

FORMALISM, INFORMALISM & INNOVATION IN SPACE LAW:
LENSES TO VIEW, ASSESS, AND GUIDE THE DEGREE OF
FORMALISM IN THE REGULATION OF SPACE ACTIVITIES

Professor Matthew Schaefer*
Director, Space and Telecom Law Program
University of Nebraska College of Law

Abstract: Too often outer space regulation has been viewed only through the lenses of public international law and the related international relations school of regime theory (or institutionalism) in which states are the primary, if not exclusive actors, and in which formal international treaties and international organizations are the means by which regulation occurs in a non-zero sum game environment (i.e. gains from cooperation can be achieved). However, it is equally important now to begin viewing the regulation of space through private international law and liberal international relations theory lenses if we are to fully understand how space activities can be and are regulated for the current “system” of space regulation that involves international, national and local government regulation but also a degree of private regulation too. From a less positivistic view and more normative perspective, it is important to continue to consider, where appropriate, possibilities for private regulation, including through the insurance market and industry self-regulation, as gap fillers and supplements for governmental regulation in the space arena if we are to maximize global space-created welfare.

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I. INTRODUCTION

Outer space actors, both governmental and private, operate in an environment in which their actions are guided and constrained by finances, technology, policy, and regulation. Outer space regulators, given the global commons nature of space, must also be acquainted with and guided by finances, technology, and policy, but also diplomacy and politics. And, of course, it is important to realize that regulators of space activity are not only governments but indeed private actors in the space arena as well, including both the space industry and insurance companies. Governments used to be the only actors in space, but now private commercial actors and operators are well established within outer space activities. Similarly, private actors are well enshrined as regulators of the outer space regime. Too often outer space regulation has been viewed only through the lenses of public international law and the related international relations school of regime theory (or institutionalism)¹ in which states are the primary, if not exclusive actors, and in which formal international treaties and international organizations are the means by which regulation occurs in a non-zero sum game environment (i.e. gains from cooperation can be achieved). However, it is equally important now to begin viewing the regulation of space through

¹ For a fuller description of institutionalism or regime theory, see Kenneth W. Abbott, "Modern International Relations Theory: A Prospectus for International Lawyers," 14 Yale J. Int'l L. 335 (1989); Kenneth W. Abbott, "Elements of a Joint Discipline," 86 Am. Soc'y Int'l L. Proc. 167 (1992); Stephen Krasner, "Structural Causes and Regime Causes: Regimes as International Variables," 36 Int'l Org. 185 (1982).

private international law and liberal international relations theory² lenses if we are to fully understand how space activities can be and are regulated for the current "system" of space regulation that involves international, national and local government regulation but also a degree of private regulation too. From a less positivistic view and more normative perspective, it is important to continue to consider, where appropriate, possibilities for private regulation as gap fillers and supplements for governmental regulation in the space arena if we are to maximize global space-created welfare.

II. THE TRADITIONAL PUBLIC INTERNATIONAL LAW & REGIME THEORY INTERNATIONAL RELATIONS VIEW OF SPACE REGULATION: STATES AS THE EXCLUSIVE OR PRINCIPAL ACTORS

At the time the seminal Outer Space Treaty (OST) was concluded in 1967, governments, principally the United States and the Soviet Union, were the exclusive actors in the space domain. Regulation of space activities was primarily viewed as a means to constrain governmental behavior, governments being the only actors in space. Traditional public international law being viewed as regulation the relationship between states, the OST fell comfortably within this framework. The OST also fell comfortably within regime

² For a fuller description of liberal international relations theory, see Anne Marie Slaughter, "A Liberal Theory of International Law," 94 Am. Soc'y Int'l L. Proc. 240 (2000); Anne Marie Slaughter, "Liberal International Relations Theory and International Economic Law," 10 Am. U. J. Int'l L. & Pol'y 717 (1995).

theory³, which posits, much like realist theory, that states were the principal actors in international relations, but distinguishing itself from realist theory in seeing international relations as a non-zero sum game where gains from formal regimes could be had through treaty making. Principles of non-interference and free access found in the OST could be seen as increasing the size of gains that could be derived from space.

