

COOPERATION, CONFLICT AND COMPETITION IN SPACE LAW

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Abstract

Cooperation is a major theme of international space law but the law and history also recognize the existence of competition and conflict. What are the trend lines in terms of promoting collective goods, commercialization and new military uses of space? An overview of selected major laws and policies combined with a theoretical examination of game theory (zero-sum and non-zero sum games) will enable us to obtain an overall understanding of the space age and the choices that space lawyers and policymakers face in the future.

Game Theory

One way to understand the development of the law of outer space is to employ game theory. Game theory helps us to understand the dynamics and logic of cooperation, conflict and competition. For those of us interested in and committed to the

progressive development of space law, it pays to understand historical situations in which we can expect more cooperation and creative competition and then distinguish those from scenarios in which there will likely be conflict and destructive competition.

There are two sorts of games - zero sum and non-zero sum. In zero-sum games there is a winner and a loser. An example would be chess, or, in the real world a war such as that pictured by Thucydides in the Melian Dialogue.¹ The Cold War could be seen as a bipolar zero-sum game which the United States won and the Soviet Union lost. It is clear that military conflicts are most susceptible to the logic of a zero-sum dynamic in which there is a winner and a loser.²

In a non-zero sum game, there can be winners and losers. In a win-win game, both sides win. This can be the case with commercial competition if one accepts the notion of Adam Smith's invisible hand and the magic of the market. A game in which all sides lose would be cutthroat commercial competition in which there are trade wars

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such as occurred during the Great Depression. Another example is a "game," or is it a tragedy humans play with nature vis-à-vis treating the atmosphere as a place to dump industrial pollutants.

One hopes that over time players will learn to play non-zero sum games in which the participants all come out ahead. This is the theme of Robert Wright's book, *Nonzero: The Logic of Human Destiny*³ in which he argues that "...on balance, over the long run, non-zero sum situations produce more positive sums than negative sums, and more mutual benefit than parasitism."⁴ Wright sees the current age of globalization as one "in which relations among nations grow more non-zero-sum year by year (as) the natural outgrowth of several billion years of unfolding non-zero sum logic."⁵ Wright puts himself on the side of progress in evolution and in human history. He associates his thinking with that of Francis Fukuyama's *The End of History and the Last Man*⁶ and against that of Stephen Jay Gould who sees humankind as an outgrowth of random evolution, a "momentary cosmic accident."⁷ However, Wright stops his analysis at earth and is not concerned with continuing his logic to include the solar system and the cosmos. If he took this leap, he would no doubt concern himself with the thinking of humankind as a spacefaring and galactic civilization.⁸ In this way the logic of human destiny would go to low-earth orbit, the geostationary orbit, Lagrange points, the moon, Mars and beyond.

Cooperation

Let us examine and assess mankind's movement into space as an example of the logic and experience of cooperation. After the space age began on October 4, 1957 with the orbiting of SPUTNIK, the United States was caught in a competitive prestige race

with the USSR but rather than let this race deteriorate into a zero-sum game, the National Aeronautics and Space Act of 1958 committed the U.S. to, inter alia, "peaceful purposes for the benefit of all mankind."⁹ The U.S. is to be "a leader" (not "the" leader) in "The conduct of peaceful activities."¹⁰ Furthermore, there is to be "cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof."¹¹ Section 205 of the NASA statute states "the Administration, under the foreign policy guidance of the President, may engage in a program of international cooperation in work done pursuant to this Act, and in the peaceful application of the results thereof, pursuant to agreements made by the President with the advice and consent of the Senate."

