Reconnaissance Satellites: Legal Characterization and Possible Utilization for Peacekeeping

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Since 1957, outer space has been open to exploration by man. Perhaps predictably, space endeavors almost immediately included military activities. Although the world was technically "at peace" during the advent of space exploration, mistrust and fear of the military capabilities of opposite camps ran high. The desire of the world powers to gather intelligence information was extended to outer space, via the reconnaissance satellite.[1]

In January, 1967, the United States, the Soviet Union, Great Britain and fifty-nine other nations signed the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Celestial Bodies (hereinafter called the Space Treaty), the drafting of which had been completed by the United Nations Committee on the Peaceful Uses of Outer Space late in 1966.[2] When the Treaty is ratified by five governments, including the Soviet Union, the United States and Great Britain, and thus comes into force,[3] it will become the most important instrument to date for the ordering of man's activity in space. This landmark treaty is in the nature of a culmination of efforts in the United Nations, which were earlier evidenced by Resolutions 1721 (XVI)[4] and 1962 (XVIII).[5] Neither the Space Treaty nor either of these resolutions, however, deals explicitly with reconnaissance activities carried on from space. It is thus necessary to provide a background for interpretation of the Treaty and resolutions, and

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1 While discussion of reconnaissance satellites has continued for some time, no significant attempts to define precisely the term "reconnaissance" or other important terms have apparently been made. In particular, the Soviet assertion that all gathering of "intelligence information" is illegal, as will be discussed below, points up the importance of the functional delineation of terminology in attempting to legally characterize these activities.

2 N.Y. Times, Jan. 28, 1967, p. 1, col. 8.

3 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Celestial Bodies, Art. 14, pars. 2 and 3. The text of the Treaty is found in N.Y. Times, Dec. 9, 1966, p. 18.

4 YEARBOOK OF THE UNITED NATIONS, 1961 (1963).

5 YEARBOOK OF THE UNITED NATIONS, 1963 101 (1965).

to determine the possibility of legal characterization outside these instruments. It is proposed here to (1) present and analyze the views of the major space participants on the proper legal characterization of reconnaissance satellites; (2) to note the political and technological bases of these views, and, (3) in the light of political realities and the present and proximate technological capabilities of these satellites, to examine the prospects for legal characterization and utilization to keep the peace and police arms control measures.

I. The Legal Regime of Outer Space

A. The Legality of Satellite Overflight

Article I of the Space Treaty provides that "outer space, including the moon and other celestial bodies, shall be free for exploration and use by all states..." This is, however, only a formalization of the view that has been generally accepted for some time that the legal regime of outer space is one of qualified freedom.[6] The United Nations Resolution 1962 (XVIII), adopted unanimously in December, 1963, proclaimed that outer space is free for the use of all states according to international law.[7] Aside from international pronouncements, it is generally argued that the lack of protest by overflown nations since the advent of satellite overflights that these constituted violation of their territorial sovereignty has caused the "freedom" principle to become a customary rule.[8] For practical reasons, sovereignty is rejected because valuable space endeavors, by their nature, must be unrestricted by territorial boundaries.[9]

By both customary international law and by multilateral agreement in the Paris and Chicago Conventions, however, territorial sovereignty

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[6] *E.g.*, Galina, A., *On the Question of Interplanetary Law*, Sovetskae Gosudarstro i Pravo, No. 7 July, 1958, pp. 52-58, reprinted in S. Doc. No. 26, *infra* note 10 at 105; Beresford, *Surveillance Aireraft and Satellites, A Problem of International Law*, 27 J. AIR L. & COM. 107, 108-09 (1960).

[7] YEARBOOK OF THE UNITED NATIONS, 1963 110 (1965).

[8] LIPSON AND KATZENBACH, REPORT TO NASA ON THE LAW OF OUTER SPACE 15 (1960); Note, 61 COLUM. L. REV. 1074, 1079 (1961); Bloomfield, *The Prospects for Law and Order*, in BLOOMFIELD, OUTER SPACE. PROSPECTS FOR MAN AND SOCIETY 150, 159-160 (1962); Jacek (Counselor, Polish Mission to the United Nations), *Selected Problems of National Sovereignty with Reference to the Law of Outer Space*, 1961 PROCEEDINGS, AMER. SOC. INT'L LAW 171, quoted by WOLFKE, CUSTOM IN PRESENT INTERNATIONAL LAW 64 (1964).

[9] *E.g.*, Note, 61 COLUM. L. REV. 1074, 1079 (1961); Jenks, *International Law and Activities in Space*, 5 INT'L & COMP. L. Q. 99, 103 (1956).

does extend to the airspace above national territory.[10] Thus acceptance that the legal regime of outer space is not that of sovereignty of the underlying state raises controversy over the location of the boundary between airspace and outer space. This question has drawn numerous proposals by scientists and lawyers,[11] which have in turn inspired voluminous analyses.[12] Notwithstanding that a number of these proposals have set the boundary high enough to include at least portions of presently common orbital altitudes, it is generally agreed that the boundary, if it existed, would be somewhere above the altitude now in common use for aviation purposes, "and not higher than, roughly, the probable perigee of durable satellite orbits." [13]

B. Restriction to Peaceful Purposes

Even before the advent of satellite activity, many nations, and in particular the United States and the Soviet Union, have ostensibly desired that outer space be devoted exclusively to "peaceful uses." In January, 1957, the United States urged in the United Nations that studies on disarmament include space activities, and in August of that year the United States was joined by Canada, France and Great Britain in proposing United Nations inspection of spacecraft to insure that they served peaceful purposes only.[14]

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[10] Customary law: Report of the *Ad Hoc* Committee on the Peaceful Uses of Outer Space Fourteenth Session, General Assembly, 1959, U. N. Doc. No. A/4141, Agenda item 25, p. 25; LIPSON AND KATZENBACH, *supra* note 8 at 15. Paris and Chicago Conventions: Symposium Legal Problems of Space Exploration, S. Doc. No. 26, 87th Cong., 1st Sess. 1219, 1222-1240 (1961).

[11] These are summarized and analyzed in LIPSON AND KATZENBACH, *op. cit. supra* note 8 at 14.

[12] *E.g.*, Haley, *Survey of Legal Opinion on Extraterritorial Jurisdiction*, reprinted in S. Doc. No. 26, *supra* note 10, at 719; Bloomfield, *supra* note 8 at 152; SCHICK, WHO RULES THE SKIES: SOME POLITICAL AND LEGAL PROBLEMS OF THE SPACE AGE 16-20 (1961); Christensen, Ronald, Soviet Views on Space Law, May, 1961 (typewritten manuscript in Yale Law School Library, 1961); Note, 61 COLUM. L. REV. 1074 (1961).

[13] LIPSON AND KATZENBACH, *supra* note 8, at 15. *Accord*, Note, 61 COLUM. L. REV. 1074 (1961). The International Radio Regulations define "Spacecraft" as including "any type of space vehicle, including an Earth satellite... whether manned or unmanned..." Reg. 84E, quoted by JENKS, SPACE LAW 189 (1965). U. N. General Assembly Resolution 1721 (XVI), concerning registration of spacecraft, refers to objects launched "into orbit and beyond."

[14] LIPSON AND KATZENBACH, *op. cit. supra* note 8, at 5. These early attempts by the United States were considered by the Soviet Union as thinly disguised attempts to ban Soviet ICBMs, while maintaining the American strike force on bases in Europe, and were rejected. Korovin, E., *On the Neutralization and Demilitarization of Outer Space*, International Affairs (Moscow), No. 12, 1959, p. 82.

The National Aeronautics and Space Act of 1958 declared that "activities in space should be devoted to peaceful purposes for the benefit of mankind." [15] The Soviet Union, shortly after Sputnik I was launched, submitted a proposal in 1958 to the United Nations General Assembly for international cooperation in the exploration of cosmic space, and the restriction of use of space to peaceful purposes.[16]

In December, 1961, the United Nations General Assembly adopted Resolution 1721 (XVI), which affirmed that international law, including the United Nations Charter, applies to outer space.[17] Article 2, paragraph 4 of the Charter provides that "all members shall refrain in their international relations from the threat or use of force against the territory or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations." This language, however, does not restrict international activities to those of a peaceful nature, unless by "peaceful" is meant avoidance of a "threat or use of force." Resolution 1962 (XVIII),[18] unanimously adopted in December, 1963, merely reaffirms Resolution 1721 (XVI) in regard to peaceful uses of space.[19] The recent United Nations Space Treaty goes further than any previous instrument in establishing the doctrine of "peaceful purposes," but conspicuously falls short of complete crystallization of that doctrine. While the major portion of the treaty provisions apply throughout outer space, article 4, in restricting activities to those of a peaceful nature only, applies to the moon and celestial bodies only.[20]

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[15] Public Law 85-568, sec. 102(a). The same Act provided for military space activities by the Department of Defense and the Armed Services.

[16] U. N. Doc. No. A/3818 (1958). This proposal, however, required dismantling of United States military bases abroad, and was not acceptable to the United States.

[17] YEARBOOK OF THE UNITED NATIONS, 1961 (1963).

