Creating an Industry Foundation, Dr. René Joseph Rey examines the commercial space transportation aspects of the "New Space" industry and the relationship between the industry's need to produce systems that will have to function within an international regulatory framework and the requirement of the vehicles to possess the robust structures and subsystems necessary for safe, reliable operations. Prof. Mark J. Sundahl also addresses the relationship between space transportation and international regulation and specifically analyzes the duty to rescue tourists travelling on private spacecraft under the Vienna Convention on the Law of Treaties[3] as well as Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies[4] and the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.[5]

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[3] Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331.

[4] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

[5] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, *opened for signature* Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

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Volume 35, Number 2

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THE ANDREW G. HALEY ARCHIVE AT THE UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW, NATIONAL CENTER FOR REMOTE SENSING, AIR, AND SPACE LAW: AN INTRODUCTION

Michael S. Dodge

The National Center for Remote Sensing, Air, and Space Law (Center) at the University of Mississippi School of Law houses a large portion of the work product of the world's first practicing space lawyer, the late Andrew G. Haley. This work product is being processed and preserved at the Center, and it has been organized into the Andrew G. Haley Archive. The provenance for the materials was provided by Dr. Stephen Doyle, who worked for Haley as a law clerk over a period of two summers in 1962 and 1964.[1]

The Archive was officially launched during the Second International Conference on the State of Remote Sensing Law at the University of Mississippi School of Law on January 17-18, 2008. The Archive is supplemented by a finding aid (aid) that summarizes the contents of each folder and box in the collection.[2] It is growing daily as more information and documents are processed. The aid may be utilized by accessing the Archival webpage at http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm.

The importance of the documents contained in the Archive can be appreciated by examining Haley's extensive correspondence with numerous legal scholars, academics, politicians, and U.S. Military personnel. Haley corresponded with individuals

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[1] *See* Stephen Doyle, *Introduction to The Andrew Gallagher Haley Collection at The National Center for Remote Sensing, Air, and Space Law* (Sept. 2007), *available at* http://www.spacelaw.olemiss.edu/archive/pdfs/AG%20Haley%20Collection%20expV3.pdf [hereinafter *Introduction*].

[2] The Andrew G. Haley Finding Aid, *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm (last visited Mar. 18, 2009).

such as Arthur C. Clarke, Myers S. McDougal, Philip Jessup, Eilene Galloway, Hubert H. Humphrey, Gerald R. Ford, Lyndon B. Johnson, John F. Kennedy, Earl Warren, and others.[3] The letters and signatures of these historic persons have been preserved in their pristine condition.

The Archive contains a variety of early space law materials in many languages. Documents have been discovered in English, French, Spanish, Russian, Italian, Portuguese, German, and other languages.[4] Many of these materials are personal correspondence between Haley and his colleagues and friends throughout the world. Some of these documents cover issues during the early years of the American Institute of Astronautics and Aeronautics (AIAA), the Committee on Space Law of the American Bar Association, the International Astronautical Federation (IAF), International Institute of Space Law (IISL), and the International Academy of Astronautics (IAA).[5] The Archive also contains, among other materials, drafts of books Haley wrote on space law, IISL papers written by attorneys from around the world, news articles, conference documents and correspondence.

Selected documents were presented at The Third Eilene M. Galloway Symposium on Critical Issues in Space Law at the Cosmos Club in Washington D.C., December 11, 2008.[6] These documents represented a sampling of the variety of information contained within the Archive. Some examples are:

1) Correspondence between Haley and Arthur C. Clarke, including a letter in which Clarke discusses telecommunications, remote sensing, Global Positioning System (GPS), and other applications of geosynchronous orbit. Clarke concludes the letter by noting, "I'll get on with my science fiction, and wait to say 'I told you so!'"[7]

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[3] The Andrew G. Haley Archive Presentation (Jan. 17 – 18, 2009), *available at* http://www.spacelaw.olemiss.edu/activitiesandevents/2008/galloway%20presentations%20pdf/3rd%20Galloway%20-%20Dodge.pdf [hereinafter Haley Presentation].

[4] *Id.*

[5] *Introduction*, *supra* note 1.

[6] Haley Presentation, *supra* note 3.

[7] Letter from Arthur C. Clarke to Andrew Haley (Aug. 1956), *available at* http://rescommunis.files.wordpress.com/2008/03/clarkeletter2-1.jpg.

2) Correspondence between Haley and the Chief Justice on the United States Supreme Court, Earl Warren.[8] In their discussion, Haley requested the use of the Supreme Court Conference Rooms for the International Institute of Space Law's Fourth Colloquium on the Law of Outer Space, and Haley encloses information informing Warren about the purpose and accomplishments of the Colloquium. Warren informed Haley that it would not be possible to use the rooms, noting that "[w]e never know when our conference rooms might be needed for the Court itself and for meetings of the Judicial Conference of the United States."[9]

3) Correspondence between Haley and the American Bar Association (ABA), in which the ABA informs Haley that he has been reappointed to the Committee on Space Law by the Chair of the Section on International and Comparative Law.[10]

4) Documents describing the formative period of space law and the IISL, including a description of Haley's involvement as founder of the organization.[11]

5) Appearance and Comments of the American Rocket Society before the Federal Communications Commission concerning a statutory inquiry into the allocation of frequencies to the various non-governmental services in the radio spectrum between 25 mcs and 890 mcs. Haley noted that "this is an actual space law proceeding—probably the first."[12]

6) Correspondence concerning the delimitation of air and space, a topic early space lawyers considered of the utmost importance. The Archive includes comments by many individuals on this matter, and there are materials which note the formation of a Working Group under the ambit of the International Institute of Space Law to consider the delimitation issue.[13]

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[8] Letter from Andrew Haley, General Counsel to the International Astronautical Federation, to Earl Warren, Chief Justice United States Supreme Court (Jan. 28, 1968), *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm.

[9] Letter from Earl Warren, Chief Justice United States Supreme Court, to Andrew Haley, General Counsel to the International Astronautical Federation (Feb. 13, 1961), *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm.

[10] Haley Presentation, *supra* note 3.

[11] *Id.*

[12] *Id.*

[13] *Id.*

7) Correspondence evidencing the Cold War tensions of the era, including attempts by the U.S. Federal Bar Association of New York, New Jersey, and Connecticut to begin a discussion with lawyers from the U.S.S.R. on the merits of "Democracy under Capitalism versus Communism."[14]

In addition to the above, the Archive contains more documents from a multitude of individuals covering many issues on aerospace law. The National Center for Remote Sensing, Air, and Space Law continues to process the Archive, and the material is made available online at the Center's blog, Res Communis,[15] as the finding aid is expanded. Select PDF images of important space law documents will be accessible in the near future. It is the belief of the Center that the Archive will provide an invaluable resource for aerospace attorneys and academics, as well as historians.

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[14] Letter from William Hyman, Chairman, Special Committee for the Promotion of the Ideals of Democracy, to Ministry of Justice, Moscow, Union of Soviet Socialist Republics (Nov. 11, 1959), *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm.

[15] The University of Mississippi School of Law, *Res Communis, A blog on the legal aspects of human activities using aerospace technologies*, *available at* http://rescommunis.wordpress.com/ (last visited Mar. 18, 2009).

SOVEREIGNTY AND THE DELIMITATION OF AIRSPACE: A PHILOSOPHICAL AND HISTORICAL SURVEY SUPPORTED BY THE RESOURCES OF THE ANDREW G. HALEY ARCHIVE

Michael S. Dodge[*]

The airplane is indeed the architect of a changing world.[1]

INTRODUCTION

Over the past century, the law of the air has come into its own. Like many fields before it, air law has established itself as a legal necessity. Though humanity has only been flying for slightly over a century, the law has wasted no time in asserting itself. Indeed, multiple extant treaties cover everything from public[2] to private[3] air law. Topics ranging from concerns over security[4] to liability[5] for third parties damaged on the ground have been covered by the air treaty regime. It is incontroverti-

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[1] Charles S. Rhyne, *International Law and Air Transportation*, 47 MICH. L. REV. 41 (1948).