It is clear that if one major player in a game is committed to cooperation there is going to be a lot of cooperation as there has been in law and in programs.¹² The prime example in international law is the Outer Space Treaty of 1967 which commits states, inter alia, to explore space "for the benefit and in the interests of all countries," to desist from "national appropriation by claim of sovereignty, by means of use or occupation, or by any other means," and "to undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction."¹³ Then there are four other space treaties that have come out of the United Nations - the Agreement on the Rescue of Astronauts,¹⁴ the Liability Convention,¹⁵ the Registration Convention¹⁶ and the Moon Agreement¹⁷ plus the five principles adopted by the General Assembly.¹⁸ There are numerous national laws. Furthermore, in fact there are a plethora of international and global

institutions and programs devoted to cooperation in the peaceful uses of outer space. Among these are the UN Committee on the Peaceful Uses of Outer Space, the ITU, the WMO, and the International Space Station.¹⁹

While there has undoubtedly been much positive cooperation in developing the peaceful uses of outer space both in law and practice some commentators see cooperation as a side game while the real players are playing "for real;" i.e., they are playing a zero-sum game.

Conflict

It is possible that we are at the end point of a zero-sum game in which there has been one winner for all time - the United States. To advocates of American Empire this is indeed the case.²⁰ The outcome of the Cold War and the events since seem to point to a permanent American hegemony in terms of military power, economic wealth and cultural outreach. Because there is no other player, the "game" is over and the law is basically what the U.S. says it is or how it interprets existing treaties. In this vein, Everett C. Dolman updates the Halford Mackinder thesis as follows - "Who controls low-Earth orbit controls near-Earth space. Who controls near-Earth space dominates Terra. Who dominates Terra determines the destiny of humankind."²¹

Advocates of a zero-sum conflict view the Outer Space Treaty not as ushering in an era of cooperation for the human species but as an intermission, a period of détente in a win-lose encounter. The players or actors in the game even engaged in "a perverse competition of who could out-cooperate whom."²² Since the United States won the game, i.e, the Cold War, the U.S. is now set to dominate space. According to

these commentators, the United States should renounce the Outer Space Treaty and claim sovereignty over parts of space.²³ It should dominate economically and militarily rather than cooperate.²⁴

In short, Robert Wright's vision of human progress is a dream and an illusion. Realpolitik - now Astropolitik - is the underlying reality of world politics as indicated by the U.S. withdrawal from the ABM Treaty, the plan to build new nuclear weapons, etc.²⁵ According to Dolman we actually need to emphasize conflict in order to realize the ultimate perfection of humankind as a multiplanetary species.²⁶ The logic here must be the logic of MacKinder, Mahan and Social Darwinism.

Some students of strategic power see it as only part of the game. The real game is a three dimensional chess game. Joseph S. Nye, Jr. sees world politics as a three-dimensional chess game. "The top board is unipolar," while "The middle economic board is multipolar," and "the bottom board of transnational relations that cross borders outside the control of governments has a widely dispersed structure of power."²⁷ In this type of "chess game," the United States cannot play bipolar chess. It can choose to dominate militarily; play in a competitive market economically; and recognize the power of non-state actors and forces transnationally. Since the latter two games take up most of international relations, a great power or superpower concentrates on the first at its own peril. Military power has less leverage among great powers than in previous epochs. Now states should concentrate on win-win scenarios and non-zero sumness rather than win-lose, zero-sum conflicts. If states do not do this they are in danger of winning Pyrrhic victories resulting in lose-lose outcomes.

Nye advises the U.S. to be less unilateral and more multilateral, as is fitting given international law and treaty commitments. The U.S. has a national interest in keeping world commons secure. What are these commons? Nye mentions the seas, the climate, endangered species, outer space and the virtual commons of cyberspace.²⁸ Yet the U.S. is stepping back from providing leadership as a collective good. It has withdrawn its signature from the International Criminal Court; not ratified the Comprehensive Test Ban Treaty; withdrawn from the Anti-Ballistic Missile Treaty; refused to enter the Kyoto Protocol; and taken some moves against free trade.²⁹ Playing world politics as if it is a zero-sum game which has ended in hegemony is myopic from the point of view of history. We may expect the United States to have its day in the sun - perhaps a long unipolar moment - but it will end. Other forces and powers tend to make the system multipolar.³⁰ For space law, this means that the principles of consensus-building in international fora such as the UN, UNISPACE and the ITU will be very relevant and vital.