[18] YEARBOOK OF THE UNITED NATIONS, 1963 101 (1965).

[19] In the preamble of Resolution 1962 (XVIII), the General Assembly studiously avoids any language which might be interpreted as implying a *restriction* to peaceful purposes. Similar vague references to "peaceful uses" were made in the preambles to Resolution 1721 (XVI) and Resolution 1802 (XVII), of December 14, 1962.

[20] Article 4. Both the United States and the Soviet draft treaties applied the "peaceful purpose" restriction and the proscription of military activities to the moon and celestial bodies only, and neither nation succumbed to repeated exhortations by the representatives of other nations to broaden the coverage of these clauses. *E.g.*, U. N. Doc. Nos. A/AC.105/C.2/SR.62, Oct. 20, 1966, p. 4 (United Arab Republic); A/AC.105/C.2/SR.66, Oct. 21, 1966, p. 3 (Argentina). A fruit-

In spite of the equivocal nature of authoritative commitments to restriction of space to "peaceful uses," the fact that these semi-commitments have been made, the periodic charges made that certain space activities of other space participants are not peaceful,[21] and the general consensus among writers,[22] make it useful to assert that any space activity is internationally disapproved, if not illegal, if it is not "peaceful" in nature. Of course, controversy presently rages over the term "peaceful."

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less draft proposal to effect this was submitted by Mr. Rao of India. A/AC.105/C. 2/SR.66, Oct. 21, 1966, p. 6. Explaining this recalcitrance, Mr. Goldberg of the United States said:

> ...it would not be practical or realistic to broaden the scope of every provision, irrespective of the subject matter. In addition, a practical consideration was involved: a treaty should be drafted on which there was a genuine prospect of agreement. Efforts should be concentrated on achieving what was possible and should not be abandoned because the ideal could not be achieved at once. U.N. Doc. No. A/AC.105/C.2/SR.65, Oct. 21, 1966, p. 10.

It would seem that the United States and the Soviet Union, in view of the previous history between these two nations of disagreement upon the meaning of "peaceful purposes" and upon the conformance of military activities to the "peaceful" restriction, sought to avoid the necessity of resolving these conflicts with regard to activities now being carried out in outer space (including reconnaissance), thus allowing both nations to agree to the present wording of the treaty. See statement of Representative Goldberg in Haley, *Space Talks Reach the Quick*, Astronautics and Aeronautics, Sept. 1966, p. 4. When either of these nations seeks to carry on reconnaissance from celestial bodies, however, the treaty will require resolution of these questions.

[21] Soviet charges that United States space activities are non-peaceful: *e.g.*, Mader, *U.S. Militarist Plans in Space*, International Affairs (Moscow), No. 8, 1965, p. 55; Korovin, *Outer Space Must Become a Zone of Real Peace*, International Affairs (Moscow), No. 9, 1963, p. 92; Zhukov, *Practical Problems of Space Law*, International Affairs (Moscow), No. 5, 1963, p. 28; see Crane, *Soviet Attitude Toward International Space Law*, 56 AM. J. INT'L L. 685, 702-06 (1962).

[22] While they do not assert there has yet arisen a legal duty to restrict the use of space to "peaceful purposes", writers generally argue that overriding principles, such as the "benefit of mankind", or the interest in maintaining international peace, security, and cooperation, requires that such a restriction be accepted, and then apply legal analysis to the term "peaceful". *E.g.*, JENKS, SPACE LAW 304 (1965); LIPSON AND KATZENBACH, *op. cit. supra* note 8, at 24-27; SCHICK, F. B., WHO RULES THE SKIES 20 (1961); Woetzel, *infra* note 41 at 125-26, and authorities cited n. 9; Platig, *The Future, Comments and Queries*, in TAUBENFELD, SPACE AND SOCIETY 169 (1964): "For the time being, however, the superpowers have agreed that space should be used for peaceful purposes..."

II. The Legal Characterization of Reconnaissance Satellites

A. Present Views on Legality

Although the Soviet position is vague and possibly changing, Soviet writers and officials have generally asserted that satellite reconnaissance is illegal under international law by two theses. (1) The assertion has been made almost without exception by Soviet spokesmen until 1963 that satellite reconnaissance is military in nature and therefore "non-peaceful" in violation of international law;[23] (2) all gathering of strategic information from within foreign territory is espionage, therefore illegal, regardless of the location of the observer.[24]

The position of the United States authorities and writers, with some possible dissenters,[25] is that reconnaissance satellites do not violate international law. It is claimed (1) that reconnaissance satellites are legal because they are necessary to proper self-defense,[26] an argument based in part on the fact that the Soviet Union has a decided intelligence advantage inherent in the closed nature of its society, and the United States, as an open society, has a right to overcome that advantage;[27] (2) that activities in space which are not aggressive are "peaceful," therefore the non-aggressive reconnaissance satellites are "peaceful,"[28] (3) and that because

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[23] Korovin, *Outer Space Must Become a Zone of Real Peace*, International Affairs (Moscow), No. 9, 1963, p. 92. Korovin berates the view of "semi-official United States documents" that "peaceful" includes military measures, viz., reconnaissance satellites. *Ibid. Accord*, Gabrovski, International Affairs (Moscow), No. 2, 1963, p. 92, 93; Zhukov, *Practical Problems of Space Law*, International Affairs (Moscow) No 5, 1963, p. 28; Woetzel, *Comments on U.S. and Soviet Viewpoints Regarding the Legal Aspects of Military Uses of Space*, 1963 PROCEEDINGS, AMER. SOC. INT'L LAW 195, 197, quoting Morozov, Soviet, Soviet delegate to the First Committee of the United Nations. See Crane, *Soviet Attitude Toward International Space Law*, 56 AM. J. INT'L. L. 702 (1962).

The Soviet position has been that while reconnaissance is not "an act of true aggression and war", it is non-peaceful and constitutes espionage. Beresford, *supra* note 6, at 116, quoting N. S. Khrushchev. But see LIPSON AND KATZENBACH, *op. cit. supra* note 8 at 32.

[24] Notes 55-58, *infra*, and accompanying text.

[25] MCDOUGAL, LASSWELL, AND VLASIC, LAW AND PUBLIC ORDER IN SPACE 312-315 (1963), and authorities there cited.

[26] *E.g.*, Taubenfeld, *The Status of Competing Claims to Use Outer Space: An American Point of View*, 1963 PROCEEDINGS, AMER. SOC. INT'L LAW 173; LIPSON AND KATZENBACH, *op. cit. supra* note 8 at 32.

[27] Taubenfeld, *supra* note 26 at 179.

[28] Feldman, George J., The Report of the United Nations Legal Committee on the Peaceful Uses of Outer Space (address at the 10th annual congress of the

reconnaissance satellites are located outside the generally accepted boundaries of national sovereignty, they are not illegal.[29]

Nations other than the United States and Russia have seldom expressed strong views on the legality of reconnaissance satellites, perhaps because they are little concerned. Those opinions which have been expressed predictably coincide with prior stands in the tripolar world; Western spokesmen have unexcitedly supported the United States positions,[30] Communist nations express support of the Soviet Union,[31] and neutral nations take no position.[32]

Until 1963, the Soviet Union advocated recognition of a principle that every [non-Soviet] military space activity was non-peaceful and therefore illegal.[33] As late as May, 1963, the Soviet jurist G. Zhukov stated that "the concept of the 'peaceful use' of outer space

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International Astronautical Federation, London, England, September 4, 1959), as quoted in Beresford, *supra* note 6:

> The word "peaceful" as used in the [National Aeronautics and Space] Act means "non-aggressive" rather than "nonmilitary". ... If "peaceful" means nonmilitary, and outer space can be used for "peaceful" purposes only, what happens to the inherent right of self-defense guaranteed by Article 51 of the United Nations Charter and by general international law? *Id.* at 111.

Also 1960 Report of the Committee on the Law of Outer Space, reprinted in RECHTSCHAFFEN, REFLECTIONS ON SPACE, ITS IMPLICATIONS FOR DOMESTIC AND INTERNATIONAL AFFAIRS 293, 315 (1964).

Accord, United States delegate Gore, before the First Committee of the United Nations General Assembly, 3 December 1962, quoted by Woetzel, 1963 PROCEEDINGS, AMER. SOC. INT'L LAW 193, 199.

[29] *E.g.*, Taubenfeld, *supra* note 26 at 179-180; note 50 *infra*.

[30] In the United Nations Committee on the Peaceful Uses of Outer Space: Mr. Tremblay of Canada, citing maritime law as basis for legality of reconnaissance satellites; U. N. Doc. No. A/AC, 105/C.2/SR.21/7 (1963); Statement of Miss Guttridge of the United Kingdom; U. N. Doc. No. A/AC. 105/C.2/SR.24/12 (1963). See Statement of Mr. Litvine of Belgium, U.N. Doc. No. A.AC. 105/C.2/SR.19/4 (1963); UNITED NATIONS YEARBOOK, 1962 42 (1964) (Australia, United Kingdom, and United State oppose U.S.S.R. draft provisions condemning gathering of intelligence from space).