[2] Convention on International Civil Aviation, Dec. 7, 1944; 61 Stat. 1180, 15 U.N.T.S. 295 [hereinafter Chicago Convention].

[3] International Convention for the Unification of Certain Rules Relating to International Carriage by Air, Oct. 12, 1929, 49 Stat. 3000, 137 L.N.T.S. 11 [hereinafter Warsaw Convention].

[4] Paris Convention for the Regulation of Aerial Navigation, Oct. 13, 1919, 11 L.N.T.S. 173 [hereinafter Paris Convention].

[5] Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface, Oct. 7, 1952, ICAO Doc. 7364, 310 U.N.T.S. 181 [hereinafter Rome Convention].

ble that air law has established a foothold over humankind's activities in the air. However, as with most areas of law, the arena of air law is not free from cases and controversies. This essay attempts to identify the background of modern air law, and it also seeks to posit problems yet to be solved. In particular, the concepts of sovereignty and jurisdiction become problematical when applied to the delimitation of airspace. Succinctly put, what is the airspace, and where does it end? Had such a question been proposed to early air lawyers, it would probably have been perceived as pointless. After all, in those early years, most of humanity probably possessed no realistic vision of humankind reaching space. Now, a unique field of law has emerged to cover human space activities.[6] The space age has caused humanity to reflect on its role in the universe in general, and in the air and space adjacent to our planet in particular. This essay intends to analyze a sampling of the theories and arguments proposed for determining where and, more forthrightly, *if* a demarcation between air and space exists.

Furthermore, this line is something of a Holy Grail to air and space lawyers, and no unified opinion has emerged to date. Although concern for the need to delimit the boundary between air and space has existed since the early days of space law,[7] the topic remains relevant to the modern world of international law. A recent questionnaire by the United Nations Committee on the Peaceful Uses of Outer Space sought the opinions of Member States regarding whether there was a need to define space and

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[6] *See* 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 [hereinafter Outer Space Treaty]; *see also*, Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119; Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187; Convention on Registration of Objects Launched into Outer Space Nov. 12, 1974, 28 U.S.T. 695, 1023 U.N.T.S. 15.

[7] *See* Letter from Andrew Haley, President, International Astronautical Federation, to Jakob Ackeret, Federal Institute of Technology (Switzerland) (Apr. 1, 1958) (available through the Andrew G. Haley Archive, *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm); Andrew G. Haley, *Space Age Presents Immediate Legal Problems*, *in* PROCEEDINGS, FIRST COLLOQUIUM ON THE LAW OF OUTER SPACE 7 (IISL, 1958).

delimit airspace and outer space.[8] The responses were almost uniformly affirmative, with Belarus noting that positive aspects of such delimitation would include increased efficiency in the control of flights in both airspace and outer space, and noting the decreased risk to participants in air and space travel.[9] The Kingdom of Jordan explained its interest in the delimitation issue, noting that "[t]he non-definition of outer space will result in ambiguity in the relevant laws and conventions. Moreover, the delimitation of outer space will be useful for the concept of national sovereignty, placing States on an equal footing before international law."[10] This controversy will continue until lawyers can be certain which law applies where. Thus, this essay suggests that humanity should renew its efforts to determine where air ends, and space begins.

This essay explores the concept of sovereignty in several parts. First, the history of sovereignty *qua* sovereignty is examined. Secondly, sovereignty and airspace is discussed. Next, the concept of airspace as viewed from a sovereign regime is analyzed. Finally, some background on the Outer Space Treaty regime's solution to sovereignty problems is discussed to provide a contrasting template from which the difficulties of delimitating airspace may be viewed.

SOVEREIGNTY

A. The Past, and Present

Before a thorough analysis of sovereignty can be undertaken, a summation of the history and concept of sovereignty must first be proffered. Questions to ask would include: what is sovereignty?; from whence did it come?; how is it seen traditionally?; and, finally, how is it seen under the light of changes in international law brought about by the adoption of the air trea-

[8] U.N. Comm. on the Peaceful Uses of Outer Space [COPUOS], Note by the Secretariat, Addendum, *Questions on the Definition and Delimitation of Outer Space: Replies from Member States,* ¶¶ 1-3, U.N. Doc. A/AC.105/889/Add.1 (Jan. 21, 2008), *available at* http://www.unoosa.org/pdf/reports/ac105/AC105_889Add1E.pdf.

[9] *Id.* at ¶ 5.

[10] *Id.* at ¶ 11.

ties and the Outer Space Treaty? To answer these questions, one must delve into a subject claimed by both philosophy and history, hoping in the process to glean sufficient understanding of the subject to elucidate it properly.

The first question is that of definitional sovereignty. Today, sovereignty can be defined in several ways, but the most prominent is the aspect of total or superior control over a territory. Because of the recent effects of globalization and the shrinking size of the world due to technological—and in particular, communication—improvements, what sovereignty really is remains somewhat debatable. Some scholars refuse to allow for a definition at all.[11]

> But there is in fact a definition that captures what sovereignty came to mean in early modern Europe and of which most subsequent definitions are a variant: *supreme authority within a territory*. This is the quality that early modern states possessed, but which popes, emperors, kings, bishops, and most nobles and vassals during the Middle Ages lacked.[12]

Black's Law Dictionary defines it as "1. Supreme dominion, authority, or rule; 2. The supreme political authority of an independent state; 3. The state itself."[13] So the traditional concept of sovereignty is that power over a state or territory that makes a Nation-State supreme. Thus, France is the sovereign over all French territory. French ministers make the decisions regarding important occasions in the territory—not Italians, Chinese, or Americans.

The question remains as to how this concept developed, as well as whether it can, in its current form, adapt to cover air law and outer space exploration and the treaties governing such activity. The most common explanation is that sovereignty acquired its current meaning after the bloody wars of religion known as the Thirty Years War.[14] It is true that Nation-States

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[11] Dan Philpott, *Sovereignty*, *in* STANFORD ENCYCLOPEDIA OF PHILOSOPHY (2003), http://plato.stanford.edu/entries/sovereignty/.

[12] *Id.*

[13] BLACK'S LAW DICTIONARY 1430 (8th ed. 2004).

[14] Philpott, *supra* note 11.

were not always the wielders of sovereign power.[15] The result of the Thirty Years War was the signing of the peace accords at Westphalia.[16] However, the War did not account for a miraculous, instant Nation-State solution—indeed:

> What features of Westphalia make it the origin of the sovereign states system? In fact, not all scholars agree that it deserves this status.[17] Nowhere in the settlement's treaties is a sovereign states system or even the state as the reigning legitimate unit, prescribed. Certainly, Westphalia did not create a sovereign states system *ex nihilo*, for components of the system had been accumulating for centuries up to the settlement; afterwards, some medieval anomalies persisted. In two broad respects, though, in both legal prerogatives and practical powers, the system of sovereign states triumphed. First, states emerged as virtually the sole form of substantive constitutional authority in Europe, their authority no longer seriously challenged by the Holy Roman Empire. The Netherlands and Switzerland gained uncontested sovereignty, the German states of the Holy Roman Empire accrued the right to ally outside the empire, while both the diplomatic communications and foreign policy designs of contemporary great powers revealed a common understanding of a system of sovereign states. The temporal powers of the Church were also curtailed to the point that they no longer challenged any state's sovereignty. In reaction, Pope Innocent X condemned the treaties of the peace as "null, void, invalid, iniquitous, unjust, damnable, reprobate, inane, empty of meaning and effect for all time[18]."[19]

Thus, the separation from the Church was not friendly. However, it was also not unexpected. The Church had undergone tumultuous changes with varying popes, and the notions of temporal power versus eternal power came into play. The for-

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[15] Jonathan F. Galloway, *Limits to Sovereignty: Antarctica Outer Space and the Sea Bed*, *in* PROCEEDINGS, FORTY-FIRST COLLOQUIUM ON THE LAW OF OUTER SPACE, 81 (IISL, 1998).

[16] *Id.*

[17] STEPHEN D. KRASNER, SOVEREIGNTY: ORGANIZED HYPOCRISY (Princeton, NJ: Princeton University Press, 1999).

