium Earth Orbit (MEO) and Geosynchronous Earth Orbit (GEO), as well as to and from the International Space Station (ISS). In 2006 Kistler was purchased by Rocketplane Ltd., Inc. (an Oklahoma corporation formed in 2001 for the purpose of providing private commercial spaceflight). The new business philosophy is to make private space travel a reality in our lifetime. Rocketplane Kistler Ltd., Inc. works closely with Space Explorers, Inc.
Lockheed Martin	1995 (formed in 1995 as an advanced technology firm, with the merger of Lockheed Corporation and Martin Marietta Corporation).	A lead systems integrator and information technology company. Nearly 80% of Lockheed Martin's business is with the U.S. Department of Defense and the U.S. federal government agencies. It is the largest provider of information technology services, systems integration, and training to the U.S. Government. The remaining 20% of Lockheed Martin's business is with international governments and some in commercial sales. Reported 2005 sales of \$37.2 billion. Its history dates back to the 1900s. Started out as a small defense contractor for the government.
Loral Space & Communications	1996 (formed when Loral Corporation divested its defense electronics and system integration businesses to Lockheed Martin for \$9.1 billion.	Owns and operates a fleet of telecommunications satellites used to broadcast video entertainment programming, distribute broadband data, and provide access to Internet services and other value-added communications services. Loral designs and manufactures satellites and satellite systems for commercial and government applications including direct-to-home television, broadband communications, wireless telephony, weather monitoring and air traffic management. It operates the Telstar satellite fleet. Shares a history with Lockheed. Loral also owns 56 percent of XTAR, a joint venture between Loral and HISDESAT, a consortium comprised of leading Spanish telecommunications companies, including Hispasat, S.A., and agencies of the Spanish government. Through its XTAR-EUR satellite, XTAR provides X-band



		services to government users in the United States, Spain and other allied countries, including the US Department of State, the Spanish Ministry of Defence and Danish armed forces.
Northrop Grumman	1939 (Northrop Aircraft Incorporated began)	The Northrop Grumman family of companies represents an integration of nearly 20 companies into "that covers the entire battlespace spectrum, from undersea to outer space and into cyberspace. The companies that became part of today's Northrop Grumman achieved historic accomplishments, from transporting Charles Lindbergh across the Atlantic to carrying astronauts to the moon's surface and back". Northrop Grumman Corporation is a global defense company providing Electronic Systems including airborne radar, navigation systems, electronic countermeasures, precision weapons, airspace management systems, space systems, marine and naval systems, communications systems, government systems and logistics services. It also provides information technology and mission services to commercial enterprise and government and infrastructure needs and information systems and services. It designs, develops, produces and supports "network-enabled integrated systems and sub-systems for U.S. government, civil and international customers". It also supports the military with intelligence, surveillance and reconnaissance; "battle management command and control; and integrated strike warfare; Mission Systems sector is a leading global integrator of complex, mission-enabling systems and services". It also provides control services for and intelligence systems; missile systems and technical and management services. It designs, builds and refuels nuclear-powered aircraft carriers and nuclear-powered submarines for naval and commercial vessels; and it designs, engineers, constructs, and life cycle supports major surface ships for the U.S. Navy, U.S. Coast Guard international navies, and for commercial vessels.
Orbital Sciences Corporation	1982	Specializes in space launchers, missile defense systems, satellite and related systems, advanced space systems, technical management, engineering for space science and defense programs, and GPS satellite navigation and communications technologies for tracking terrestrial vehicles. Formed to make "space technology more affordable, accessible and useful to millions of people on Earth". They design and manufacturer of smaller, "more affordable" space and rocket systems. They have created new types of launch vehicles, satellites and other space technologies. And plan to use these technologies as "building blocks of space-related systems used by our customers to defend our country, to provide global communications, to study the Earth, and to explore our solar system and the universe beyond". The company's Pegasus® rocket and the Stargazer™ L-1011 carrier aircraft have been used on 35 missions from six different launch sites worldwide since 1990. Its launch systems group is heavily involved with missile defense launch systems.
Pratt Whitney	1925	An aerospace engine manufacturer; makes, designs and supports engines for commercial, military and general aircraft and space propulsion systems for both commercial and military applications. Their engines