[31] In the United Nations Committee on the Peaceful Uses of Outer Space: Mr. Wzner of Poland, advocating inclusion in U.N. resolution of provision forbidding gathering of intelligence by use of satellite. U.N. Doc. No. A/AC. 105/C.2/SR.19/7 (1963); Mr. Gavrillov of Bulgaria, supporting Soviet statement of incompatibility of use of reconnaissance "with the objectives of man in outer space". U.N. Doc. No. A/AC.105/C.2/SR.12/20 (1963); UNITED NATIONS YEARBOOK, 1962 42 (1964) (Czechoslovakia, Romania support U.S.S.R. draft provision condemning gathering of intelligence information from space).

[32] See statement of Indian delegate, Krisha Rao, to U.N. Space Committee, U.N. Doc. No. A/AC.105/C.2/SR.29-37/40 (1964).

[33] Authorities cited note 23, *supra*. See Crane and Woetzel, *supra* note 23, Christensen, Soviet Views on Space Law, May, 1961 (typewritten manuscript in Yale Law Library).

excludes any measures of a military nature." [34] In 1962 and 1963, the Soviet Union equivocated in its position that all military use of space was illegal, and Robert Crane, an authority on Soviet strategy, has asserted that the Soviet policy had changed to legalize military uses.[35] This equivocation on the military use issue, however, did not alter the Soviet position against the legality of reconnaissance satellites.[36] Thus, it is Crane's view of the present Soviet position

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[34] Zhukov, G., *Practical Problems of Space Law,* International Affairs (Moscow), No. 5., 1963, p. 27, 28.

[35] On April 22, 1963, the Czechoslovakian delegate to the U.N. Committee on Peaceful Uses of Outer Space opposed the inclusion in a draft of legal principles of a "provision prohibiting the use of space for war purposes", saying: "Practical implementation of... [Article 2(4) of the Charter and operative paragraph 1(a) of General Assembly Resolution 1721 (XVI)] could be insured only by negotiation and conclusion of an agreement on general and complete disarmament". Summary Record of the Twentieth Meeting, U. N. Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, April 22, 1963, U. N. Doc. No. A/AC.105/C.2/SR.20/9 (1963). On May 13, 1963, the Soviet representative to the same legal subcommittee equivocated as follows:

> The Soviet Union had always maintained that outer space should be used solely for peaceful purposes. On March 15, 1958, shortly after the launching of the first artificial satellite, the Soviet Union had submitted a proposal for the banning of the use of cosmic space for military purpose and for the elimination of foreign military bases on the territories of other countries. The Soviet Union draft treaty on general and complete disarmament (ENDC/2) specified that the peaceful use of outer space should be one of the objectives of the first stage of disarmament. The Soviet Union adopted a realistic approach to the question and considered that the problem of the prohibition of the military use of outer space could be solved only in the context of disarmament.

Summary Record of the Twenty-English Meeting, U.N. Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, May 3, 1963, U. N. Doc. No. A/AC. 105/C.2/SR.28 at 14 (1963). Thus in the first sentence the Soviets establish a foundation for assertion of their support of the continuing requirement that space be used only for peaceful (and thus non-military) purposes, while the rest of the statement seems to assert that the Soviet Union cannot be bound to non-military uses of space until there is signed a convention of general and complete disarmament. Robert Crane, in *Basic Principles of Soviet Space Law: Peaceful Coexistence, Peaceful Cooperation, and Disarmament,* 29 LAW AND CONTEMP. PROB. 943 (1964) quotes these statements as support for the assertion that "this policy [of the Soviets that space was legally only for peaceful, i.e., non-military, uses] changed in 1962 to legalize military uses, and now has gone so far that the Soviets are beginning to designate even the attempt to inspect one of their military space satellites as an act of preventive war". *Id.,* at 952.

[36] In the same summary record in which the Soviet representative tied the legal prohibition of military use of space to the removal of foreign military bases and agreement on general and complete disarmament, the delegate stated: "all attempts to reconcile the collection of intelligence information by artificial satel-

that the military use of space is legal, but that reconnaissance activities remain illegal.[37] It would seem, however, that the Soviet policy is not one of legalizing the military uses of space, but is simply one of abandonment of previous efforts to have these uses declared illegal. The present view of the Soviets seems to be that the military use of space is alegal, i.e., without legal characterization, and will remain so until agreement is reached on general and complete disarmament, with which the issue is inseparably linked.[38] It would be speculative at best to indicate whether the purpose for this manoeuver was to avoid growing criticism in view of the history of Soviet military uses of space (e.g., the testing of ICBMs) and "rocket diplomacy," or to open to the Soviet Union future military uses of space, supportable by the argument that they were forced to such devices by the refusal of the United States to accept its proposed ban on military uses. In this regard, it must be noted that Soviet writers continue to attack United States space endeavors as military and thus against the interest of mankind, in opposition to the solely "peaceful" activities of the Soviet Union, without, however, declaring military uses of space to be illegal.[39]

It is the position of the United States and other Western powers that the term "peaceful," as applied to space activities, is used in opposition to "aggressive," not to "military."[40] United States spokesmen point to the fact that the application of the United

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lites with the principles of international law were completely unfounded. Espionage in any environment was inadmissible and it was prohibited by every system of national law." Summary Record of the Twenty-Eight Meeting, U.N. Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, May 3, 1963. U.N. Doc. No. A/AC.105/C.2/SR.28 at 13 (1963).

[37] Crane, *supra* note 35, citing Zhukov, G., *The Legal Regime of Outer Space in the Contemporary Period*, Kosmos I Mezhdunarodnoye Satrudnichestvo (1963) (in Russian).

[38] Even in the article condemning the military use of space as illegal, Korovin, *supra* note 23, later states: "I leave aside such problems as the demilitarization of space, which apparently cannot be solved until there is disarmament on earth." *Id.*, at 93. See also Comment, *The Cosmos Must Be a Peace Zone*, International Affairs (Moscow), No. 12, 1963, p. 41.

[39] *E.g.*, Sibiryakov, *U.S. Military Space Drive in Latin America*, International Affairs (Moscow), No. 7, 1966, p. 54; Mader, *U.S. Militarist Plans in Space*, International Affairs (Moscow), No. 8, 1965; Larionov, *The Doctrine of Military Domination in Outer Space*, International Affairs (Moscow), No. 10, 1964, p. 25; Comment, *The Cosmos Must Be A Peace Zone*, *supra* note 38.

[40] *E.g.*, Woetzel, *infra* note 41 at 126, quoting Senator Gore in the U.N. First Committee; LIPSON AND KATZENBACH, *op. cit. supra* note 8 at 32; Beresford, *Surveillance Aircraft and Satellites*, 27 J. AIR L. & COM. 107, 109 (1960), and authorities there cited; Litvine, Belgian delegate to the Legal Subcommittee of the U.N. Space Committee, U.N. Doc. No. A/AC. 105/C.2/SR. 19 at 4 (1963).

Nations Charter forbids an actual "threat or use of force," and does not purport to ban traditional non-aggressive defensive military activities.[41] In a less legalistic defense of its position, the United States asserts that the effect of reconnaissance from space is stabilization, in that knowledge of the activities, the force levels, and the military preparations of the opposite camp are brought to light,[42] dispelling suspicions and reducing the need arising from lack of knowledge to extend the arms race by developing weapons systems to meet factually unfounded contingencies.[43]

Perhaps because of the inability to reach agreement on the conformance of military uses to the "peaceful" standard, the recent Space Treaty evades the question for the most part.[44] The Treaty arguably equates "peaceful" with "non-military," when in Article 4 it provides that the moon and celestial bodies may be used only for "peaceful purposes" and then expressly proscribes the use of these bodies for military purposes. It may also be argued, however, that the drafters felt it necessary to advert to military activities because these activities are not included within the "peaceful purposes" restriction.

The positions of both the Soviet Union and the United States on the conformance of reconnaissance with "peaceful uses" are tenable, because the term "peaceful" has been used in varying contexts in international relations, sometimes referring to "non-military" and sometimes to "non-aggressive."[45] It would seem that the United States position that military uses, if non-aggressive, are peaceful, is the stronger position. Two United States writers, however, urge an expansion of the scope of the term "non-peaceful" to include military uses, because of the "destabilizing" effect of such uses on world order.[46] While it is perhaps a strained definition of "peaceful" which includes all non-aggressive military uses the proposals to ban all military uses as "non-peaceful" seem equally strained to the opposite extreme. Neither of these writers admits of the differenti-

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[41] Woetzel, *Legal Aspects of Military Uses of Space in Soviet and American Eyes*, in TAUBENFELD, SPACE AND SOCIETY 121, 126 (1964); Taubenfeld, *The Status of Competing Claims to Use Outer Space, An American Point of View, in* TAUBENFELD, AND SOCIETY 151, 152 (1964).

[42] LIPSON AND KATZENBACH, *op. cit. supra* note 8, at 32.

[43] Brennan, *Arms and Arms Control in Outer Space*, in BLOOMFIELD, OUTER SPACE. PROSPECTS FOR MAN AND SOCIETY 134 (1962).

[44] Note 20, *supra*.

[45] LIPSON AND KATZENBACH, *op. cit supra* note 8, at 25-26.