[18] Innocent X, *quoted in* DAVID MALAND, EUROPE IN THE SEVENTEENTH CENTURY 16 (Macmillan 1966).

[19] Philpott, *supra* note 11.

mer is the concept of sovereignty as it is traditionally defined, whereas the latter is the idea that the Church has the power to "bind and loose," if you will. The concept of sovereignty became solid after the Treaty of Westphalia. However, there are indications that the precepts of sovereignty were extant long before that time. A conflict between the Catholic Church and the Holy Roman Emperors of the medieval period had existed for centuries, and the idea of statehood began to flower during that time.[20] "The new states that were emerging in the thirteenth century were the kingdoms of national rulers, each of whom claimed to be 'an emperor unto his own realm' and recognized no external superior in temporal affairs."[21] Primarily, what the world began to lose was the idea that a king (or a Pope) ruled by authority of Divinity itself, or the Divine Right. That idea is an ancient and well understood one, but even more modern chroniclers have described it with some force. For example, Shakespeare wrote of the concept in *Richard II*:

> Not all the water in the rough rude sea
> Can wash the balm off from an anointed king.
> The breath of worldly men cannot depose
> The deputy elected by the Lord.
> For every man that Bolingbroke hath pressed
> To lift shrewd steel against our golden crown,
> God for his Richard hath in heavenly pay
> A glorious angel. Then, if angels fight,
> Weak men must fall; for heaven still guards the right.[22]

It is hardly surprising then that papal leaders would balk at the notion of Nation-States grasping temporal power on their own. Long before Westphalia, notions crept up that the papal states could not be ruler of all the Earth. For example, the struggle for power between church and state began to heat up in the mid-twelfth century. Although the general power structure did not seem to change much per se, the *appearance* of where power came from once again became a prevalent talking point.

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[20] BRIAN TIERNEY, THE CRISIS OF CHURCH AND STATE 159 (1998).
[21] *Id.*
[22] WILLIAM SHAKESPEARE, RICHARD II act 3, sc. 2.

Most interesting to this author was the debacle between Holy Roman Emperor Frederick Barbarossa and Pope Hadrian (or, more specifically, between the Emperor and the bureaucracy of Rome). The most intriguing aspect of the story is the overtly political nature of the fight.

The concepts of temporal and spiritual power once more took center stage when Frederick declined to accede to typical Holy Roman Emperor etiquette during his first meeting at Rome (in refusing to help the Pope get into his saddle).[23] That Frederick publicly insulted the "Senate" of Rome after they insinuated his power came as a gift from them was no balm to the already tense situation.[24] Five years later, the issue had still not been put to bed, and came to a head at the Diet of Besancon.[25] The fire began anew with the use of the word *beneficium* in a letter written to the Emperor by the Pope's chancellor, since that word has two or more official meanings. On the one hand, the word can mean benefit. On the other, it can mean gift (as in when someone "benefits" another by bequeathing money, lands, or power). The first meaning could be a cordial recognition of proper imperial power, but the second would mean that the papacy, if it was to be truly represented by the letter, was exerting temporal power by claiming that power on Earth was its alone to give. This exercise is reminiscent of the battle over the exact meaning of the words of Article II.[26] What does it mean to "appropriate" or engage in "a claim of sovereignty"? These questions will be explored further in the essay. The Emperor took the latter meaning as what was conveyed by the chancellor.[27] The Emperor wrote of the Papal delegation that they:

> [B]y lofty pride, by arrogant disdain, by execrable haughtiness, presented a message in the form of a letter from the pope, the content of which was to the effect that we ought always to remember the fact that the lord pope had bestowed upon us the

[23] TIERNEY, *supra* note 20, at 100.
[24] *Id.*
[25] *Id.*
[26] The relevant language here is "[o]uter 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." Outer Space Treaty, *supra* note 6, at art. II.
[27] TIERNEY, *supra* note 20, at 100.

> imperial crown and would not even regret it if Our Excellency had received greater benefits [*beneficia*] from him.[28]

The situation had the potential to become quite disastrous, but the words of the pope quelled any potential violence when he wrote to Frederick to inform him that the word *beneficia* meant only benefit, and not something that implied Frederick "owed" the pope for the former's power.[29] However, the chancellor could have corrected the misunderstanding after the issue had become a hot topic, rather than waiting for it to get so explosive that the pope himself had to intervene.[30] What the real meaning behind those words is remains to be debated. What is certain is that the issue of the Church's power over politics once again became a point of contention between church and "state" during the mid-twelfth century, raising the problems of who is sovereign over what.

Such an emphasis on individual States could create chaos and dissention among mankind, where before the Church could more easily silence its opponents in generally peaceful ways. This argument could be used for the Outer Space Treaty regime as well. Nation-States have become accustomed to their power, but it is possible that mankind's extension into space will change the viewpoint of sovereignty altogether. Some argue that "perhaps it is becoming more and more a legal fiction endangered by independence, integration, globalism and a world without borders."[31] The discussion above on what today might seem minor incidents created political dangers so great that war was not out of the question. In modern times, one idea of going into space was surely that of peaceful coexistence. After all, space was supposed to be the "province of all mankind."[32] The Outer Space Treaty was designed to promote such peace in accordance with the principles of the United Nations.[33]

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[28] *Id.* at 107.
[29] *Id.* at 100-01.
[30] *Id.*
[31] J. ANN TICKNER, GENDER IN INTERNATIONAL RELATIONS: FEMINIST PERSPECTIVES ON ACHIEVING GLOBAL SECURITY 18, 64, 81, 117 (New York: Columbia University Press, 1992), *quoted in* Galloway, *supra* note 15.
[32] Outer Space Treaty, *supra* note 6, at art. I.
[33] *Id.* at Preamble.

Whatever may be the future for sovereignty on Earth, the outer space treaty regime was written with the Westphalian system in place. This is understandable, because although entering into the realm of space was a new endeavor for all humankind, the United Nations Charter provided the basis for the regime. Specifically, Article 2(4) states "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations,"[34] and Article 2(7) states:

INSPIRED by the great prospects opening up before mankind as a result of man's entry into outer space,

RECOGNIZING the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

BELIEVING that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development,

DESIRING to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

BELIEVING that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples,

RECALLING resolution 1962 (XVIII), entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", which was adopted unanimously by the United Nations General Assembly on 13 December 1963,

RECALLING resolution 1884 (XVIII), calling upon States to refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies, which was adopted unanimously by the United Nations General Assembly on 17 October 1963,

TAKING account of United Nations General Assembly resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned resolution is applicable to outer space,

CONVINCED that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the Purposes and Principles of the Charter of the United Nations . . . .

[34] U.N. Charter art. 2, para. 4.

> Nothing contained in the present Charter shall authorize the United Nations to intervene in matters which are essentially within the domestic jurisdiction of any state or shall require the Members to submit such matters to settlement under the present Charter; but this principle shall not prejudice the application of enforcement measures under Chapter VII.[35]

These measures indicate that the nation-states involved in the creation of the United Nations believed it important to keep control of typical sovereign schemes, rather than create a world government with absolute control over all territories on Earth. The function of the United Nations, in simplistic terms, is to encourage peace—not to strong-arm governments into the asserted goals of all by some military means. The question remains, however, as to how sovereignty is viewed in space as a result of Article II of the Outer Space Treaty. Before the author provides an answer, a brief look at the controversy surrounding the delimitation of space must be explored, for it relays the Nation-State centered emphasis on sovereignty as the one of the most pertinent factors in the construction of behavioral norms for outer space.

B. Sovereignty and the Air

The doctrine of absolute sovereignty is considered entrenched in international law.[36] Indeed, sovereignty has been written into some of the most exceptionally important air law treaties. In particular, the Paris Convention and the Chicago Convention make obvious the fact that Westphalian sovereignty has a place in the world of aviation. The skies may have opened up to technology, but they have not freed themselves from law. Nor has humankind labored under the delusion that air should be open to all, and sovereignty ignored altogether, as with the *res communis* ideal applicable to outer space.