Competition

In game theory, competition can result in both sides winning or both sides losing. The hope is that most commercial competition will result - through the workings of market forces - in an ever bigger pie. Otherwise, cutthroat competition either within or between nations will result in everyone losing. Robert Wright sees the Prisoners' Dilemma game as a non-zero sum game in which through learning behavior, i.e., playing the game over and over both sides can win.³¹ This has happened in lab experiments and in history.³²

Given the history of the Space Age, we can expect more and more commercial competition. In the beginnings, there were very few commercial competitors and they were heavily subsidized and regulated by governments. Now there are many more and many government ventures have been partly or wholly privatized. In U.S. law, there has been a push towards privatization since the Communications Satellite Act of 1962 and more recently with the 1998 Commercial Space Act.³³ Even international organizations - viz INTELSAT and INMARSAT have been privatized.³⁴ But for true capitalism to occur in outer space, there must not only be privatization on earth but property rights in space. "However, in common law countries such as the United States, legal theory dictates that the government must have sovereignty over territory before it can confer title on its citizens."³⁵ Thus there can be no real property rights in outer space due to Article II of the Outer Space Treaty. On the other hand, Wayne White contends that "jurisdictional authority under the Outer Space Treaty provides most of the protections traditionally associated with property rights."³⁶ And James E. Dunstan argues that "customary international law, consistent with the Outer Space Treaty, has come to develop a regime for property use that is compatible with private investment."³⁷ The evidence he uses to support this thesis is the practice of states vis-à-vis owning moon rocks, controlling frequency spectrum and orbital slots, doing business on Mir, and providing for property rights on the International Space Station. Dunstan argues that real property rights are not necessary because their functional equivalent already exists.

This is related to the argument Sterns and Tennen make when they say, "The corpus juris spatialis, and the Outer Space

Treaty in particular, contain several provisions which recognize and promote the role of private entities in space." ³⁸ Sterns and Tennen make clear that "claims of fee simple ownership of space property are unnecessary and ineffective to protect private interests from interference." What exists to protect space commerce are national licensing regimes which are compatible with Articles VI and IX of the Outer Space Treaty.

So capitalism in space already exists and it is growing in terms of commercial space businesses in communications satellites, remote sensing, GPS, weather satellites and even space tourism. Still, space entrepreneurship is in its infantile stage because of the high costs of launch (about \$10,000 a lb.) and because the public perception exists that space is a purview of governments and not the private sector. If these two factors can be changed, then the new frontier will truly witness a new millennium.

In the meantime, are we witnessing positive change and progressive evolution through the workings out of the logic of non-zero sumness as Robert Wright argues? It appears that we are in terms of the increasing cooperation and in the promise of

commerce in space. Yet, caution and prudence should lead us to withhold final judgment given the plans for new military programs in space.

Prospect?

Ultimate non-zero-sumness will arrive when humanity becomes a multiplanetary species³⁹ and when we recognize ourselves more as humankind rather than conflictual subsets of our species. Previously evolution and natural selection made our species fit for earth or what Carl Sagan called that Pale Blue Dot, but for our species to survive, conscious acts of will, intelligence and wisdom will require us, as Tsiolkowsky said, to leave the cradle. In this new environment, we may colonize Mars and build space cities, but we will require legal and political regimes and constitutions to make the journey worthwhile. Not only will astronauts be the envoys of all mankind, but so will lawyers, politicians, businessmen, scientists and engineers. The altruism built into our biology through evolution will enable us to cooperate in making this journey.