[46] Falk, *Toward a Responsible Procedure for the National Assertion of Protested Claims to Space*, in TAUBENFELD, SPACE AND SOCIETY 91, 117-120 (1964); Woetzel, *supra* note 41 at 126-127, 129, 130.

ation proposed by Professor Howard J. Taubenfeld between reconnaissance which is unmistakeably peacekeeping in nature, and those of more direct military use.[47] The first class includes the Midas system, the function of which is to detect the launching of hostile ICBMs. It can hardly be charged that such a function is destabilizing or that United States has no right to gather this indisputably defensive information. The observed state cannot claim that this function enhances the first-strike capability of the observer. The charges that satellite reconnaissance is destabilizing gather more credence when that reconnaissance is the traditional photographic type, which is used for gathering targetting as well as other information. Former Soviet Premier Nikita Khrushchev has stated:

> ... information about the location of such bases can be of importance not for a country concerned with its defense requirements, but solely for a state which contemplates aggression, and intends to strike the first blow and therefore wants to destroy the missile base so as to avoid retribution after attack.[48]

This argument, however, assumes that an aggressor will use all its missiles to assure an effective first strike, and that therefore retaliation by the victim will be restricted to counter-city actions (which do not require such precise targetting). Neither of these assumptions is correct: the aggressor will no doubt retain a significant number of weapons in order to exert further pressure upon survivors to accede to its demands, and the victim, with his forces seriously truncated by the counter-force first strike, would need extremely accurate targetting information to destroy the aggressor's reserved missiles.[49]

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[47] Taubenfeld, *supra* note 41, at 150-52.

[48] Zhukov, G., *Space Espionage Plans and International Law*, International Affairs (Moscow), No. 10, 1960, p. 53, reprinted in S. Doc. No. 26, p. 1095, 1098, quoting N. S. Khrushchev.

[49] It is true, of course, that in *pre*-attack planning, the most effective plan for an unchangeable defense is assignment of the main components of the retaliatory force to the enemy's major cities, if the enemy is informed of these tactics. BRODIE, STRATEGY IN THE MISSILE AGE 291-92 (1959). However, from the prospective view of *post*-attack planning, this commitment will prove undesireable to the victim. First, the attacker will hold some missiles in reserve, and these will be the prime target for the victim's remaining forces; the victim must know exactly where these reserve missiles are located. BRODIE, *op. cit. supra* at 290. Second, the aggressor may well avoid attacking, in his "first-strike", the cities of the victim. (It is at least certain that his prime objective will be a counter-*force* first strike.) It would then be foolish for the victim to initiate city destruction, thus assuring destruction his own cities, and in greater degree. BRODIE, *op. cit. supra* at 292; KAHN, ON THERMONUCLEAR WAR 166, 168, 177 (1960).

Furthermore, reconnaissance satellites are as capable of gathering information on the *number* of nuclear weapons, which the observing nation requires in order to avoid the necessity of building weapons capability far beyond that necessary for defense, as they are of gathering information on the *location* of those weapons. And the added capability of reconnaissance satellites in informing the observer of build-ups in conventional weapons, information which is of use primarily for defensive purposes, would seem to characterize reconnaissance from space more as stabilizing than as destabilizing. Use by both the United States and the Soviet Union of reconnaissance satellites of equal capability would assure more equal targetting information and information on force levels and intentions of opponents; this is a more stable situation than would exist without their use, because of the intelligence advantage which the Soviet Union enjoys.

Notwithstanding its arguments that reconnaissance satellite activities are legal because they are "peaceful," the main thrust of the Western position is that they are legal because they take place outside the limits of the territorial sovereignty of the underlying state. Invariably, in support of this position it is by analogy claimed by United States and Western officials that reconnaissance activities from outer space are as legal as observation from the high seas, and from airspace above countries friendly to the observing state.[50]

The analogy to "freedom of the seas" is generally stated broadly, allowing of no qualifications, when actually, as the Soviets have correctly pointed out,[51] the maritime legal regime has not been one

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[50] Remarks of Senator Albert Gore, U.S. Representative to the First Committee of the U.N., 3 December, 1962: "Observation from space is consistent with international law, just as is observation from the high seas", quoted in Cooper, *Current Developments in Space Law*, IV SPACEFLIGHT 134, 136 (July, 1963). *Accord*, Taubenfeld, *supra* note 41 at 152; Gardner, *Outer Space: Problems of Law and Power*, in RECHTSCHAFFEN, REFLECTIONS ON SPACE, ITS IMPLICATIONS FOR DOMESTIC AND INTERNATIONAL AFFAIRS 281, 284; Beresford, *supra* note 6, at 114; Canadian United Nations representative Tremblay, U.N. Doc. No. A/AC.105/C.2/SR.21/7 (1963). See also the views of the British delegate. A/AC.105/C.2/SR.24/12 (1963).

[51] Soviet United Nations delegate Federenko, before the Legal Subcommittee of the Space Committee on April 24, 1963:

> All governments with maritime interests established — either temporarily or permanently — warning, danger, restricted or prohibited areas for numerous purposes. Moreover, aid defense identification zones had been established along the coasts of North America. The norms of international law provided sufficient bases for the banning of espionage activities in outer space. The altitude from which intelligence observation might be made was immaterial.

U.N. Doc. No. A/AC.105/C.2/SR.22/5 (1963).

of complete freedom.[52] And when a system of law is established in space, it also will probably be one of qualified freedom. However, though freedom on the high seas is not complete, it would seem that observation of coastal states is not one of the activities proscribed, in view of the fact that the practice is common among states, including the Soviet Union.[53]

The Western analogy to the high seas assumes two propositions: (1) observation from these areas is legal, and (2) observation from artificial earth satellites is so similar to these more earthbound activities that analogy is proper. The Soviets deny the validity of both these propositions.

The Soviets first argue that, even were observation from the high seas or from the territory of a nation friendly to the observer "legal," observation from a satellite is so intrinsically different that analogy between the two is improper.[54] But the essence of the Soviet position, at least until 1963, has been that reconnaissance from outer space and even from the high seas is espionage, and that:

> We cannot agree with the claim that all observation from space, including observation for the purpose of collecting intelligence data, is in conformity with international law... Such observation is just as wrong as when intelligence data are obtained by other means, such as by photographs made from the air. The object to which illegal surveillance is directed constitutes a secret guarded by a sovereign state, and regardless of the means by which such an operation is carried out, it is in all cases an intrusion into something guarded by a sovereign state in conformity with its sovereigu prerogative... If it were merely a case of observing what happens on the high seas, one could accept this analogy; but when it is

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[52] *E.g.*, Lipson, *Outer Space and International Law*, Rand Corporation, Paper P-1434 (1958), p. 10, quoted in Falk, *supra* note 46 at 110, 111:

> In maritime law and practice there is not merely a zone of territorial waters, a single contiguous zone, and the free high seas; there is a whole cluster of zones, overlapping and intersecting, established at different times for different purposes by different states (unilaterally, bilaterally, and multilaterally) with different degrees of formality, enforced by different methods, and accepted in different degrees by varying numbers of others states...

[53] Note, *Reconnaissance in Airspace and Outer Space*, 61 COLUM. L. REV. 1074, 1082 n. 48 (1961).

[54] Mr. Morozov, replying for the Soviet Union to the space-sea analogy of U.S. representative Gore in 1963 (quoted note 50, *supra*): "no analogy exists here with principles applying to the open sea," indicating that this use of space had more dangerous consequences than similar use on the high seas. Quoted by Woetzel, *supra* note 23 at 197. Gabrovski, Todor, International Affairs (Moscow), No. 2, 1963, p. 92; Korowin, quoted in STAFF OF SENATE COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES, 87TH CONG., 2ND SESS., REPORT ON SOVIET SPACE PROGRAMS 199-200 (Comm. Print 1962); Osnitskaya, *International Problems of the Conquest of Space*, 1959 SOVIET YEARBOOK OF INTERNATIONAL LAW 65 (1960), summarized in S. Doc. No. 26, p. 1088, 1092.

> a case of observation on the high seas for purposes of collecting intelligence information, then we are dealing with an intrusion into the sovereign rights of states...[55]

There are a number of points to this position, each of which bear examination. Consistently injected into Soviet statements is the "espionage" charge. Even if these activities actually constituted espionage, the question whether espionage is itself a violation of international law is yet to be answered. United States writers point out that, while the Soviet charge is true that espionage violates virtually every national law, it does not violate international law, in the sense that no claims to international redress have been made by spied-upon nations.[56] Perhaps more importantly, reconnaissance from space does not fit the traditional mold of espionage, requiring that the activity be clandestine,[57] and involving intrusion into a nation's territory,[58] which even the Soviets do not extend to satellite altitudes. This is, then, a new and distinctly Soviet conception of (non-Soviet) espionage and conforms to the Soviet view of international law.