The Paris Convention, convened shortly after the horrendous events of the First World War, set principles regarding the

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[35] *Id.* at art. 2, para. 7.

[36] *See* John C. Cooper, *Air Transport and World Organization*, 55 YALE L. J. 1190, 1195 (1946); Rhyne, *supra* note 1, at 43.

right of Nation-States over their air territory. The first few articles are reproduced below:

CHAPTER I.
GENERAL PRINCIPLES.

Article 1.

> The High Contracting Parties recognise that every Power has complete and exclusive sovereignty over the air space above its territory.
>
> For the purpose of the present Convention, the territory of a State shall be understood as including the national territory, both that of the mother country and of the colonies, and the territorial waters adjacent thereto.

Article 2.

> Each contracting State undertakes in time of peace to accord freedom of innocent passage above its territory to the aircraft of the other contracting States, provided that the conditions laid down in the present Convention are observed.
>
> Regulations made by a contracting State as to the admission over its territory of the aircraft of the other contracting States shall be applied without distinction of nationality.

Article 3.

> Each contracting State is entitled for military reasons or in the interest of public safety to prohibit the aircraft of the other contracting States, under the penalties provided by its legislation and subject to no distinction being made in this respect between its private aircraft and those of the other contracting States from flying over certain areas of its territory.
>
> In that case the locality and the extent of the prohibited areas shall be published and notified beforehand to the other contracting States.

Article 4.

> Every aircraft which finds itself above a prohibited area shall, as soon as aware of the fact, give the signal of distress provided in paragraph 17 of Annex D and land as soon as possible

outside the prohibited area at one of the nearest aerodromes of the State unlawfully flown over.[37]

Thus, one of the greatest achievements in air law indicates that the lessons of the militarization of airspace in the War to End All Wars had not been forgotten. "The Paris convention was an outgrowth of World War I and, in the opinion of some it was an undesirable and unwise agreement because it reflected wartime philosophy."[38] Albert Roper noted that the Convention, even when not signed by certain Nation-States, had the unfortunate effect of suppressing the freedom of the air, all due to the "terrible lessons of the war."[39] This chagrin was primarily a facet of the idea that air should be free to all for all non-military purposes, and was particularly espoused by the early air law document known as the Fauchille proposal.[40] Though the air would be presumed free for commercial purposes, it was not necessarily free for military aircraft when they might be forbidden due to national security.[41] The Fauchille proposal intimated a desire to allow humankind unprecedented freedom of movement and commerce. Unfortunately, the outbreak of World War I shocked humanity into the realization that aircraft could be used as deadly implements of war. Thus, the Paris Convention took heed of lessons learned, and allowed Nation-States to maintain absolute sovereignty over their airspace.

Even before World War I, confrontations between Nation-States indicated that no matter what the view taken by the Fauchille report, sovereignty was presumed in the airspace above defined territory. On several occasions, The Netherlands protested that German aircraft dared to cross into their territory.[42] As a neutral state, The Netherlands believed it had the right to shoot at any aircraft passing over its territory, even if

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[37] Paris Convention, *supra* note 4, arts. I-IV.

[38] ANDREW G. HALEY, SPACE LAW AND GOVERNMENT 46 (1963).

[39] Albert Roper, *Recent Developments in International Aeronautical Law*, 1 J. AIR L. 395, 405-06 (1930).

[40] HALEY, *supra* note 38, at 42.

[41] 21 ANNUAIRE DE L'INSTITUT DE DROIT INTERNATIONAL 293, 295 (1906) (translation).

[42] *See* HALEY, *supra* note 38, at 43-45.

the aircraft was there by mistake.[43] Moreover, The Netherlands exercised this right by attacking a German zeppelin that, under *force majeure*, had inadvertently drifted into the former's territory.[44] The Netherlands' Ministry of Foreign Affairs justified the decision to shoot at the German aircraft, noting:

> In the interest of the defense of the state no less than in the view of the maintenance of a strict neutrality a neutral power therefore has the right to oppose forcibly all passage of its frontiers by belligerent airships unless they should indicate by a signal—white flag or other distinctive sign—their intention to land. Considerations of humanity may lead the authorities to resort to force only after having tried to warn the aviator that he is above neutral territory, but in view of the forgoing such notice is not obligatory.[45]

After this event, Germany and The Netherlands adopted a distress system.[46] Unfortunately, the events of World War I did nothing to alleviate the fear that Nation-States had concerning the misuse of their airspace. After the events of that war, the notion of absolute sovereignty conveyed by the Paris Convention became adopted by most Nation-States, and the effect of its provisions has not changed much since that time.[47]

Shortly after World War II, the public international law was further developed. The Chicago Convention established the International Civil Aviation Organization (ICAO), and is considered one of the most significant air law instruments to date.[48] Like the Paris Convention before it, the Chicago Convention was not shy regarding sovereignty. The first article noted that "[t]he contracting states realize that every state has complete and exclusive sovereignty over the airspace above its territory,"[49] thereby mirroring the Paris Convention's first article.

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[43] *Id.* at 44.
[44] *Id.*
[45] Netherlands, Ministry of Foreign Affairs, Recueil De Diverses Communications Du Ministre Des Affairs Etrangeres Aux Etats-Generaux Par Rapport A La Neutalite Des Pays-Bas Et Au Respect Du Droit Des Gens 142-43 (1916) (translation).
[46] HALEY, *supra* note 38, at 45.
[47] *Id.* at 46.
[48] Chicago Convention, *supra* note 2.
[49] *Id.* at art. I.

Furthermore, the Chicago Convention provides that each Nation-State can withhold passage through airspace from other Nation-States, noting:

> (a) Each contracting State may, for reasons of military necessity or public safety, restrict or prohibit uniformly the aircraft of other States from flying over certain areas of its territory, provided that no distinction in this respect is made between the aircraft of the State whose territory is involved, engaged in international scheduled airline services, and the aircraft of the other contracting States likewise engaged. Such prohibited areas shall be of reasonable extent and location so as not to interfere unnecessarily with air navigation. Descriptions of such prohibited areas in the territory of a contracting State, as well as any subsequent alterations therein, shall be communicated as soon as possible to the other contracting States and to the International Civil Aviation Organization.
> (b) Each contracting State reserves also the right, in exceptional circumstances or during a period of emergency, or in the interest of public safety, and with immediate effect, temporarily to restrict or prohibit flying over the whole or any part of its territory, on condition that such restriction or prohibition shall be applicable without distinction of nationality to aircraft of all other States.
> (c) Each contracting State, under such regulations as it may prescribe, may require any aircraft entering the areas contemplated in subparagraphs (a) or (b) above to effect a landing as soon as practicable thereafter at some designated airport within its territory.[50]

Thus, the Chicago convention was fully prepared to allow Nation-States to maintain their supremacy over their own airspace, so long as they maintained it indiscriminately. Perhaps the most striking example of provision (b), as cited above, is what happened after the events of 9/11. After the brutal terrorist attack of 9/11, there was real concern that more planes could be diverted for terroristic purposes, and the Federal Aviation Administration decided to land all planes within the airspace of

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[50] *Id.* at art. IX.

the United States.[51] Like The Netherlands before, the United States quickly utilized the dominion it possessed over its airspace to secure its territory.

Intriguingly, the sovereignty protected by the Paris and Chicago Conventions seems to be the modern day extension of a Roman and Common Law right, *cujus est solum, ejus est usque ad coelum*. Various translations have been provided for this oft utilized concept. It may be translated, "he who has the soil owns upward into heaven,"[52] "whose is the soil, his it is up to the sky,"[53] or, this author's favorite, "[h]e who owns the soil owns up into the sky and (down below) to hell!"[54] This author's rough translation is "he who owns the soil owns also everything above and below."

Though in olden times this right was meant to be applicable to the individual, in the era of internationalization and globalization, Nation-States have taken on a legal individuality, and thereby claimed the right for themselves. The importance of the right is derived from the fact that this simple maxim expresses how humans have thought for thousands of years about ownership of airspace. Furthermore, the effects of the maxim on the modern law are obvious and profound. The wording of the Paris Treaty and the language of the Chicago Convention both serve to illustrate that the ancient maxim was still the predominant legal analysis of airspace.