Many of the other “Cold War”-era treaties on space negotiated over the ensuing 12 years, including the 1968 Rescue and Return agreement, the 1972 Liability Convention, the 1976 Registration Convention and the 1979 Moon Agreement, also paid primary attention to the behavior of governmental actors. To be sure, private activity in space was not unforeseen even in the OST, as Art. VI of the OST requires governments to provide continuing authorization and supervision of non-governmental actors within their jurisdiction. Nevertheless, with little private activity in space in the 1960-70’s, much of the regulation of space activities was principally through these treaties. Later still, United Nations General Assembly (UNGA) Resolutions, such as the 1985 Resolution on Direct Broadcast Satellites and the 1992 Resolution on Remote Sensing Principles, became a key regulatory tool. However, this form of regulation was still of an intergovernmental, negotiated nature, albeit legally non-binding unless later acquiring the status of customary international law. If regulation of space activities did not transform itself, the debate between so-called “hard law”

(e.g. treaty) v. “soft law”⁴ (e.g. UNGA resolution) would continue to be the principal debate in the regulation of space. It is still an important debate in space regulation, but certainly not the principal one, especially since formal amendment of the OST, although occasionally proposed, or even formal new treaties on space activities do not appear feasible anytime soon given the international political landscape. This is why for instance the issue of mitigation of space debris is handled principally through voluntary soft-law instruments.⁵

III. THE PRIVATE INTERNATIONAL LAW & LIBERAL INTERNATIONAL RELATIONS THEORY VIEW OF SPACE REGULATION: DOMESTIC CONSTITUTIONAL STRUCTURES AND LEGISLATION, NON-GOVERNMENTAL ORGANIZATIONS (NGOs), MULTINATIONAL CORPORATIONS (MNCs) AND NETWORKS

Private international law has rapidly grown throughout the past several decades, principally through efforts undertaken in the Hague Conference on Private International Law. While historically, in the pre-WWII era, references to private international law were basically synonymous with a reference to conflict of law rules (those rules that told you which nation’s substantive law would guide resolution

³ See generally Abbott, *supra* note 1.

⁴ For an excellent discussion of hard law v. soft law in the context of space, see Comments by Geraldine Goh at University of Nebraska College of Law conference on “Formalism, Informalism, and Innovation in Space and Telecommunications Law,” May 1-2, 2008.

⁵ See, e.g., Steve Mirmina, “Reducing the Proliferation of Orbital Debris: Alternatives to a Legally Binding Instrument,” 99 *Am. J. Int’l L.* 649 (2005).

of the dispute at hand), private international law has rapidly expanded in the past several decades through the traditional public international law making method of treaties. As private actors became more engaged in space are even efforts in the UNIDROIT (which continue today) regarding security interests in mobile assets in outer space (or as described by one of the lead UNIDROIT officials, “mortgages” in space) so as to create more possibilities for financing space activities. But even the traditional view of public international law as only regulating interaction between government actors has come under increasing pressure, for much of public international law has very tangible impacts on private actors (e.g. WTO/GATT tariff limits, human rights norms, etc.). Thus, the distinction between public international law and private international law is breaking down, and what is more critical is to realize that there are a range of actors that participate in international space relations and in regulating space activities.

Liberal international relations theory posits that states are not monolithic entities, that their preferences and behavior are influenced by domestic constitutional structures and legislation, and that international relations are not the exclusive domain of governments, with NGOs, MNCs, and networks (educational or otherwise) also playing key roles.⁶

This view of international relations, although only gaining popularity in the last decade plus in terms of joint international relations-international law scholarship, certainly has some

⁶ See generally Slaughter, *supra* note 2.

descriptive weight even in the early origins of space law. For example, the OST borrowed language from (and was guided and constrained by) the original NASA Act of the US Congress.⁷ In current environment, the liberal international relations lens has even more explanatory force for what we are witnessing. In today’s world, we see competition and experimentation among arious nations in terms of their approaches to space legislation, in particular the different models of national space legislation adopted by space active nations. We see the explanatory force of the theory in the US delegation to the International Telecommunications Union (ITU) World Radio Communication Conferences (WRC). At the most recent WRC-07, the US delegation was comprised of 157 persons, over half of whom where private sector advisors.⁸ Indeed, the body sponsoring the technical session at which this paper was delivered, the International Institute of Space Law (IISL), is an example of the influence of NGO’s in international relations too, through its recently acquired permanent observer status at the UNCOPUOS. But the impact of non-governmental private entities in the regulation of space activities is not limited to input at intergovernmental negotiations and conferences. Private regulation through the insurance market and industry self-regulation are already

⁷ See, e.g., Jonathan Galloway, “Revolution and Evolution in Outer Space Law,” forthcoming in *Nebraska Law Review*.

⁸ See comments by Ambassador Richard Russell, US Ambassador to WRC-07, made at University of Nebraska College of Law conference on “Formalism, Informalism, and Innovation in Space and Telecommunications Law,” May 1-2 (2008), Lincoln, Nebraska.

existing components of the regulatory domain of outer space too.