The crux of the Soviet position is not in the nature or the location of the information gathering activity, but rather it lies in the nature and location of the events being observed. That is, it is a "violation of the sovereignty of States" to direct surveillance by any means from any location to a "secret guarded by a sovereign." Thus, to any information which it desires kept secret the Soviet Union imparts a "sovereignty" which depends not upon territorial

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[55] Soviet statement in the United Nations First Committee, quoted in Cooper, *Current Developments in Space Law*, IV SPACEFLIGHT 134, 136 (July, 1963). *Accord*, Zhukov, *The Outer Space Law Qualifications*, 1963 PROCEEDINGS, AMER. SOC. INT'L LAW 193, 195: "There is not and cannot be any 'right to spy' in outer space or elsewhere"; Timerbaev, U.S.S.R. representative to the Legal Subcommittee of the U.N. Space Committee:

> All attempts to reconcile the collection of intelligence information by artificial satellites with the principles of international law were completely unfounded. Espionage in any environment was inadmissible and it was prohibited by every system of national law.

Summary Record of the Twentieth Meeting, May 3, 1963, U.N. Doc. No. A/AC. 105/C.2/SR.28/13 (1963).

[56] Note, *Reconnaissance in Airspace and Outer Space*, 61 COLUM. L. REV. 1074 (1961); 1 OPPENHEIM, INTERNATIONAL LAW § 455 (Lauterpacht ed. 1937); Beresford, *supra* note 40 at 113-14. *Contra*, Christensen, *supra* note 33 at 20.

[57] Beresford, *supra* note 40 at 113; 1 OPPENHEIM, INTERNATIONAL LAW § 455 (Lauterpacht ed. 1937); Note, 61 COLUM. L. REV. 1074 n. 1 (1961).

[58] *E.g.*, see the Hague Convention, of which both the United States and Russia are signatories, which by article 20 considers as spies in time of war only those who clandestinely gather information "*in the zone of operations* of the belligerent". Hagne Convention respecting the Laws and Customs of War on Land (1907), 36 Stat. 2277, 2303. (Emphasis added).

delimitation, but upon whether the Soviet Union deems it "intelligence" and desires it kept secret. This view is in direct conformity with the Soviet concepts of "national" sovereignty, and the "danger" theory, as described by Ronald Christensen:

> Danger is used to show when its [the Soviet Union's] national sovereignty has been violated, which could happen, under the socialist international law (or policy towards), without an entry into her national territory. Thus Russia regards her sovereignty rights as going beyond her territorial borders, ceasing, it seems, not even at the borders of another state, and, perhaps pervading the entire universe. No one anywhere, she says, has the right to endanger the Soviet Union.[59]

While this Soviet doctrine is novel in international law, it would seem to be novel only in degree, not in its nature. That is, international proscription of various activities has not been wholly by territorial boundaries, but has sometimes been based upon the undesireable function of these activities, even though they take place outside the territory of the complaining state, as is evidenced by the occasional approval by both national,[60] and international,[61] tribunals of the impact territoriality principle. The novelty of the doctrine lies in the extent to which it proscribes — all information which it is desired to keep secret, regardless of the means or location of the information gatherer — and the extent to which it allows the Soviet Union to unilaterally determine its final definition.

It would seem that Christensen's "danger" theory is similar to Soviet statements extending sovereignty to whatever altitude is necessary to protect Soviet security.[62] Crane asserts that the Soviets were forced to "reassess" this "security" doctrine because it would allow other states to interfere with Soviet space activities, and even legalize reconnaissance satellites, in the interest of their own security.[63] The "danger" theory, in its broad statement, is susceptible

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[59] Christensen, Soviet Views on Space Law, May, 1961 (typewritten manuscript in Yale Law Library), p. 30-31.

[60] *E.g.*, United State v. Aluminum Company of America, 148 F. 2d 416 (1945), and authorities cited pp. 443-44.

[61] The Lotus Case, P.C.I.J., Series A, No. 10 (1927).

[62] *E.g.*, Zhukov, *Space Espionage Plans and International Law*, International Affairs (Moscow), No. 10, 1960, p. 53; Osnitskaya, *International Problems of the Conquest of Space*, 1959 SOVIET YEARBOOK OF INTERNATIONAL LAW 65 (1960), summarized in S. Doc. No. 26, p. 1088, 1091; Crane, *Soviet Attitude Toward International Space Law*, 56 AM. J. INT'L L. 685, 691, 692 (1962).

[63] Crane, *supra* note 62, at 692. Crane cites no example of this "reassessment", but his assertion would seem to be born out in Larionov, *The Doctrine of Military Domination in Outer Space*, International Affairs (Moscow), No. 10, 1964, p. 10. While the "security" doctrine has possibly been "reassessed" by the Soviets, it has not been abandoned. See, *e.g.*, Gabrovski, International Affairs (Moscow), No. 2, 1963, p. 92.

to the same objections. However, the secrecy/sovereignty doctrine, seemingly a spin-off from the security and danger theories, is not open to these weaknesses. It is peculiarly appropriate to the closed nature of Soviet society, and is so undesireable to Western society that the Soviets need not worry that it will be utilized against them. For the same reason, of course, the doctrine is not likely to be accepted in international law.

In the spring, 1963, session of the United Nations subcommittee during which the Soviets first equivocated in their views on the general issue of military uses of outer space, dropping their demands that such uses be declared illegal, their position on the illegality of reconnaissance satellites remained adamant.[64] Similarly, as late as September, 1963, the eminent Soviet jurist E. Korovin reasserted the doctrine that "espionage" from space was illegal.[65] As of that point of time, Soviet statements that reconnaissance satellites are illegal have apparently terminated.[66] With the close of the spring, 1963, session of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, Soviet statements in that subcommittee on the illegality of space reconnaissance ceased.[67] There were no Soviet references to this topic in the meetings of the Committee itself in its September and November 1963 deliberations.[68] The December, 1963, Resolution 1962 (XVIII), approved by the Soviet Union, bears no mention of reconnaissance satellites. The 1964 U.S.S.R. draft proposals on Assistance to and Return of Astronauts and Spacecraft did not expressly except reconnaissance

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[64] Timerbaev, U.S.S.R. representative to the legal subcommittee of the U.N. Space Committee, quoted *supra* note 55; Federenko, quoted *supra* note 51.

[65] Korovin, E., *Outer Space Must Become a Zone of Real Peace*, International Affairs (Moscow), No. 9, 1963, p. 104, 105.

[66] See, *e.g.*, *Reconnaissance Satellites*, Interavia, January, 1965, p. 104, 105.

[67] In the 1964 meetings of the Legal Subcommittee, much time was spent attempting to clarify the legal principles laid down in Resolution 1962 (XVIII), adopted in December, 1963. No mention was made during these meetings, held from March 9 to March 26, 1964, of reconnaissance satellites, except that the Indian delegate Rao noted that "the U.S.S.R. draft made no mention of the return of vehicles carrying devices for the collection of intelligence information, which was understandable". U.N. Doc. No. A/AC.105/SR.29-37 at 40 (1964).

[68] Cooper, John C., *Aerospaee Law: Progress in the U.N.*, Astronautics and Aeronautics, March, 1964, p. 42, 44. See U.N. Doc. No. 5801.

[69] 1964 U.S.S.R. Proposal on Assistance to and Return of Astronauts and Spacecraft, U.N. Doc. No. A/AC.105/C.2/L.2/Rev.2 (1964); comparative table of proposals as of 6 October, 1964, U.N. Doc. No. A/AC.105/C.2/W.1/Rev.1 (1964).

spacecraft from those to be returned to the launching state,[69] as the 1962[70] and 1963[71] Soviet draft proposals had done.

This is not to say that the Soviet Union now supports the legality of reconnaissance satellites. Included in Resolution 1962 (XVIII) and in the 1967 Space Treaty is the provision that space activities must be carried out "according to International law," leaving the status of reconnaissance as it was prior to the adoption of the resolution, and leaving to the Soviet Union the prerogative of reassertion of its prior statements.[72] Similarly, the 1964 U.S.S.R. draft proposals on the return of fallen spacecraft, while not expressly mentioning reconnaissance craft, place conditions on the duty to return the craft, which would, by previous Soviet statements, exclude reconnaissance craft.[73] Numerous Soviet writings since September, 1963, vehemently attack reconnaissance satellites as against the interests of mankind in the exploration of space and as "espionage," though no longer by the use of that term classifying them as illegal under international law.[74] Thus, while the Soviet Union has abated its statements that reconnaissance satellites are illegal, it has again left itself the opportunity to take up the cry. The reasons for this manoeuver are unknown. Possibly the Soviet Union has come to feel that reconnaissance from space is valuable enough to itself to give up its objections.[75] Just as possibly, this move, in conjunction with its apparent withdrawal on the issue of military use of outer space, is to construct a legal doctrine supporting future Soviet military uses of space.

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[70] YEARBOOK OF THE UNITED NATIONS, 1962 35-47 (1964).

[71] 1963 U.S.S.R. Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space, Annex IA, article, 9, U.N. Doc. No. A/AC.105/12 (1963).

[72] Cooper, *supra* note 68, at 44.