One should not forget that although the maxim has been extended to the arena of Nation-States' right to the airspace above their territory, it originally did not apply so expansively. In fact, it originally served to protect a Roman land owner's air and light rights.[55] The right received further treatment by Ac-

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[51] *See, e.g.* Marilyn Adams, Alan Levin & Blake Morrison, *Part II. No One was Sure if Hijackers were on Board*, USA TODAY, http://www.usatoday.com/news/sept11/2002-08-12-hijacker-daytwo_x.htm.

[52] Jean-Marie Henckaerts, *Vexing Issues of Supreme Authority and Sovereign Rights Arising from Space Activities*, 88 AM. SOC'Y INT'L L. PROC. 259, 262 (1994).

[53] HALEY, *supra* note 38, at 41.

[54] F. B. Schick, *Who Rules the Skies: Some Political and Legal Problems of the Space Age*, INTERNATIONAL STUDY PAPER NO. 4, INSTITUTE OF INTERNATIONAL STUDIES, UNIV. OF UTAH, 4 (1961).

[55] *Id.*; *see also*, *Digest*, VIII.2.24.

cursius, a Glossator of the Bolognese school around 1200 A.D.[56] Accursius had a son who went to study law with the court of Edward I, and it is possible that this is how the maxim first became introduced into the common law system.[57]

It is possible that the maxim arose from a document executed during the reign of Edward I and attached to the so-called Charter to the Jews.[58] Thus, though typically attributed to the Romans, the maxim may in fact have a Jewish origin as well.[59] It is not known whether the Jewish possibility is independent of Roman influence, or if it too can be traced to Roman times.

Whatever may be the origin of *cujus est solum*, its inclusion into the modern world was guaranteed by English decisions that effectively cemented the maxim into the common law. Lord Coke was instrumental in this process, noting in one case that it is foolish to consider a property owner's airspace as anything less than his to do with what he pleases:

> Case for stopping of his light.—It was agreed by all the justices, that if two men be owners of two parcels of land adjoining, and one of them doth build a house upon his land, and makes windows and lights looking into the other's lands, and this house and the lights have continued by the space of thirty or forty years, yet the other may upon his own land and soil lawfully erect an house or other thing against the said lights and windows, and the other can have no action; for it was folly to build his house so near to the other's land: and it was adjudged accordingly. *Nota. Cujus est solum, ejus est summitas usque ad coelum. Temp. Ed. 1.*[60]

Finally, Lord Coke solidified this sentiment with his opinion that "the earth hath in law a great extent upwards, not only of water as hath been said, but of aire, and all other things even up to heaven, for *cujus est solum ejus est usque ad coelum*, as it is holden."[61] The doctrine continued in the United States' legal

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[56] Schick, *supra* note 54, at 5.
[57] *Id.*
[58] *Id.* at 5-6.
[59] *Id.* at 6.
[60] Bury v. Pope, 78 Eng. Rep. 375 (1586).
[61] Lord Coke, *cited in* Schick, *supra* note 54, at 6.

system as an outgrowth of the English system. In one case, *Guille v. Swan*, 19 Johns 381 (1822), defendant balloonist descended from the air above another's property and landed, thereby causing damage to the garden of the plaintiff.[62] Defendant's violation of the plaintiff's airspace caused a crowd to enter into the garden to assist the former, which resulted in further destruction.[63] The defendant was liable for the damage caused.[64]

Despite its prevalence in the common law, the maxim did not enjoy unlimited application. In *United States v. Causby*, 328 U.S. 256 (1946), a chicken farmer claimed his property had been taken under the meaning of the U.S. Constitution's Fifth Amendment.[65] Military aircraft had been flying low over the plaintiff's property, thereby scaring some of his poultry to death.[66] The Court held that in fact such actions did constitute a taking when they prevented an owner from the full use and enjoyment of his property.[67] However, the *cujus est solum* maxim was not the justification for protecting the plaintiff's property. Indeed, "[i]t is ancient doctrine that at common law ownership of the land extended to the periphery of the universe – *Cujus est solum ejus est usque ad coelum*. But that doctrine has no place in the modern world."[68]

Causby may have attempted to limit the principle, but it did not get rid of it entirely. In fact, *Causby* served to transfer the focus of the maxim from the individual human to the individual Nation-State. Of course, this had already been recognized in the language of the Paris and Chicago instruments, but it was solidified at the national level by *Causby*. Moreover, despite the language in *Causby* to the contrary, *cujus est solum* continues to enjoy favorable treatment in legislation.[69] The Federal Aviation Act of 1958, passed not long after *Causby*, noted:

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[62] Guille v. Swan, 19 Johns 381 (1822).
[63] *Id.* at 383.
[64] *Id.*
[65] United States v. Causby, 328 U.S. 256 (1946).
[66] *Id.* at 259.
[67] *Id.* at 261.
[68] *Id.* at 260-61.
[69] Schick, *supra* note 54, at 6.

> The United States of America is declared to possess and exercise complete and exclusive national sovereignty in the airspace of the United States, including airspace above all inland waters and the airspace above those portions of the adjacent marginal high seas, bays and lakes, over which by international law or treaty or convention the United States exercises national jurisdiction. Aircraft of the armed forces of any foreign national shall not be navigated in the airspace of the United States, including the Canal Zone, except in accordance with authorization granted by the Secretary of State.[70]

Of course, the Canal Zone no longer being in the possession of the United States, the passage indicates its age. The modern incarnation of the Federal Aviation Act states simply "[t]he United States Government has exclusive sovereignty of airspace of the United States."[71] Regardless of the wording, it is clear that *cujus est solum*, and thus sovereign control of airspace, has remained a governing national concept.

One short note should be made. Sovereignty over the air has become so entrenched that it is essentially a form of customary international law. Its acceptance is no longer doubted.[72] Thus, as a custom, it is protected from any kind of rapid change, and will therefore likely continue to govern airspace despite the complications it might lend to craft traveling through airspace to reach outer space, or hybrid craft capable of utilizing both spaces. Custom is a principle of highest import in the international arena. The United States Supreme Court noted the importance of custom regarding the law of the sea, writing: "Undoubtedly, no single nation can change the law of the sea . . . . Like all the laws of nations, it rests upon the common consent of civilized communities. It is of force, not because it was prescribed by any superior power, but because it has been generally accepted as a rule of conduct . . . ."[73] This principle was upheld even with respect to certain institutions which had been re-

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[70] Federal Aviation Act, 72 Stat. 798 (1958) (current version at 49 U.S.C. § 40103(a)(1) (1994)).

[71] Federal Aviation Act, 49 U.S.C. § 40103(a)(1) (1994).

[72] *See, e.g.*, Cooper, *supra* note 36.

[73] The Scotia, 14 Wall. 170, 187 (1872).

jected by some States, but not by others. The slave trade was one such instance, and the United States Supreme Court, under Chief Justice Marshall, noted "that which has received the assent of all, must be the law of all . . . . [a]s no nation can prescribe a rule for others, none can make a law of nations."[74]

C. Drawing the Line, the Delimitation and Identification of Airspace

One of the most intriguing things about space, in this author's opinion, is that no one seems to know exactly where it begins. By equivalence, no one seems to know where the air ends. The delimitation of where Earth ends and space begins was of monumental import to early space lawyers. John Cobb Cooper noted that "[u]nless we know the boundary between territorial airspace and international outer space grave practical control questions will necessarily result."[75] Furthermore, "The lower the upper limit of the territorial airspace, the greater freedom will exist in planning such launchings and reentry."[76] Thus, the delimitation of space seemed important in light of how sovereignty should extend beyond national land, sea, and airspace. Indeed, the concern for extension of sovereignty into space was shared by the drafters of the Outer Space Treaty, which was made apparent with the language of Article II.

Before the Outer Space Treaty was even written, scholars were debating how, and to what extent, sovereignty should extend into space. S.M. Beresford suggested that the reason for sovereignty in space would include the prototypical factors underlying all sovereignty—the ability to control a Nation-State's security and effective control over territory.[77] Indeed, "[i]n extending national sovereignty away from the center of the earth, therefore, the minimum distance is set by the requirements of

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[74] The Antelope, 10 Wheat. 66, 121-22 (1825).