IV. PRIVATE REGULATION: THE INSURANCE MARKET AND INDUSTRY SELF-REGULATION

A. Insurance Market as a Regulatory Vehicle

The insurance market is able to act as an institution of governance because it can stimulate or control behavior and uses many of the same techniques such as surveillance, information systems, investigators, and inspectors as government does when it regulates.⁹ Indeed, “competitive pressures among insurers [can] result in continual improvements in the art of risk analysis.”¹⁰ For example, the fire insurance industry is widely viewed as playing a key regulatory role and greatly reducing the number of fire losses that would otherwise occur.¹¹ The satellite launch insurance market can be analyzed as an example of this type of regulation.¹²

The historical failure rate of launches is 8-12%, although in recent years it had fallen to 6%, leading to profitable years for launch insurers. However, in the past year or so, numerous launch failures have occurred, including the Russian Proton/AMC-14 Comsat; Sea

⁹ See generally, Ericson, Doyle, & Barry, *Insurance As Governance* (2003)

¹⁰ Martin Katzman, “Environmental Risk Management Through Insurance,” 6 *Cato Journal*, No. 3 (1987).

¹¹ See *id.*

¹² For a description of space insurance law, see generally, Pamela Meredith “Space Insurance Law, With A Special Focus on Satellite Launch and In-Orbit Policies,” 21 *Air & Space Law* 13 (2008).

Launch/Dutch NSS-8; Proton Rocket/JCSat 11 plus satellite damage to the QAF-1 Comsat.¹³ One can ask whether certain launch companies or vehicles might be squeezed out of the launch market due to “regulation” of such activities by the insurance market. “Regulation” of launch companies through the insurance market can occur through a variety of means, including the cost of premiums, level of deductibles, the denial of insurance altogether, inspections, and even definitions of coverage terms such as “material change” and “due diligence” provisions.¹⁴ Indeed, the predictions of lower premiums for manned flights than unmanned flights¹⁵ might be suggestive of regulatory power of the insurance market, namely manned flight operators will exercise more care, utilize more technology, and include more redundant systems in order to keep insurance costs low and thereby keep the viability of the private space flight industry.

The launch industry is not the only “transport” industry in which regulation is thought to occur through the insurance market. In the maritime industry, private insurance companies play an important regulatory role. Marine underwriters may for example ask ship owners with “bad loss records” to implement specific

¹³ See Ron Panko, “Falling Stars: A String of Launch Failures Has Brought the High-Flying Satellite Insurance Market Back to Earth,” 109 *Best’s Review* 82 (July 1, 2008).

¹⁴ For similar type of regulation in the maritime industry, see Franco Furger, “Accountability and Systems of Self-Governance: The Case of the Maritime Industry,” 19 *Law & Policy* 445, 459 (October 1987),

¹⁵ See Meg Green, “Reach for the Stars: Insurers are Playing a Critical Role in Transforming the Dream of Affordable Space Tourism,” 105 *Best’s Review* 20 (March 1, 2005)(quoting Jean Michel Eid, managing director of Aon).

safety recommendations and those ship owners with enviable safety records may ask for premium discounts.¹⁶ Marine insurers also rely in part on classification societies to certify the seaworthiness of ships prior to deciding on whether to offer insurance coverage. One problem with the combined regulatory power of the insurers and the classification societies is that no single society has a monopoly, instead they compete for members as self-financed organizations, and thus have some incentive to be lenient in their certifications in order to attract or at least not lose members.¹⁷ Moreover, it is important to realize the limits on insurance market acting as regulator so as to not accord too great a role to it in the “regulatory mix” of space regulation.

A significant limit is the so-called “insurance cycle” relating to periodic fluctuations in insurance capacity. The insurance cycle related to the maritime industry is described as follows:

“Industry insiders divide the cycle into two phases, “hard” and “soft.” In a hard market situation, insurance capacity is scarce, premiums are rising and underwriters will be able to charge adequate premiums and to impose tight conditions. Rising premiums attract additional insurance capacity and new underwriters into the market. As a result, competition for fleets among underwriters sets in, and the ability of underwriters to dictate premiums, deductibles and conditions sharply diminishes. Eventually capacity

will be too high and the market becomes soft. In a soft market, premiums are falling and insurers compete, often desperately, for market shares.”¹⁸