[73] Article 6(2) of the 1964 U.S.S.R. proposal creates a duty to return only fallen spacecraft "launched in accordance with the Declaration of Legal Principles Governing the Activities of States in Exploration and Use of Outer Space [Resolution 1962 (XVIII)]". U.N. Doc. No. A/AC.105/C.2/L.2/Rev.2 (1964). Resolution 1962 could be interpreted to ban reconnaissance satellites. See note 72, *supra.*

[74] Mader, *U.S. Militarist Plans in Space,* International Affairs (Moscow), No. 8, 1965, p. 55; Larionov, *The Doctrine of Military Domination In Outer Space,* International Affairs (Moscow), No. 10, 1964, p. 25.

[75] See *Reconnaissance Satellites,* Interavia, January, 1965, pp. 104, 105.

B. Present Development and Uses of Reconnaissance Satellites

To estimate the probability that the users of reconnaissance satellites would allow them to be characterized as illegal, and to predict their reaction to such characterization, the abilities and disabilities of the Soviet and United States satellites at present and in the near future must be examined. Such an examination is also necessary to estimate the hesitancy with which these nations would agree to turn these instruments over to an international peacekeeping institution, and the value of such satellites in inspection of an arms control or peacekeeping arrangement.

In spite of stringent restrictions on information,[76] it is known that present United States reconnaissance satellites carry out a number of functions. The Samos system is engaged in traditional photographic reconnaissance similar to the U-2, gathering targetting and force level information in addition to serving as a warning of foreign military preparations.[77] The Midas (Missile Defense Alarm System) project carries in high polar orbits infrared sensing devices which detect the heat generated during the hot-boost phase of missile firings.[78] The United States has also developed a satellite system for the detection of nuclear testing at high altitudes and in space.[79] The Air Force Discoverer program, while officially an engineering and scientific study project, is also being used for terrestial reconnaissance.[80]

While the Soviet Union rarely mentions the specific military purposes of its space program,[81] it is known to be engaged in reconnaissance from space.[82] The first Sputnik contained infra-red

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[76] In 1962, the Department of Defense banned the use of traditional public names for reconnaissance satellites, and sharply curtailed the release of relevant information. VAN DYKE, PRIDE AND POWER: RATIONALE OF THE SPACE PROGRAM 37 (1964); U.S. News and World Report, January 13, 1964, p. 76. For this reason it necessary to infer from certain information often not directly in point, and just as often not up to date.

[77] *E.g.*, U.S. News and World Report, January 13, 1964, p. 76; VAN DYKE, *op. cit. supra* note 76, at 37.

[78] Brown, *DoD Space Programs*, Astronautics and Aeronautics, vol. II, June, 1964, p. 68; VAN DYKE, *supra* note 76, at 39.

[79] Brown, *supra* note 78; N.Y. Times, Oct. 29, 1966, p. 3, col. 4.

[80] SCHICK, WHO RULES THE SKIES: SOME POLITICAL AND LEGAL PROBLEMS OF THE SPACE AGE 24 (1961).

[81] STAFF OF SENATE COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES, 87th CONG., 2d SESS., REPORT ON SOVIET SPACE PROGRAMS 47 (Comm. Print 1962).

[82] VAN DYKE, *op. cit. supra* note 76, at 39; UPI Report, New Haven Register, Sept. 26, 1965, Sec. 1, p. 5: "Shortly before his ouster, Soviet Premier Nikita Khrushchev openly boasted that Soviet satellites were constantly photographing military installations in the United States."

devices to map the United States for targetting purposes.[83] The Cosmos series, although intended primarily for weather and meteorological research, reportedly utilizes television cameras for reconnaissance purposes.[84] In 1962 the Soviets orbited three satellites reportedly used for reconnaissance, eight in 1963 and thirteen in 1964.[85] As of March, 1966, the Russians had completed at least 47, such flights, apparently using an unmanned version of the Vostor or Voshkod spacecraft.[86]

Thus, reconnaissance satellites have been and are being used by both major space powers in gathering military information for targetting and detection of missile firing and nuclear testing. It has also been proposed to use these satellites to gather economic information on industrial and commercial activities of the observed state, in order that the observing state may more knowledgeably make economic and political decisions.[87]

Because the subsystems found in the various types of reconnaissance systems described are virtually innumerable, simplification requires restriction of the examination to the primary parameters controlling reconnaissance capability: data interpretation,[88] sensors, and ground coverage. The quality of photointerpretation is a function of the training and ability of the interpreter, as well as the identification features of the observed events and the resolution, contrast and scale of the photographs.[89] Although it was early urged that development of photointerpretation was woefully inadequate,[90] the

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[83] Garthoff, *Red War Sputniks* in the Works, Missiles and Rockets, vol. 3, May 1958, p. 134.

[84] SENATE REPORT, *supra* note 81; Simmons, *The Russian Space Race*, 4 Astronautics, June, 1966, p. 4.

[85] European Space Vehicle Launcher Development Organization Classification of Soviet Space Vehicles, Technical Memorandum No. F-16 (March, 1965), NASA Accession No. N65-24873. *Accord, Reconnaissance Satellites*, Interavia, January, 1965, pp. 104, 105.

[86] Simmons, *supra* note 91.

[87] Yuan-Li Wu, *Solving the Red Chinese Puzzle from Space*, Air Force and Space Digest, vol. 47, February, 1964, p. 59.

[88] The quality of photointerpretation must be examined separately from that of the raw sensor data. Danskin, *A Theory of Reconnaissance* II, X OPERATIONS RESEARCH 285 (1962) (proving that the confusion caused by improper interpretation is necessarily equal to or greater than that caused by photographic inaccuracy).

[89] Jennings, Meeker, Praver, Cook, Ground Resolution Study Final Report, NASA Accession No. N64-12639, November 29, 1963 (study of photointerpreter performance as a function of image quality).

[90] Katz, *Thoughts on Reconnaissance* (address presented November 24, 1948), Selected Readings in Aerial Reconnaissance (1963 ed.), Rand Corporation, Paper P-2762, at p. 22.

continuous studies of the techniques of this art[91] would seem to bear out the later assertion made by the same writer that the human restrictions on accurate photointerpretation are being continually reduced.[92]

The primary sensory method used in reconnaissance at the present time is photography, utilizing the visible portion of the electromagnetic spectrum, because this is presently the most accurate sensor available.[93] Although many factors enter into a determination of the interpretability of an aerial photograph, perhaps the most important parameter is film resolution,[94] which refers to the ability of a film to render barely distinguishable a pattern of black and white lines.[95] "Ground resolution" is the ground (target) dimension equivalent to one line at the limit of film resolution.[96] Ground resolution is a function of the resolution R of the film, the focal length F of the camera, and the vertical height h of the camera above the target.

$$\text{Ground resolutions (ft)} = \frac{h}{300F(\text{ft}) \times R(\text{lines/mm})}.$$[97]

Thus to achieve fairly detailed ground resolution, it is desireable to have high film resolution, a low satellite altitude, and a long focal length.[98]

In 1959, Amrom Katz, a noted authority on reconnaissance and photography, estimated that the ground resolution of a high quality photography system would be of the order of five to one-hundred

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[91] *E.g.*, see study cited note 88, *supra*.

[92] Katz, *Observation Satellites: Problems and Prospect* (reprinted from Astronautics, April, June, July, August, September, October 1960), p. 19.

[93] Katz, *supra* note 92 at 5; Buchheim, INFLUENCE OF SPACE TECHNOLOGY ON HEMISPHERIC DEFENSE, Rand Corporation, Memorandum RM-368-PR, (July, 1963), at 17.

[94] There is much justified criticism of dependence upon this single parameter to describe photographic performance. Katz, *supra* note 92, at 5-6. Nevertheless, ground resolution is a convenient measure for making gross comparisons and evaluations. In the Ground Resolution Study Final Report, *supra* note 89, it was reported that identification of most important objects was primarily dependent upon ground resolution.

[95] Katz, *supra* note 92, at 5. Thus, when the resolution of a film is 10 lines per millimeter, the pattern whose line-plus-space width is 0.1 millimeter of film is barely resolved or distinguished, finer patterns are not perceived, and coarser patterns are more clearly seen. *Ibid.*

[96] *Ibid.*

[97] Katz, *supra* note 92 at 6.

[98] Brennan, *Arms and Arms Control in Outer Space*, in BLOOMFIELD, OUTER SPACE, PROSPECTS FOR MAN AND SOCIETY 135 (1962).

feet from a height of 300 miles.[99] In 1962, arms control expert Donald Brennan estimated a resolution capability of eight feet in the near future.[100] These estimates seem to have been achieved by United States satellites, at least when physical recovery of the film is used, rather than telemetry.[101] Depending upon operating altitude, film resolution, lens size, shutter speeds and other factors, obtainable ground resolutions of from 60 feet down to 2 feet are estimated, with corresponding focal lengths believed to range from 12-44 inches.[102] Based on the observed launching ratio of *Thor-* and *Atlas-Agena* systems, utilizing scale numbers (S = height above target/focal length) of 800,000 to 200,000, provide the basic surveillance or mapping functions.[103] At these scale numbers, with film resolutions of 40 lines/mm, which are about normal, theoretical ground resolutions are 67 and 17 feet, respectively. The larger *Atlas-* launched systems are then programmed in lower orbits to pursue suspicious details at scale numbers ranging downward from 100,000,[104] providing theoretical ground resolutions of 8.3 feet and lower.[105] There is

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[99] Katz, *supra* note 92, at 5, 31.