[75] Letter from John Cobb Cooper, President, International Institute of Space Law, to L. R. Shepherd (Jan. 30, 1962) (available through the Andrew G. Haley Archive, *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm).

[76] *Id.*

[77] S. M. Beresford, *The Future of National Sovereignty*, *in* PROCEEDINGS, SECOND COLLOQUIUM ON THE LAW OF OUTER SPACE, at 5 (IISL, 1959).

safety and defense, and the maximum distance is the limit of effective control."[78] The idea of protecting sovereignty during this time was made all the more urgent by the Cold War and the pressures felt by the two great powers—the U.S.A. and the U.S.S.R. The two countries needed to find a way to prevent destruction and world catastrophe without the cessation of their respective outer space agendas. Both countries needed to continue in space, both to assure one another of military strength, and to win the tides of world opinion. William Hyman noted the seriousness of the times, but added there were ways to prevent destruction:

> The increasing use of air space and outer space is the avenue to either peace or war. The hazards of such use can be overcome by the cooperation of scientists, lawyers and diplomats. Scientists must inform the public of all scientific advances. Lawyers must devote themselves to the drafting of laws, obedience to which will be compelled by informed public opinion. Politicians must cooperate and forswear arbitrary action.[79]

The drafting of laws of which Hyman spoke referred to the delimitation problem. Only when air and space could be separated could peace truly thrive. Henri T. P. Binet believed that "there is only one way to settle the issue: an international agreement!"[80] Since violations of sovereignty are often the most dangerous threat to peace, demarcating the boundaries between air and space could prevent international events from turning into international incidents.[81] This would especially be so if Nation-States preferred sovereignty in space itself as the regime of the future. Binet suggested the Nation-States would prefer to have sovereignty in space rather than "freedom of space," which is antithetical to the actual result that culminated in the Outer Space Treaty (i.e., Nation-States showed that they preferred freedom of space, not sovereignty as the legal scheme under

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[78] *Id.* at 7.

[79] William A. Hyman, *Sovereignty over Space*, *in* PROCEEDINGS, THIRD COLLOQUIUM ON THE LAW OF OUTER SPACE, at 26 (IISL, 1960).

[80] Henri T. P. Binet, *Toward Solving the Space Sovereignty Problem*, *in* PROCEEDINGS, SECOND COLLOQUIUM ON THE LAW OF OUTER SPACE, at 11 (IISL, 1959).

[81] Hyman, *supra* note 79, at 30.

which space operations were to operate), but his prediction lost to the proponents of free use of space. That concept will be explored below in the essay.

Despite the end result of the Outer Space Treaty, attempts were made to determine a line between air and space. The attempts probably stemmed from the idea that air space was sovereign, and since outer space was simply air space at a higher altitude (and without air, the author might add), then sovereignty should exist there too.[82] Even before the Chicago Convention's establishment of sovereignty of a Nation-State's air space,[83] previous agreements held the principle in like esteem. Dr. Samuel Kucherov noted:

> Thus, in international law practice, states exercised full and exclusive sovereignty in airspace before it was generally accepted in the Paris Convention of October 13, 1919. Already before World War I a number of states protested against violation of their sovereignty in the air by belligerents. For example . . . [t]he United States prohibited the overflying of the Panama Canal by belligerents on 13 November 1914.[84]

The question remained as to where the line should be drawn.

The line-drawing is divided into essentially two camps. The first is that of the spatialists, who wish to define a stable, constant line by which to judge the transition from the air regime to the space regime. The second is that of the functionalists, who believe that there should be no solid line defining space; rather, vehicles should be adjudged according to the regime that best suits their function. Thus, if a craft operates only in air,

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[82] *Cf.* Declaration of the First Meeting of Equatorial Countries ("Bogota Declaration") of 3 December 1976, http://www.jaxa.jp/library/space_law/chapter_2/2-2-1-2_e.html (last visited Feb. 17, 2009); *See also* COLOMBIAN CONSTITUTION, ch. 4, art. 101 ("También son parte de Colombia, el subsuelo, el mar territorial, la zona contigua, la plataforma continental, la zona económica exclusiva, el espacio aéreo, el segmento de la órbita geoestacionaria, el espectro electromagnético y el espacio donde actúa, de conformidad con el Derecho Internacional o con las leyes colombianas a falta de normas internacionales."), http://pdba.georgetown.edu/Constitutions/Colombia/col91.html.

[83] Binet, *supra* note 80, at 14.

[84] Samuel Kucherov, *Sovereignty and Sovereign Rights in Outer Space*, *in* PROCEEDINGS, FIFTH COLLOQUIUM ON THE LAW OF OUTER SPACE, at 5 (IISL, 1962).

like a 747, air law should govern. Likewise, if a craft is designed to work in space, like a rocket launching a satellite, space law should govern. The functionalist approach allows for greater flexibility of evolving technology, since any line drawn by the spatialist approach could become burdensome should certain craft be developed that challenge the limits of the line. On the other hand, the functionalist camp faces problems with the possibility that a vehicle could be developed that possesses the ability to fully operate in either air or space.[85]

Bin Cheng has suggested the presence of a third group, amongst which he places the United States, the United Kingdom, and Germany.[86] This third group contains entities that simply are not sure where the line is or should be, and that might say to "the world at large, 'Of course we all know where space is, but there is really no need for you to worry about it, because it is way beyond you.'"[87] The United States opposed the attempt to define where airspace ends and outer space begins, since such attempts would lead to an arbitrary boundary that was scientifically unsound and that could cause problems in the future.[88] Others, such as the Czech Republic and Denmark, believe in the importance of establishing both a definition of space and the delimitation of outer space, but nevertheless argue that "the current level of space and aviation activities does not seem to require the adoption of a treaty definition and/or delimitation of outer space, and for the present this issue could be left to the theory and practice of States."[89]

Should the spatialist concept be employed, the varied possibilities provide numerous options. It is possible that the line should be placed at the limit of the atmosphere (wherever that is).[90] A second possibility is that the atmosphere can be divided

[85] A possible example from science-fiction are the shuttlecraft from Gene Roddenberry's Star Trek franchise.

[86] Bin Cheng, *The Legal Status of Outer Space and Relevant Issues: Delimitation of Outer Space and Definition of Peaceful Use*, 11 J. SPACE L. 89, 93-94 (1983).

[87] *Id.* at 93.

[88] Stephen Gorove, *How High is High and Other Cosmic Questions*, 12-FEB BRIEF 9, 9 (1983).

[89] U.N. Doc. A/AC.105/889/Add.1, *supra* note 8, at ¶ 8.

[90] U.N. Doc. A/AC.105/C.2/7 (May 7, 1970).

into its parts (e.g., troposphere, stratosphere, etc.) and a line could be derived from that point.[91] It is possible that the limit could be set at the highest location at which aircraft can operate.[92] This possibility reflects the ICAO definition, where airspace is “only that space in which an aircraft can operate.”[93] Unfortunately, this definition is not a solid one, since changing technology will change where aircraft can operate.[94] A fourth possibility is if the von Karman Primary Jurisdictional Line (discussed below) is selected—it would place the line at 275,000 ft, where aerodynamic lift gives in to centrifugal force.[95]

A fifth possibility is that the line is where the lowest perigee of a satellite is orbiting.[96] The problem with this is that, again, as technology changes, where this line is would also change. Consider that a line that is proposed today for the lowest perigee could be usurped by a lower perigee from a satellite twenty years from now. Should that happen, the absurd situation could arise where a new satellite finds itself in what is technically the airspace of a sovereign Nation-State that would, at that point, posses the right to destroy the satellite.[97] A sixth possibility is to draw the line where the gravitational pull of the Earth ceases.[98] However, this author would suggest that this would mean that certain gravity controlled objects, like artificial satellites, would then be considered within airspace—an absurd outcome. A seventh possibility is that the line should be drawn

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[91] *Id.* at 36.

[92] *Id.* at 37.