		"power nearly half of the world's commercial fleet" and their military engines "power the Air Force's front line fighters today – the F-15 and F-16 – and our F119 and F135 engines will power the front line fighters of the future – the F/A-22 Raptor and F-35 Joint Strike Fighter". Their rocket engines "send payloads into orbit at 20,000 miles per hour".
Raytheon	1922 (formerly American Appliance Company)	A defense and aerospace systems supplier Develops "defense technologies and in converting those technologies for use in commercial markets". Began as a maker of radio tubes for World War II radar to microwave technology for cooking. It developed "the first guided missile". Business areas include: "homeland security, missile defense, precision engagement and intelligence surveillance reconnaissance".
SAIC (Science Applications International Corporation)	1969	Provides "scientific, engineering, systems integration and technical services and solutions to all branches of the U.S. military, agencies of the U.S. Department of Defense (DoD), the intelligence community, the U.S. Department of Homeland Security (DHS) and other U.S. Government civil agencies, as well as to customers in selected commercial markets". Regarding space SAIC "helps NASA and the military, space and intelligence communities transition to faster, better and cheaper business processes through Applied Research & Technology; Information Systems; Modeling & Simulation".
SPACEHAB	1984	Provides "commercial space services" through four business units: SPACEHAB Flight Services, SPACEHAB Government Services, Astrotech Space Operations, and Space Media which provide many types of space products and support services including research and logistics, engineering and analysis services, payload processing and delivery, and tools for space travel. For example, pressurized habitation modules are aboard many spaceships. This type of invention allows people to live and work while in space.
Spectrum Astro (General Dynamics Spectrum Astro Systems)	1988	Guided missiles and space vehicle manufacturing. Purchased by General Dynamics C4 Systems in 2004. The company manufactures small spacecraft, tailored for specific missions. General Dynamics provides the U.S. military with missile defense systems, such as the Kinetic Energy Interceptor and the Near Field Infrared Experiment for detecting and tracking missiles. General Dynamics C4 is "a major subcontractor performing an important role in spacecraft development and systems engineering in the Space Tracking and Surveillance System Program for the Missile Defense Agency. The company has build and designed spacecraft for several successful NASA missions.
Swales Aerospace	1978	Swales provides various spacecraft services, including mission design and analysis, space and payload control, design and fabrication of spacecraft buses, instrumentation development and integration, ground system development and post-launch support. The company is prime contractor for various NASA spacecraft. The company has provided services to NASA and the Department of Defense and to many aerospace companies such as Boeing, Lockheed-Martin and Northrop Grumman. It provides engineering services, technology and systems services for NASA Exploration missions and

		satellite services, it provides flight hardware and thermal management systems for commercial space systems in the US and Europe, as well as provides services for national security satellite systems.
Teledyne	1960 (1906)	Teledyne was formed to formed "capitalize on the coming revolution in which digital technology would replace analog devices and systems in everything we could touch and imagine". It is a family of companies: Teledyne Technologies, Teledyne Brown Engineering, Teledyne Energy Systems, Teledyne Continental Motors, Teledyne Electronics and Communications. They provide various products and services to the military and commercial markets including electronics & communications, systems engineering, aerospace engines & components, products for electronic warfare and satellites, energy systems such as electrolysis, PEM fuel cell, thermoelectric applications, fuel injection, turbo charging, reduction gearing and electronic engine management and various aviation products. They manufacture electronic instruments for air and water quality analysis. Sales in 2005 were \$1,206.5 million. Approximately 58% of our total sales in 2005 were to commercial customers and the balance was to the U.S. Government.
Total Resource Management	1993	Provide consulting and information technology services such as Software developer and programmers, systems engineers, enterprise software application specialists, implementation and training specialists, and project managers and leaders. They determine the most practical approach to asset management challenges help clients focus on project successes that achieve measurable value in a short period of time. roadmap as well as the progress being made along the journey to reduce risks.
United Space Alliance	1996	Limited Liability Company (LLC), USA is equally owned by The Boeing Company (NYSE:BA) and Lockheed Martin Corporation manages and conducts space operations work involving the operation and maintenance of multi-purpose space systems, including systems associated with NASA's human space flight program, Space Shuttle applications beyond those of NASA, and other reusable launch and orbital systems beyond the Space Shuttle and Space Station. As the prime contractor for NASA's Space Shuttle Program.
United Technologies	1975 (Formerly United Aircraft Corporation)	They innovate new technologies for aircraft, climate control systems, elevator design and hydrogen fuel cells. United Technologies is a global corporation made up of several companies including: Hamilton Sundstrand (aerospace and industrial systems), Otis elevators (elevators and escalators), Pratt & Whitney (aircraft engines), Sikorsky (helicopters), United Technologies Corporation (Fire & Security protection services, power, and research). The company has 220,000 employees (2005) (67% of these are based outside the united states); revenues for 2005 were \$42.7 billion, sales to U.S. government were \$5.5 billion (2004), international revenues 61% of total revenues (2005). The company is located in over 4,000 locations in approximately 62 countries and does business in approximately 180 countries. Company assets were \$40 billion (2004).