[100] Brennan, *supra* note 98, at 136. A ground resolution of two feet was predicted in Lyon, *Space Vehicles, Satellites, and the Law*, (1961) 7 McGILL L. J. 271, 278, but this has probably not yet been operationally achieved.

[101] In addition to physical return of the film capsule, the United States originally pursued the use of television (telemetric) return of data to receiving stations on earth. Telemetric return, however, too seriously degrades film resolution achieved by the camera system. Katz, *supra* note 92, *Reconnaissance Satellites*, Interavia, January, 1965, pp. 104, 106.

Because of the problems of mass readout, *infra* notes 111-113, and resolution degradation during transmission, the United States has largely abandoned telemetric return of data, even though this would theoretically permit long-lived reconnaissance missions and avoid the multiplicity of launches required when physical recovery is employed, Katz, *supra* at 106. It is reasonable to believe, however, that in the future the resolution obstacles of television return and TV sensors will no longer be significant, in view of the constant development in these areas. See 277 FRANKLIN INSTITUTE JOURNAL 97 (January, 1964).

[102] *Reconnaissance Satellites*, Interavia, January, 1965, p. 105.

[103] *Ibid.*

[104] Brennan, *supra* note 98, at 135.

[105] Using a focal length of 144 inches and with a film resolution of 100 lines/mm, a theoretical ground resolution of 2.2 feet would be attained. The Gemini 11 manned flight, using the Maurer photography system, possessed a film capability of almost twice that figure — "resolutions figures in the order 200..." N.Y. Times, Sept. 18, 1966, p. 82, col. 6. However, this film resolution is probably not yet available for widespread operational use because of cost, N.Y. Times, *supra*, and because of design constraints for satellites; generally grainy images with lower resolutions must be accepted in order to achieve fast shutter speeds, easing problems of image compensation. *Reconnaissance Satellites*, Interavia, January, 1965, p. 104, 105.

reason to believe that the Soviet Union has maintained this pace.[106]

While not in such predominant use, sensors other than photography are available. Television "vidicon" sensors presently lack the high resolution and information storage capabilities of photographic sensors.[107] The Midas system utilizes the infra-red portion of the electromagnetic spectrum in attempting to detect the hot-boost phase of hostile missile firings.[108] As of June, 1964, however, the Midas project was viewed as very costly in light of the fact that other more reliable systems for missile detection were available.[109] Because of atmospheric attenuation the restrictions on the portion of the spectrum available for radar systems promise to be too great in the near future to allow profitable use of radar.[110] While no estimate can be made of similar Soviet capabilities, it is urged that, in light of the restricted capabilities of the infra-red and radar modes of surveillance, these would add little support to the United States bargaining position in negotiations concerning reconnaissance.

Besides operating outside the normally accepted boundaries of territorial sovereignty of the underlying states, reconnaissance satellites possess the capability of a degree of ground coverage several orders of magnitude greater than previous methods of surveillance. A satellite with a camera coverage angle of about 90 degrees at an altitude of 150 miles could cover about six million square miles per day.[111] This greater coverage due to greater height is not pure advantage, however; it also constitutes a great limitation on reconnaissance satellites. As observed above, the altitude of the satellite is perhaps the greatest barrier to achieving high resolution. Also, degradation of the resolution of the photography system increases seriously at the extremity of the observed swath.[112] The vast amount of information obtained by satellite sensors creates a serious problem

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[106] N. S. Khrushchev, quoted while showing the photographs obtained from the captured U-2: "But it has also to be said that our cameras produce better, sharper pictures, so that in this respect we gained little." Quoted in Katz, *The Soviets and the U-2 Photos — An Heuristic Argument*, The Rand Corporation, Memorandum RM-3584-PR, March, 1963, p. 15. See also, Katz, *supra* at p. 17, citing Soviet literature; SCHICK, *supra* note 80, at 24.

[107] See discussion *supra* note 101.

[108] VAN DYKE, PRIDE AND POWER, RATIONALE OF THE SPACE PROGRAM 39 (1964).

[109] *Ibid.*

[110] Kraus, *Legal Aspects of Space Communications and Space Surveillance*, 29 J. AIR L. & COM. 230, 233 (1963).

[111] KATZ, *supra* note 92, at 17.

[112] Vargo, Pasquali, and Gersten, *Observation Satellite Orbits, American Rocket Society Journal*, vol. XXXII, 1962, p. 105.

in returning that information to earth. At present full utilization of the coverage capabilities of a single satellite using swift telemetric return is not feasible, and the slower physical return of the film capsule is necessary.[113]

The advent of manned space reconnaissance is perhaps the most significant recent achievement in overcoming the problems of vast coverage and information return. The Gemini manned flights included successful experiments in selective photography.[114] When this procedure becomes operational in the Air Force Manned Orbiting Laboratory project,[115] surveillance from space will have reached a new plateau of capability.

It is valuable at this point to compare the capabilities or reconnaissance satellites with those of the U-2, in view of the determination of the United States to use the U-2 over Cuba, Red China [116] and the Soviet Union, at least until 1960.[117] Although direct information is not available, Amrom Katz has estimated the ground resolution of U-2 photography at about five to seven feet.[118] It is probable that present operational United States photography attains resolutions of about eight feet and lower.[119] With better films and increasing focal length, the resolution capabilities of the U-2 and low orbit reconnaissance satellites will be equal in the near future. And though the resolving power of satellite photography may not have reached that of the U-2, other advantages of satellites seem to make them more valuable than the U-2. Photointerpretation, in light of its continuous development,[120] has almost certainly surpassed that in 1960 when the U-2 controversy flared. And perhaps more importantly, the ground coverage capabilities of reconnaissance by satellite is several orders of magnitude greater than was available with the U-2. At

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113 *Reconnaissance Satellites*, Interavia, January, 1965, p. 104, 106.

114 See Newsweek, Sept. 27, 1965, p. 88. See also New York Times, Aug. 25, 1965, p. 24C, concerning Gemini 5 (August, 1965) astronauts sighting and photographing a Minuteman solid-fueled ICBM firing, and taking infra-red measurements. Katz, *supra* note 92:

> An observer aboard a satellite could, in principle, study a large amount of data and transmit selected portions of the data, or, perhaps, selected remarks about the data. This form of data processing would greatly reduce the complexity of communications facilities...

115 See Time, Sept. 3, 1965, p. 51; New York Times, Aug. 29, 1965, p. 1E, col. 4.

116 See *Reconnaissance Satellites*, Interavia, January, 1965, p. 104.

117 See, *e.g.*, Katz, *The Soviets and the U-2 Photos — An Heuristic Argument*, The Rand Corporation, Memorandum RM-3584-PR (March, 1963).

118 *Id.* at 7.

119 Notes 101-105, *supra*, and accompanying text.

120 See notes 89-92, *supra*, and accompanying text.

the present time this capability can be utilized only with the relatively slow process of physical return of the film. When manned selective coverage becomes operational, however, the full coverage capability of reconnaissance from space will be much nearer availability. Also, though it has been asserted that both the United States [121] and the Soviet Union [122] are developing means of downing hostile spacecraft, this "space denial" is not yet nearly so great a threat as was the possibility of downing the high-flying U-2s.[123]

In analyzing the inspection capabilities of present reconnaissance satellites, it must be remembered that, as a general rule, the ground resolution required for identification of an object is five times the quality which will suffice for detection of that object.[124] Assuming good atmospheric conditions and no concealment measures by the observed state, the photographic satellite systems reportedly in use by the United States, utilizing a resolution of about 70 feet for mapping and surveillance, and resolutions down to 8 feet and lower for detailed inspection, would detect and properly identify militarily useful transport centers, selected industry and military installations.[125] Resolutions ranging only down to 32 feet allow identification of most of the components of these facilities, such as railroad vehicles, tanks, aircraft storage areas, and roads.[126] "It is clear that these scales and estimated ground resolutions are entirely adequate for discerning the gross strategic capability of the Soviet Union, plus much of its tactical capability."[127] According to a report issued in January, 1960, on the 1958 United Nations Conference on "Possible Measures Which Might be Helpful in Preventing Surprise Attack," ground resolutions of 75 to 100 feet

> ... should yield detection of missile launch pads, as well as the location and gross characteristics of all major airfields. Most communications lines and many areas of activity will be found which require examination at higher resolution in order to identify. It will be possible to detect large moving ships at sea due to their conspicuous wakes.[128]

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[121] See, *e.g.*, New York Times, Aug. 29, 1965, p. 1E, col. 4.

[122] *E.g.*, VAN DYKE, *supra* note 76, at 56.

[123] See Abt, *Space Denial: Costs and Consequences*, Air Force and Space Digest, vol. XLVI, March, 1963, p. 45.

[124] *Reconnaissance Satellites*, Interavia, January, 1965, p. 106; Brennan, *supra* note 98, at 135; SPACE HANDBOOK, ASTRONAUTICS AND ITS APPLICATION, ch. 21, note 6.

[125] See Levison, *Capabilities and Limitations of Aerial Inspection*, in MELMAN, INSPECTION FOR DISARMAMENT 60, 67 (1958).