[93] ICAO definition of airspace, *cited in* Stanley B. Rosenfield, *Where Air Space Ends and Outer Space Begins*, 7 J. SPACE L. 137, 139 (1979); *cf.* the definition of aircraft, ICAO Annex 1 Personnel Licensing, p. 1-1 (Jan. 11, 2001).

[94] Rosenfield, *supra* note 93, at 139.

[95] U.N. Doc., *supra* note 90, at 43. Centrifugal force is not actually a real force at all. It may be defined as “[a]n outward pseudo-force, in a reference frame that is rotating with respect to an inertial reference frame, which is equal and opposite to the centripetal force that must act on a particle stationary in the rotating frame.” MCGRAW-HILL DICTIONARY OF PHYSICS 62 (Sybil Parker ed., 2nd ed. 1997). The “force” pushing an object outwards away from the center of a circle is simply that object attempting to proceed via inertia on its tangent at any given moment. However, that fact does not render the von Karman Line immaterial.

[96] *Id.* at 45.

[97] Ricky J. Lee, *Reconciling International Space Law with the Commercial Realities of the Twenty-First Century*, 4 SING. J. INT’L & COMP. L. 194, 209 (2000).

[98] U.N. Doc., *supra* note 90, at 48.

at the highest bounds of where a Nation-State can enforce its sovereignty.[99] "It would mean that the more powerful States, with their high altitude rockets, would be able to control the 'airspace' over their surface territories. The weaker States, however, would be unable to exercise such control."[100] Obviously, this possibility would be unworkable in the international context.

An eighth possibility is that there should be a zonal system, by which there is one zone controlled by sovereignty (presumably airspace), another zone for transitional purposes, and a final zone where the law of space takes over.[101] This last proposal was put forward in 1956 by Professor Cooper of McGill University, who proposed that the middle zone be 300 miles up, and available for traversal for all non-military aircraft (since there would still be sovereignty here).[102] Contrast the 300 mile limit to that proposed by the Nazis in 1939, who argued that a 3 mile limit for jurisdiction should exist that mirrored the 3 mile jurisdictional zone afforded territorial waters.[103] A ninth possibility is to draw the line after a fashion of one or more of the above proposals.[104]

One of the most famous attempts at delimitation was the von Karman Line. Some proposed that the so called Karman Primary Jurisdictional Line (or, von Karman Line) would be the best candidate, since it "is susceptible to determination because of aerodynamic reactions and is here proposed as the line of demarcation between airspace and space."[105] However, there is little to suggest that other lines, both above and below the Karman Line, could not be selected to demarcate the difference be-

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[99] *Id.* at 49.

[100] HALEY, *supra* note 38, at 83.

[101] U.N. Doc., *supra* note 90, at 52.

[102] HALEY, *supra* note 38, at 84.

[103] *See* N.Y. TIMES, Nov. 24, 1939, at 1,16; *accord* Arthur K. Kuhn, *Aerial Flights Above a Three-Mile or Other Vertical Limit by Belligerents Over Neutral Territory*, 34 AM. J. INT'L L. 104, 104-05 (1940).

[104] U.N. Doc., *supra* note 90, at 54.

[105] George D. Schrader, *National Sovereignty in Space*, *in* PROCEEDINGS, FIFTH COLLOQUIUM ON THE LAW OF OUTER SPACE (IISL, 1962); *see also* Jerzy Sztucki, *On the So-Called Upper Limit of National Sovereignty*, *in* PROCEEDINGS, FIFTH COLLOQUIUM ON THE LAW OF OUTER SPACE (IISL, 1962).

tween air and space. If the answer were simple, the ideas of whether and how to extend sovereignty into space would have been resolved long ago. At present, this author knows of no universally agreed upon demarcation line, and that is just as well, since the sovereignty issue may have no readily discernable conclusion.

Despite the above sentiment, serious efforts have been made on behalf of the von Karman Line. Andrew Haley was a major proponent of the idea, devoting substantial efforts to defending it in his writings.[106] The von Karman Line was set at approximately 275,000 feet, with emphasis on its approximate nature.[107] It was believed that the Line would be worked out more precisely with further scientific efforts, and that in any case the Line represents a median measurement akin to a mean sea level (albeit a more complex concept than that).[108] Haley believed the von Karman Line is unique to the law, since many scientists probably thought that the delimitation of space was irrelevant, especially for their purposes.[109] Haley noted:

> Ironically enough, the lawyer finds the main crackpots and nuisances among engineers and sociologists who assume the role of amateur lawyers and give vent to their rather silly if harmless rhapsodies in a field wholly unfamiliar to them. To them the very real task of delimiting airspace is wholly unnecessary. The sound scientist, on the other hand, avoids legal interpretation while at the same time making an essential contribution by staying within his technical expertise and keeping the lawyer well advised on appropriate physical phenomena. Such was the most helpful role of Dr. Theodore von Karman.[110]

Despite the high praise, the von Karman Line has not to date been accepted as the most viable option for delimiting airspace. Like many other proposals, it is still at least somewhat

[106] *See generally*, HALEY, *supra* note 38.

[107] *Id.* at 78; *see also*, Letter from E. Sänger, Professor, to Andrew G. Haley, President, International Astronautical Federation (Apr. 9, 1958) (available through the Andrew G. Haley Archive, *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm).

[108] HALEY, *supra* note 38.

[109] *Id.* at 97.

[110] *Id.*

arbitrary, and, at the very least, faces the problem posed by technology that may one day be able to perform just under or above the line, thereby frustrating the identity of which legal regime applies.

The question thus arises, should delimitation even be sought, and if so, what general principles could be agreed upon in lieu of the proposals heretofore described?

Beresford suggested that the idea of sovereign territory in space would be astronomically impossible in the first place.[111] This is especially important, since if as some proposals have suggested[112] (that the extent of sovereignty reaches far into what is colloquially thought as space), planetary physical realities cause problems. Beresford's analysis astutely pointed out the futility of sovereignty in space when he wrote that:

> Let us first consider the view that national sovereignty extends into outer space without any limit whatever. A cone of sovereignty conceived as stretching into space from the center of the earth through the territorial boundaries of each nation would clash with the facts of astronomy. With the movement of the earth and other astronomical bodies, the concept of each nation's cone of sovereignty would change continually. Any given point in space would constantly pass from one cone of sovereignty to another. A rocket could not go from the earth to the moon, for example, without crossing through the sovereign space of many nations.[113]

Thus, the full range of sovereignty may be impossible to determine. Early space lawyers realized that the solution was to form a treaty regime that governed behavior in space—one that might preclude sovereignty altogether. Beresford, for example, predicted that "limited particular agreements . . ." might aid the situation.[114]

Stephen Gorove joined Beresford in decrying the thought of extending sovereignty into space. He believed that such an extension was not workable, and that the real problem was to

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[111] Beresford, *supra* note 77, at 6.
[112] *See* U.N. Doc., *supra* note 90, at 45, 48.
[113] *Id.*
[114] *Id.* at 9.

identify where the airspace ended.[115] Thus, Gorove believed, as have so many others, that the legal concerns of airspace—and the sovereignty carried within—were of the utmost importance.[116]

If sovereignty would not reign supreme in space, some other concept would have to apply. Would the result be freedom in space, or absolute prohibition? The first concept is that of *res communis*, and the latter that of *terra nullius*. It is the former concept that was enshrined by the interpretation of Article II of the Outer Space Treaty. On the other hand, air law is dependent on the concept that air above legally held ground territory is neither *res communis* nor *terra nullius*.

D. The Future of Sovereignty: res communis*, the contrast to* Cujus est solum, ejus est usque ad coelum

The words of Article II of the Outer Space Treaty do not express a preference for either *res communis* or *res nullius*. They simply prohibit any nation from establishing sovereignty in space. Thus, the question remained as to how space should be perceived. The options were twofold: 1) space could be open to all for exploration and use; or 2) space could be closed to any nation—at least any nation in particular. If the second option were chosen, it is possible that a created world space agency might license activity in space for any given Nation-State, but such an agency has never been created. The former choice was selected by time and precedent, and it comports with the essence of the Outer Space Treaty's desire to promote peace among humankind in the use and exploration of space.[117]

The origins of *res communis* can be traced back to ancient Roman times, when the concept was referred to as *res communis omnium*.[118] The term referred to those qualities of nature

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[115] HALEY, *supra* note 38, at 94.