**Table 5.5**

**Business Leaders and Companies that  
President's Commission on Space Exploration has  
Contacted**

<b>Leader</b>	<b>Company</b>	<b>Action(s) Taken to Hyper-Privatize Space</b>
John Douglass, President and Chief Executive Officer	Aerospace Industries Association	Testified before Congressional Subcommittee on Space & Aeronautics on 5/15/01
Raymond A. Ernst, Chairman	Aerospace Industries Association (AIA) Space Council	Testified before the President's Commission hearing on 2/11/04
Mark E. Bitterman, Representative	U.S. Chamber of Commerce, Space Enterprise Council	Testified before the President's Commission hearing on 2/11/04
Cort Durocher, Executive Director	American Institute of Aeronautics and Astronautics	Testified before the President's Commission hearing on 2/11/04
Mike Mott, Vice President and General Manager NASA Systems	Boeing Space Exploration	Testified before the President's Commission hearing on 3/4/04
Roger A. Krone, President	Boeing Network and Space Systems	Testified before the President's Commission hearing on 5/3/04
Jeff Harris, Vice President Strategic Management, Information Systems and Solutions	Lockheed Martin Space Systems	Testified before the President's Commission hearing on 3/4/04
Craig Staresinich, Sector Vice President and General Manager of Kinetic Energy Interceptors	Northrop Grumman Mission Systems	Testified before the President's Commission hearing on 3/4/04
Phil McAlister, Director of Space and Telecommunications Industry Analysis Division	Futron Corporation	Testified before the Congressional Subcommittee on Space & Aeronautics on 7/24/03; Testified before the Senate Subcommittee on Science, Technology and Space on 7/24/03
Dennis Tito, Founder & CEO	Wilshire Associates, Incorporated	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 6/26/0; Testified before the Senate Subcommittee on Science, Technology and Space on 7/24/03
Elon Musk, CEO and Chief Technology Officer	SpaceX, Founder and President PayPal & Zip2	Testified before U.S. House of Representatives Subcommittee on Space & Aeronautics on 7/24/03; Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05; Testified before the Senate Subcommittee on Science, Technology and Space on 7/24/03; Testified before the Senate Subcommittee on Science, Technology and Space on 5/5/04; Testified before the President's Commission hearing on 3/24/04
Jeff Greason, President & Co-Founder	XCOR Aerospace	Testified before U.S. House of Representatives Subcommittee on Space & Aeronautics on 7/24/04;