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- ² Thomas C. Schelling, *The Strategy of Conflict* (Cambridge: Harvard University Press, 1960).
- ³ (New York: Vintage, 2001)
- ⁴ Wright, p. 6.
- ⁵ Wright, p. 7.
- ⁶ (New York: Avon Books, 1992).
- ⁷ Wright (p. 15 and p. 267). Gould, *Wonderful Life* (New York: Norton, 1989).
- ⁸ Robert Zubrin, *Entering Space: Creating a Spacefaring Civilization* (New York: Putnam, 1999).
- ⁹ 72 Stat. 426-438 (July 29, 1958); 42 U.S.C. 2451.
- ¹⁰ Sec. 102 (5).
- ¹¹ Sec. 102 (7).
- ¹² Eilene Galloway, "International Institutions to Ensure Peaceful Uses of Outer Space," in Nandasiri Jasentuliyana, ed., *Space Law: Development and Scope* (Westport, CT: Praeger, 1992).
- ¹³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies (1967). 18 UST, 2410; TIAS 6347; 610 UNTS 205. See articles I, II & IV.
- ¹⁴ Space (1968). 19 UST 7570; TIAS 6599; 672 UNTS 119.
- ¹⁵ Convention on International Liability for Damage Caused by Space Objects (1976). 24 UST 2389; TIAS 762; 961 UNTS 187.
- ¹⁶ Convention on Registration of Objects Launched Into Outer Space (1976). 28 UST 695; TIAS 589480; 1023 UNTS 15.
- ¹⁷ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1984). 18 ILM 1434; 1363 UNTS 3.
- ¹⁸
- a. Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space
 - b. Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting
 - c. Principles Relating to Remote Sensing of the Earth from Outer Space
 - d. Principles Relevant to the Use of Nuclear Power Sources in Outer Space
 - e. 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
- ¹⁹ For annual assessments see the UN series, "Highlights in Space: Progress in Space Science, Technology and Applications, International Cooperation and Space Law."
- ²⁰ Robert D. Kaplan, *Warrior Politics* (New York: Random House, 2002).
- ²¹ Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (London: Frank Cass, 2002). p. 8. Dolman is a professor at Maxwell Air Force Base.
- ²² Ibid.
- ²³ Dolman, pp. 140-141.
- ²⁴ Dolman, pp. 151, 173. Also, see James W. Canan, "Iraq and the Space Factor," *Aerospace America* (August, 2003), pp. 32-36.
- ²⁵ John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2002).
- ²⁶ Dolman, p. 182.
- ²⁷ *The Paradox of American Power - Why the World's Only Superpower Can't Go It Alone* (New York: Oxford University Press, 2002). p. 140.
- ²⁸ Ibid., p. 145.
- ²⁹ Ibid., 205 et passim.
- ³⁰ Charles Kupchan, *The End of the American Era* (New York: Alfred A. Knopf, 2003).
- ³¹ Wright, *op. cit.*, p. 57.
- ³² Robert Axelrod, *The Evolution of Cooperation* (New York: Basic Books, 1984).
- ³³ See "United States Space Law" <http://www.spacebizstation.com/uslaw.html>
- ³⁴ David Sagar, "The Privatization of INMARSAT," *Proceedings of the Forty-First Colloquium on the Law of Outer Space* (AIAA, 1999), pp. 205-223. Jonathan F. Galloway, "Privatizing An International Cooperative? The Case of Intelsat," *Proceedings of the Thirty-Ninth Colloquium on the Law of Outer Space* (AIAA, 1997), pp. 144-150.

³⁵ Wayne White, "The Legal Regime for Private Activities in Outer Space," chap. 6 in Edward L. Hudgins, ed., *Space: The Free-Market Frontier* (Washington, DC: CATO Institute, 2002), pp. 83-111, 84.

³⁶ Ibid.

³⁷ James E. Dunstan, "Toward a Unified Theory of Space Property Rights: Sometimes the Best Way to Predict the Weather is to Look Outside," chap. 16 in Hudgins, op. cit., pp. 225-226.

³⁸ P. M. Sterns and L. I. Tennen, "Privateering and Profiteering on the Moon and Other Celestial Bodies: Debunking the Myth of Property Rights in Space," *Proceedings of the Forty-Fifth Colloquium on the Law of Outer Space* (AIAA, 2003), 56-67, 57.

³⁹ Ramiro Iglesias, *The Route Towards Cosmic Man* (Mexico, D.F.: Noriega, 1999).