[116] *See* John Cobb Cooper, *Report of the Chairman of Working Group I*, International Institute of Space Law (Aug. 15, 1964) (available through the Andrew G. Haley Archive, *available at* http://www.spacelaw.olemiss.edu/archive/haleyarchive.htm).

[117] Outer Space Treaty, *supra* note 6.

[118] Aldo Armando Cocca, *Determination of the Meaning of the Expression "Res Communes Humanitatis"*, *in* PROCEEDINGS, SIXTH COLLOQUIUM ON THE LAW OF OUTER SPACE, at 1 (IISL, 1963).

that belonged to all people, such as air, water, and the oceans.[119] Interestingly, as has been shown here, not all air belongs to everyone according to international precedent. Allowance was made for all so that these things should be taken by no one man to the exclusion of another. These rules are essentially a matter of *ius naturalis*, or the natural law.[120] Natural law has been utilized throughout the millennia as the kind of law that comes most easily to developing peoples. In philosophy, natural law would be an extension of what is called deontological ethics—i.e., what one *ought* to do is what is right. One ought share the great resources of the planet—the commons. One ought not deny to others that which clearly belongs to all. The *res communis* principle captures this spirit. It is very much related to the ideal of equity, where all should be treated fairly. Thus, it is not surprising that this principle has come to dominate the implementation of Article II.

Terra nullius, on the other hand, could be translated as "no country," or "no land." This means that should this definition be employed in space, the vast realm of outer space belongs to no Nation-State. At first, this appears to be equivalent to *res communis*, but in fact that concept is phrased in a positive light, whereas *terra nullius* possesses a negative tone. If *terra nullius* were chosen, one interpretation would be that space and all its resources was an open field—a free for all whose resources could be devoured by the Nation-States first to get there. On the other hand, as has been noted, space could have been subjected to the sovereign control of Nation-States via the principle of *cujus est solum*. However, that option was not selected, and *res communis* allows a much more optimistic spirit of exploration and sharing to prevail. This is the peace-promoting concept, and the one that fits more fully with the preamble to the Outer Space Treaty.[121] In fact, the entire treaty regime is an effort aimed at assuaging the fears and promoting the hopes and dreams of all humankind. As Joanne Irene Gabrynowicz has noted, "[b]orn of Cold War forces, the COPUOS space treaties

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[119] *Id.*
[120] *Id.*
[121] Outer Space Treaty, *supra* note 6.

contain both the aspirations and fears of the times. Their affirmative mandates include that space is 'the province of all mankind' and is not subject to national appropriation by the exercise of sovereignty."[122] This language encompasses the words and essence of Article II. Therefore the logical, and equitable, choice is the extension of a spirit of cooperation into space, and to interpret Article II of the Outer Space Treaty as professing *res communis* over exclusionary theories like *terra nullius*.

Indeed, early space lawyers found that initial satellite launches whose orbits passed over other Nation-States' territories indicated that space may be a *res communis* jurisdiction by matter of customary international law.[123] "The Committee . . . believes that, with this practice, there may have the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing international law or agreements."[124] The Soviets suggested that spacecraft be granted a right of passage through what would otherwise be the sovereign airspace of a Nation-State.[125] William Hyman proposed a list of provisions that should be adopted by an international convention (presciently predicting the Outer Space Treaty, which came after his commentary):

> c) That all Outer Space be deemed *res communis* (and not *terra nullius*);
>
> d) That the interplanetary system be deemed *res communis* (and not *res nullius*);
>
> e) That recognition be given to the distinction between "*res communis*" and "*terra nullius*" (the former denying rights of appropriation and exclusive control by any one nation, the latter conceding such rights of appropriation through the established principles of discovery, habitation, and settlement) . . .[126]

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[122] Joanne Irene Gabrynowicz, *Space Law Its Cold War Origins and Challenges in the Era of Globalization*, 37 SUFFOLK U. L. REV. 1041, 1043 (2004).
[123] Binet, *supra* note 80, at 12.
[124] *Id.*
[125] Rosenfield, *supra* note 93, at 138.
[126] Beresford, *supra* note 77, at 34.

Early efforts to establish *res communis* as a guiding principle were successful, and since then a spirit of cooperation, for the most part, has prevailed in outer space relations. No one put this more clearly than Carl Christol, who noted that "[d]uring the negotiations and drafting of the agreement, and in subsequent state practice, it has become clear that the space environment is perceived in international law as a *res communis* . . . ."[127] The future of space law depends on submission to the *res communis* principle. So long as it governs, in many respects it controls what can be used and owned in space—an issue particularly germane to Nation-States, companies, and individuals interested in utilizing space and the celestial bodies.

Certitude may be granted by the outer space regime regarding what conception of sovereignty governs in space, but the problem still remains—where does it begin, and air end? Should humanity be unable to solve this conundrum, the possibility that Nation-States may become confused about what law to apply will constantly raise its head. Especially in an era where private space flight is becoming more and more a reality as the years go by, uncertainty as to whether new craft are considered spacecraft or aircraft could quash needed investment in future technologies. Adding to the problem, the question as to how jurisdiction over individuals applies is complicated by the inability to delimitate the line between air and space; indeed, is an actor on a vessel presumed to be an aircraft treated as an astronaut if her vessel crosses one of the suggested lines between air and space, and how will Nation-States' Authority reach such individuals?[128]

Unfortunately, no readily agreed upon definition has been proposed, and therefore the distinction between airspace and outer space, *cujus est solum* and *res communis*, remains murky. This author concurs with Haley, Cooper, Gorove, and many others that it is important to flesh out a line sooner rather than later. The legal problems that seem somewhat theoretical at

[127] Carl Christol, *Article 2 of the 1967 Principles Treaty Revisited*, 9 ANNALS OF AIR & SPACE LAW 217, (1984).

[128] *Cf.* P.J. Blount, *Jurisdiction in Outer Space: Challenges of Private Individuals in Space*, 33 J. SPACE L. 299, 300 (2007).

this point could become starkly real should a problem occur (e.g. the destruction of a satellite) at a point somewhere in between what is generally regarded as outer space, and what is typically thought of as airspace.

CONCLUSION

History is replete with the machinations of individuals and Nation-States trying to understand where and at what level their power extends. Law is in a very real sense about control as much as it is about order. From Papal times to Westphalia and beyond, the concept of sovereignty has continued to mutate, and sovereign control over airspace has changed focus from the individual in Rome and the common law, to the faceless Nation-State. The realities of the modern world have produced a plentitude of suggested solutions to where this sovereignty should end, and though to date no perfected solution has presented itself, the need for one has only increased with time. Humanity's ability to create such abruptly different regimes—such as Article II from the Outer Space Treaty, and absolute sovereign control under the Paris and Chicago Conventions—suggests that delimitation is possible, though difficult to discern. With time, perhaps history can show humanity a way to truly discover how high the sky goes.

THE OPENNESS PRINCIPLE IN MULTILATERAL AGREEMENTS FOR SPACE EXPLORATION

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ABSTRACT

The 2006 release of NASA's new Vision for Space Exploration, including the Lunar Architecture program, represents a step forward for the human exploration of Mars. To that end, the NASA Global Exploration Strategy was a significant first step toward developing a model of global participation, but it falls short in terms of the global cooperation and international joint ventures that will likely be necessary given the funding and technological needs required for a decade-long program to put humans on the Martian surface. With US national funding commitments to the space program constrained by domestic and international funding priorities and with the potential for cost overruns over long time-scales and multiple political administrations, any real potential for human exploration of Mars will likely require international cooperation.

The NASA Global Exploration Strategy involved NASA asking the world's thirteen space agencies and a variety of experts about their visions of space exploration, including priorities for research, but did little to form a coherent international agenda. Rather than a go-it-alone approach, a first priority for the NASA

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