		Testified before the Senate Subcommittee on Science, Technology and Space on 7/24/03; Testified before the President's Commission hearing on 3/24/04
Jon Kutler, Chairman, Founder & CEO	Quarterdeck Investment Partners, L.L.C.	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 7/24/03; Testified before the Senate Subcommittee on Science, Technology and Space on 7/24/03
Burt Rutan	Scaled Composites	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05
John W. Vinter, President & CEO	International Space Brokers, Inc.	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05
Wolfgang Demish, Founder	Demisch Associates, L.L.C.	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05
Dr. Molly Macauley, Senior Fellow and Director of Academic Programs	Resources for the Future	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05
Heidi Wood, Vice-President	Morgan Stanley	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on
Harrison H. Schmitt, Chairman	Interlune-Intermars Initiative, Inc.	Testified before the Senate Subcommittee on Science, Technology and Space on 11/6/03
Dr. Mary Ellen Weber, Vice President	Texas Southwest Medical Center	Testified before the Senate Subcommittee on Science, Technology and Space on 4/20/05
Will Whitehorn, President (and Group Corporate Affairs and Brand Development Director for Virgin Management Limited)	Virgin Galactic	Testified before the U.S. House of Representatives Subcommittee on Space & Aeronautics on 4/20/05
Dr. Stan Rosen	California Space Authority	Testified before the President's Commission hearing on 4/16/04
Captain Winston Scott (Retired), Executive Director,	Florida Space Authority	Testified before the President's Commission hearing on 3/24/04
Jim Benson	SpaceDev	Testified before the President's Commission hearing on 4/16/04
Dr. Peter Diamandis, Chair and CEO	ZeroGravity Corporation & Founder of the X Prize Foundation	Testified before the President's Commission hearing on 3/24/04
John Higginbotham	SpaceVest	Testified before the President's Commission hearing on 5/4/04
Joel Greenberg	Princeton Synergetics	Testified before the President's Commission hearing on 5/4/04
Myles Walton	Morgan Stanley	Testified before the President's Commission hearing on 5/4/04
Dr. John C. Karas, Vice President of Space Exploration	Lockheed Martin Space Systems Company	Testified before the Senate Subcommittee on Science, Technology and Space on 5/5/04
Byron Wood	Boeing Rocketdyne	Testified before the President's Commission hearing on 4/16/04
Mike Cross, Project Manager	Ball Aerospace	Testified before the President's Commission hearing on 3/3/04

Michael F. Martin	Aerojet	Testified before the President's Commission hearing on 4/16/04
Dr. Scott Horowitz, Director of Space Transportation and Exploration	ATK Thiokol	Testified before the Senate Subcommittee on Science, Technology and Space on 5/18/05
Tim Huddleston, Executive Director	Aerospace States Association	Testified before the President's Commission hearing on 3/24/04
Robert A. Hickman	The Aerospace Corporation	Testified before the Senate Subcommittee on Science, Technology and Space on 5/5/04
Frederick H. Hauck, President & CEO	AXA Space	Testified before the President's Commission hearing on 3/25/04
Ronald E. Turner, Principal Physicist	ANSER Corporation	Testified before the President's Commission hearing on 3/25/04
Dr. Buzz Aldrin, President	Star Craft Enterprises and Space Share	Testified before the U.S. House Subcommittee on Space & Aeronautics on 4/3/01
Michael E. Kearney, President & CEO	Spacehab, Inc.	Testified before the President's Commission hearing on 3/25/04
Marco H. Caceres, Senior Analyst & Director Space Studies	The Teal Group	Testified before the President's Commission hearing on 3/25/04
Stephen Fleming	EGL Ventures	Testified before the President's Commission hearing on 3/25/04
Dr. Louis Friedman, Executive Director	Planetary Society	Testified before the Senate Subcommittee on Science, Technology and Space on 1/28/04
Dr. Howard McCurdy	Author	Testified before the Senate Subcommittee on Science, Technology and Space on 1/28/04
Dr. Richard Tumlinson, President	Space Frontier Foundation	Testified before the Senate Subcommittee on Science, Technology and Space on 1/28/04
Rusty Schweickart, Chairman of the Board	B612 Foundation	Testified before the Senate Subcommittee on Science, Technology and Space on 4/7/04
Charles M. Chafer, President	Team Encounter, L.L.M.	Testified before the Senate Subcommittee on Science, Technology and Space on 2/18/04
David Goodreau, Chairman and Co-founder	Small Manufacturers Association of California	Testified before the President's Commission hearing on 4/15/04
Richard J. Omlor, President & CEO	YSI, Incorporated	Testified before the President's Commission hearing on 3/3/04
W.F. Mitchell, President	Altari Development Corporation	Testified before the U.S. Senate Committee on Commerce Science and Transportation on 2/18/04
George Whitesides, Executive Director	National Space Society	Testified before the President's Commission hearing on 5/3/04
Nick Efthimiades	Federation of Galaxy Explorers	Testified before the President's Commission hearing on 5/3/04
Frederick Hauck	Association of Space Explorers	Testified before the President's Commission hearing on 5/3/04
Louis Friedman	Planetary Society	Testified before the President's Commission hearing on 5/3/04