Hard markets are thought to enhance operational safety in the maritime industry; the reverse is thought to be true in soft markets. The launch and satellite insurance markets appear to be subject (at least to some degree) to a similar cycle as well. From 2002-2006 many new insurance players entered the marketplace as insurers were making lots of money and operators gradually obtained cheaper insurance.¹⁹ However, the recent launch failures of the past year and half may have tipped the insurance market from soft to hard. Indeed, an official of the insurance company with the highest market share in space insurance has said the recent launch failures “ ‘have reduced the pressures on terms and conditions...and for the first time in a number of years, we were able to increase prices by some 25-30%... So the competitive pressures are a little more in our favor.’ ”²⁰ Similar insurance cycles for satellites and launches can be seen as far back as the beginnings of the satellite and launch insurance markets in 1965 and 1968 respectively. Many insurers continued to enter these markets until the 1977 “destruction of the OTS-1 communications satellite caused by the explosion of [its] launch vehicle...[the damage] wiped out the prior 12 years combined international premium

¹⁶ See Furger, *supra* note 14, at 458.

¹⁷ See *id.* at 462-63.

¹⁸ See *id.* at 464.

¹⁹ See Panko, *supra* note 13.

²⁰ See *id.* (quoting Ernst Steilen, head of space underwriting at Munich Re)

income.”²¹ To the extent the insurance cycle leads to sub-optimal standards periodically, steady, stable, non-fluctuating government regulation may be preferable, although government regulation tends to go in cycles as well depending on events and shifts in the control of government by different political parties.

B. Industry Self-Regulation

Industry self-regulation is the second branch of private regulation that is important to examine from a liberal international relations theory view of space regulation. The US has adopted a relatively “hands off” approach in its space tourism and transport regulations.²² For instance, with respect to reusable launch vehicles, the FAA currently only has authority to restrict design features that have a high risk or have caused injury or death.²³ For space flight participants (or space tourists) the FAA does not regulate medical clearance. However, an industry association has been created, the Personal Spaceflight Federation, and that body has taken steps towards establishing medical clearance standards for space tourists. The possible motivations and benefits of self-regulation are many²⁴, including but not

limited to warding off restrictive government regulation, deferring to those with potentially the greatest knowledge, establishing quicker and more easily adjustable regulation,²⁵ and, of no small significance in the space sector, more easily becoming effective at the global/international level (as the market and the industry is not limited to a particular geographic boundary). Further, it does appear that the space tourism industry is a “community of fate,”²⁶ in which companies collectively have an incentive to fill in regulatory gaps left by the government, in the sense that a major accident by one operator is likely to damage the fortunes of all as demand for flights would likely decrease significantly or onerous government regulation would likely appear. While each space tourist operator wants to out-compete the other in terms of the quality of the experience, none of them want to see a disastrous accident by one of their competitors.

Self-regulation, of course, causes many potential concerns as well, including self-serving standards that do not adequately protect the public,²⁷ standards that are potentially not backed with sufficient enforcement mechanisms, problems of potential free-riders²⁸ (referring to those companies that simply do not join or do not follow the industry standard yet benefit from the public’s sense that standards are in place), and

²¹ See Munich Re, *Re-View A Magazine: 07 A Space Odyssey*, available at www.munichre.com/en/corporate/history/re-view_a_magazine/magazine_07.aspx

²² See comments by Rachel Yates at University of Nebraska College of Law conference on “Formalism, Informalism, and Innovation in Space and Telecommunications Law,” May 1-2, 2008.

²³ 49 U.S.C.A. Sec. 70105(c)(2).

²⁴ For a discussion of benefits and drawbacks of industry self-regulation, see generally, Margot Priest, “The Privatization of Regulation: Five

Models of Self-Regulation,” 29 *Ottawa L.Rev.* 233, 268-275 (1997-98)

²⁵ See Neil Gunningham & Joseph Rees, “Industry Self-Regulation: An Institutional Perspective,” 19 *Law & Policy* 363, 366 (October 1997).

²⁶ See *id.* at 395.

²⁷ See *id.* at 373-75.

²⁸ See *id.* at 391-93.

possible anti-trust concerns²⁹ as well. Given these potential drawbacks, it is important to realize that private regulation, be it through the insurance market or industry self-regulation, need not become a full replacement to government regulation, but can rather fit within a system of larger government regulation. For example, the government can mandate certain insurance coverage levels (rather than leaving it exclusively to a business decision) or can mandate self-regulation (or provide penalties for lack of compliance with self-regulatory schemes). These types of mixed governmental and private regulation are referred to as “co-regulation” or “regulated self regulation.”³⁰ Co-regulation already exists in the form of the FAA requirements that private space operators maintain 3rd party liability insurance for the maximum probable loss, up to a maximum of \$500 million dollars.