Table 5.6

## Business Moguls Involved in Newly Emerging Space Ventures

Name	Affiliation	Link to Space Venture
<b>Paul Allen</b>	Microsoft co-founder and billionaire	Known for funding the SpaceShipOne project.
<b>Walt Anderson</b>	Telecommunications billionaire	Reportedly is involved in several space projects including (FINDS, Space Frontier Foundation, Orbital Recovery Corporation.
<b>Amir Ansari</b>	Co-founder of venture capital firm, Prodea, Inc. Ansari also co-founded Telecom Technologies, Inc. and served as the CTO for the company prior to its acquisition by Sonus Networks. He has filed several patents in the area of Voice over IP and is currently sitting on the Board of Directors of several technology companies.	The Ansari family is said to have founded the \$10 million Ansari X Prize private annual spaceship competition to encourage the establishing of a private space travel industry.
<b>Anousheh Ansari</b>	Co-founder of venture capital firm Prodea, Inc. and co-founder of Telecom Technologies, Inc., a supplier of softswitch-based solutions for network and service providers in 1993, which was acquired by Sonus Networks in 2000. Ansari was listed in the Fortune magazine's 40 Under 40 in 2001, recognized by Working Woman magazine as the winner of the 2000 National Entrepreneurial Excellence award and was chosen as the winner of the 1999 Ernst and Young Entrepreneur of the Year, Southwest Region, Technology and Communications.	<i>Id.</i>
<b>Jim Benson</b>	Entrepreneur and computer software pioneer, who created a private space company, Spacedev.	Spacedev created the technology for the engine on SpaceShipOne.
<b>Jeff Bezos</b>	Founder of Amazon.com, entrepreneur and billionaire. In 2001 quietly created a small space company called Blue Origin	In 2005 Bezos announced publicly his plans for his Seattle-based Blue Origin company - to build a suborbital space facility on his 165,000 acre Texas ranch <sup>9</sup> .
<b>Robert Bigelow</b>	Owner of the Budget Suites of America motel chain. Create Bigelow Aerospace, a space technology company specializing in expandable space station modules.	Has pledged to spend up to \$500 million (through the American's Space Prize) over the next decade to develop a private space based hotel/tourist business. He has created Bigelow Aerospace, a Las Vegas, Houston and D.C. operations <sup>10</sup>
<b>Sir Richard Branson</b>	Billionaire, music-to-airlines entrepreneur, founder and chairperson of the Virgin Group of Companies. The new space company is called Virgin Galactic <sup>11</sup> .	Created a private space tourism, headquartered in New Mexico. He appeared in a commercial in a spacesuit before millions of football fans in a Volvo commercial during the televised Superbowl game in 2005.
<b>John Carmack</b>	Co-founder of <i>Id Software</i> and a key programmer for its games such as <i>Doom</i> and <i>Quake</i> . Operates through space company called the Armadillo Aerospace group - a Texas based spacecraft development firm, which is one of the teams competing for the Anasari X Prize.	Reportedly is involved in space rocket projects.

Joe Firmage	Co-founder, CEO and Chief Stratifist for US Web Corporation, one of the world's largest Internet services companies and has served as President of Strategic Planning for Novell Systems Group. He has co-founded Digital Universe, a new Internet company	Formed International Space Sciences Organization to sponsor research and development of breakthrough insights into physics. Has produced books and interactive public education materials on space. Also provided financial support to the Planetary Society, Carl Sagan Productions, and helped with the Cosmos I solar sail project
Richard Garriott	Co-founder of the video game company Origin Systems, which was sold to Electronic Arts in 1992 for \$35M. He is a producer at computer gaming company NCSoft and has many hit computer gaming titles including his famed Ultima series	He is vice-chairman of Space Adventures and was an early investor and trustee of the X PRIZE. He is the son of former astronaut Owen Garriott, who flew on Skylab.
Robert A. Heinlein	Renowned science fiction author, spanning over fifty years. Heinlein advocated human advancement into space through commercial endeavors. After his death in 1988, his widow, Virginia Gerstenfeld Heinlein, established the Trust in order to further her husband's vision of humanity's future in space.	Created The Heinlein Prize <sup>12</sup> for \$500,000 to encourage practical accomplishments in commercial space activities. Trustees emphasize that the award is for effort by an individual - not corporate or government sponsored activities - and that the Heinlein Prize is intended to be world-wide in scope. "The purpose of the Heinlein Prize is to provide an incentive to spur the advancement of the commercial use of outer space."
Takafumi Horie	CEO of Livedoor Company, Ltd, a Japanese firm that does "networking, consulting, e-commerce, e-finance and software development." In 1996, started a company, "Livin' on the Edge". Later he took the company public on the Tokyo Stock Exchange Mothers Board. He then expanded the business into e-commerce, finance, and data center management. In February 2004, he changed the company name to Livedoor and the company is now one of the fastest growing internet portals in Japan. Author of several bestsellers including 'How to Become a Billionaire,' 'How to Make a Profitable Company,' and 'Money to Win.'	Board of Trustee, X Prize Foundation and started a project with a Russian firm to develop a space tourist system.
Dr. Chirinjeev Kathuria	A Telecom entrepreneur. Currently (2006) running for Illinois Lieutenant Governor.	Made a large investment in MirCorp, which was trying to privatize the Mir space station. In May of 2005 it was announced that he would join with the Canadian Arrow rocket builder to form a suborbital space tourism company called PlanetSpace
Steve Kirsch	Founder and former chairman of Infoseek.com, a popular Internet search engine, which was sold to Disney in 1999.	Supporter of the Mars Society and contributed to the Mars Direct project, to simulate Mars exploration on Earth.
Elon Musk	Entrepreneur, co-founder of Paypal and Zip2 - an online content publishing software for news organizations. In 1999, Compaq's AltaVista division acquired Zip2 for US\$307 million in cash and US\$34 million in stock options. In 1999 Musk co-founded X.com, an online banking company and PayPal In February 2001, X.com changed its name to PayPal. In October 2002, PayPal was acquired by eBay for US\$1.5 billion in stock. In June 2002, Musk founded his third company, Space Exploration Technologies (SpaceX).	Serves as CEO and CTO for SpaceX, a space company that develops and manufactures space launch vehicles, with an emphasis on low cost and high reliability. Musk is a member of the Board of Directors of the Planetary Society and the Board of Trustees of The X-Prize Foundation. Musk has also funded the SpaceX rocket development project and the Mars Oasis project.



<p><b>Ralph Steckler</b></p>	<p>NASA Ralph Steckler/Space Grant Space Colonization Research and Technology Opportunity awards.</p>	<p>Contributed awards totaling \$1 million. to implement his testamentary direction to "make a lasting impact on the field of space colonization". This is stated to mean that "space colonization is understood to be the establishment of a broad range of human activity in space that, for the most part, is not reliant on Earth".</p>
<p><b>Dennis Tito</b></p>	<p>Wilshire Associates Incorporated, a global investments technology firm. Wilshire serves "over 600 organizations in over 20 countries representing assets totaling more than US \$12.5 trillion"<sup>13</sup>.</p>	<p>Became the first private space tourist and reportedly paid \$20 million dollars to the Russian Space Agency to go. When he returned from his famous trip to the Space Station, he promised to find ways to help more people experience the joy that he felt while in space. Mr. Tito is a trustee of the X PRIZE.</p>