V. MULTI-LEVEL, MULTI-TYPE REGULATORY MIX: THE MOST EFFICIENT PATH TO SPACE-CREATED GLOBAL AND NATIONAL WELFARE ENHANCEMENTS?

The business of space is an industry subject to the influences of complex technology, diplomacy, politics, and

²⁹ See Robert Pitofsky, “Self-Regulation and Anti-Trust,” Prepared Remarks to DC Bar Association Symposium, February 18, 1998 (noting such concerns are raised “in the limited group of cases in which rivals are foreclosed from the market without justification”).

³⁰ See generally Hans Bredow Institute, “Regulated Self-Regulation As a Form of Modern Government,” (October 2001); Gunningham & Rees, *supra* note 25, at 365-366 (for “co-regulation”).

finance. It is no surprise then that a complex regulatory mix already exists for space activities, one that involves governmental regulation at international, national, and even state, regional and local levels and one that involves elements of both governmental and private regulation. For example, OST Article VI requires national governments to authorize and supervise private space actors under their jurisdiction. The US Congress passed the Commercial Space Launch Act Amendments Act (CSLAA) of 2004 and the FAA issued regulations providing a baseline of regulation for space tourism operations, including requirements that space flight participants sign written informed consents, but no waiver of liability was required between the space flight operator and the participants (tourists). The industry is proceeding with developing contractual waivers and even lobbying state legislatures to pass laws providing tort liability protection should a space flight participant be injured or die during a voyage (because of worries that the written informed consent and the contractual waivers might not provide watertight protection in the absence of such legislation).³¹ Indeed, it is possible that in a search for even further protection from legal uncertainty, the space flight operators (or even the participants) might seek insurance to cover any remaining risk.³² Another existing example of a multi-level, multi-type regulatory mix is OST Article VI’s direction leading to the CSLAA and accompanying regulations requiring

³¹ I adapted this example from comments made by Rachel Yates, Holland & Hart, at the UNL Conference on “Formalism, Informalism, and Innovation in Space and Telecommunications Law,” May 1-2, 2008.

³² See, e.g., Meredith, *supra* note 12, at 13.

insurance be obtained by reusable launch vehicle permit applicants for maximum probable loss (up to a maximum of \$500 million) and then the insurance industry regulating further through insurance policies issued to companies.

This paper should not be read as a call for more private regulation or less government regulation. Rather, as the title indicates, this paper explores lenses through which to view and assess the degree of formalism in the regulation of space activities. It acknowledges as a positive matter the complex regulatory mix already existing for space activities and this is why we should most appropriately view space regulation as a system of rules, at various governmental levels and by various private bodies.³³ As a normative matter, it simply calls for all regulatory options to be considered and recognizes that a mix is likely to continue to be necessary as we seek the most efficient path to space –created global and national welfare enhancements. It also hopes to serve as a reminder that sometimes private regulation –often having international scope and buy-in --may partially fill regulatory voids left by the inability to achieve international consensus for regulation among governments. For example, the potential problem of “flags of convenience” in space regulation (i.e. industry moving to states with weak regulatory schemes)³⁴, and the related

problem of the large difficulty of negotiating “hard law” harmonized standards among governments, might be partially cured through private regulation.

In sum, we might seek to visualize each space activity issue demanding regulation as a search for the appropriate regulatory points in a space bounded by a Y axis going from local regulation upward to national regulation and up further to international regulation and a X axis moving from pure government regulation further outward to co-regulation and further still toward true private regulation. The concept of subsidiarity (that decisions should be made as closely to those affected having regard for the scope of the issue at hand) and the benefits of federalism (including the benefits and drawbacks of experimentation among jurisdictions v. harmonization across jurisdictions) will likely guide us to appropriate regulatory points as we move along the Y axis. The benefits and drawbacks of private regulation through the insurance market and industry self-regulation can guide us along the X axis.

³³ For a related argument of viewing international trade constraints as a system of rules, see Matthew Schaefer, “U.S. States, Sub-Federal Rules, & the World Trading System,” in *New Directions in International Economic Law* 525 (Bronckers & Quick eds., 2000).

³⁴ The potential problem of flags of convenience was raised during the question and answer session at the plenary session hosted by IISL in Glasgow on Tuesday September 30, 2008. In

response, the panel did not discount the problem ever arising but thought the Isle of Mann was not such a case as they had strong regulation but rather recruited space industries through favorable tax treatment.