[126] Jennings, Meeker, Praver, Cook, Ground Resolution Final Report, RADC-TDR-63-224, NASA Accession No. N64-12639 (November, 1963).

[127] *Reconnaissance Satellites*, Interavia, January, 1965, p. 106.

[128] *Ibid.*

The United Nations report concluded that a ground resolution of 5 to 10 feet would be required for precise identification of weapons with a surprise attack capability; at this resolution, said the report: "An ICBM system would be recognized by identification of some of its components, such as the logistic support vehicles, launch devices, guidance and communication vans, warhead storage, etc."[129] A recent NASA report states that air launch missiles are identifiable as towed weapons and probably as specific air launch weapons, at resolutions of 4 to 8 feet.[130] Thus, the present United States ground resolution capability of eight feet should allow identification of the surprise attack capability of the Soviet Union.

It is not valid to assume, however, as do these estimates, that the observed nation will not take concealment measures.

> Knowing itself to be under satellite surveillance, the opponent would seek to install new fixed bases in areas and in ways that would make them hard to detect from outer space (for example, in industrial and mining areas) ... He will try to beat our intelligence system, and, though he cannot do this without incurring some extra cost, the costs are unlikely to be very substantial.[131]

Also, darkness and cloud cover will severely limit satellite performance. Moreover, it has been argued that even aside from concealment measures, reconnaissance from space is capable only of detection and identification of missile site construction, and that missiles installed before these satellites became operational in about 1962 are now beyond detection.[132]

Because of the problems in detecting and identifying nuclear attack capability, some writers have argued that the value of reconnaissance satellites lies in "giving advance warning of conventional types of attack, involving considerable troop movements and airforce deployments," for which traditional intelligence methods are just as capable.[133] It is true that, in part because of these difficulties, a satellite reconnaissance system will require coordination with conventional intelligence methods to provide reliable identification of weapons with a nuclear attack capability and thus cannot reliably constitute the sole intelligence method depended upon. As of July, 1962, however, these satellites indicated that the Soviet missile sites

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[129] *Ibid.*

[130] Note 126, *supra*, at 71.

[131] Knorr, Klaus, *On the International Implications of Outer Space*, The Rand Corporation, Report R-362-RC, p. 133, 145; Brennan, *supra* note 98, at 138.

[132] *E.g.*, Knorr, *supra* note 131, at 143; Levison, *supra* note 125, at 73. But see *Reconnaissance Satellites*, Interavia, January, 1965, p. 104.

[133] Knorr, *supra* note 131, at 144. See Levison, *supra* note 125, at 73-74.

were above-ground and highly vulnerable.[134] The construction required to protect these sites or build new sites certainly could not go largely undetected since that time, notwithstanding cloud cover and darkness. In view of this fact, and the value of reconnaissance satellites to the United States during the Cuban missile crisis of 1962,[135] it is not likely that the United States will abstain from their use without some favorable alternative.

C. Difficulties in Making Legal Characterization Meaningful: Enforcement

If the international community eventually proscribes reconnaissance from space, the view in the West that some means of enforcement or "effective control" is necessary to make such a ban meaningful[136] is reasonable. With that community largely unorganized, it is probable that most "control" measures would be taken unilaterally. However, as cooperation in space activities increases significantly, particularly under the aegis of the United Nations, multilateral enforcement activities may become feasible. The means of enforcement may range from those of a coercive nature, as by physical interception of offending satellites, to persuasive and diplomatic means, as by formal complaint through diplomatic channels, or perhaps by establishment of a multi-nation committee for pre-launch inspection and publicity.

1. Views of participants

While the controversy over the legality of reconnaissance satellites has continued since about 1958, views on the propriety of various measures of control of these activities have focused primarily on unilateral means, and have not progressed to significant articulation of the desirability of various multilateral means.

Those United States spokesmen who, early in the development of satellite activity, believed it advisable to oppose reconnaissance activities in space also felt that physical interception, or at least

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[134] Hanson Baldwin, New York Times, July 26, 1962, p. 1, quoted in *Reconnaissance Satellites*, Interavia, January, 1965, p. 104.

[135] *Ibid.*

[136] *E.g.*, statement of Sir Pierson Dixon, for the United Kingdom, U.N. Doc. No. A/C.1/SR.982/213, quoted in SCHICK, *supra* note 80 at 28. See also the description of U.S. and Western proposals in the U.N. for controls to assure space will be used for peaceful purposes only. SENATE STAFF REPORT, *supra* note 81 at 159-60.

incapacitation, of non-friendly reconnaissance satellites constituted proper protection of this country's security.[137] Of course, in consonance with the present United States position opposing any ban on reconnaissance satellites, the United States is precluded from supporting any activity to enforce such a ban.

The original Soviet position as stated by Khrushchev seemed to advocate clearly forcible interception of reconnaissance craft: "they will also be paralyzed and rebuffed."[138] However, since that time, the position of Soviet jurists on the proper means of preventing reconnaissance from space has vacillated. In January, 1959, E. Korovin wrote that destruction of a satellite of another country, "even if employed for reconnaissance," is an act of war;[139] rather

> interested governments have a right to measures conforming to the letter and the spirit of the U. N. Charter in order to avert actions taken in space which are directed against them. They may undertake diplomatic representations, as well as reprisals and retaliation of a non-military nature.[140]

Later in 1959, G. P. Zhukov quoted with approval Khrushchev's original threat that reconnaissance satellites would be "paralyzed and rebuffed," stating that "such action will be fully justified under the existing rules of international law and the United Nations Charter".[141] This Soviet approval of forcible interception was renewed by Zadorozhnyi in 1962.[142] But in 1964, another Soviet article, without specifically mentioning reconnaissance satellites, denounced the theory that article 51 of the United Nations Charter allowed preventive attack upon a spacecraft, and argued that article 51 only applies in the case of an armed attack.[143]

It would seem that the Soviet position on the proper means to enforce a ban on reconnaissance satellites has followed the Soviet views on the basic question of the legality of reconnaissance satellites. As it has done on the basic issue, the Soviet Union has left the door open, by equivocation, to deny the validity of interception if it ulti-

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137 McDOUGAL, LASSWELL, AND VLASIC, LAW AND PUBLIC ORDER IN SPACE 313 (1963), quoting Senator Keating in 1961 Congressional Hearings; GAVIN, WAR AND PEACE IN THE SPACE AGE 224 (1958), quoted in McDOUGAL, ET AL. *supra* at 312-13.

138 McDOUGAL, LASSWELL, AND VLASIC, *supra* note 137 at 315.

139 Korovin, *International Status of Cosmic Space*, International Affairs (Moscow), No. 1, 1959, p. 53, quoted in S. Doc. No. 26, 1062, 1066.

140 *Id.* at 1067.

141 Zhukov, *Space Espionage Plans and International Law*, International Affairs (Moscow), no. 10, 1960, p. 53, quoted in S. Doc. No. 26, at 1101.

142 Quoted in Woetzel, *supra* note 41, at 130.

143 Vereshchetin, *Outer Space — A Realm of Peace*, International Affairs (Moscow), No. 6, 1964, p. 98.

mately decides that reconnaissance is valuable, while retaining the opportunity to justify interception of U.S. reconnaissance satellites if it develops an interception capability.

2. Technical Difficulties of Enforcement

Enforcement, whether by forcible or diplomatic means, aside from total denial of satellite activity to the potential offender, would require inspection of the satellite before launch or in flight, or monitoring of the information returned, to determine whether the purpose of the mission was illegal reconnaissance.

Agreement for inspection before launch at present seems to be the most feasible possibility technologically, though an international system for the inspection of launches to assure that reconnaissance is not attempted is scarcely to be expected in the near future. Also, it is doubtful whether, even if agreement could be reached, competent inspection methods could be developed. Finding photographic equipment aboard a satellite would not suffice to determine a violation, for virtually every type earth satellite now orbitting has photographic equipment. It would be necessary to determine by experiment whether the cameras found were of the low quality resolution type sometimes used for cloud cover studies in weather satellites, or of high quality resolution possibly used for reconnaissance. And even were high quality resolution cameras found aboard, the launching state could validly claim they were to be directed not to earth, but to celestial bodies. If infra-red detection systems were included within a ban on reconnaissance satellites, it would probably be extremely difficult for an inspector to distinguish between infra-red reconnaissance systems and infra-red systems used for geological and crop surveys. It is worthy of note that in April of 1962 the United States submitted a proposal for prelaunch inspection by the International Disarmament Organization in conjunction with the space aspects of the 1962 disarmament conference, but only after the Soviets had stated: "Any sort of international inspection is out of the question."[144]

International or unilateral inspection of satellites in orbit is another possible means of identification of the reconnaissance function of satellites. However, the ability to inspect satellites in orbit has not yet been developed. It is true that the proposed inspection system need only be concerned with satellites at a relatively low altitude, because of present restrictions on photographic systems.[145]

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[144] SENATE STAFF REPORT, *supra note* 81, at 239.

[145] Abt, *Space Denial: Costs and Consequences*, Air Force and Space Digest, vol. XLVI, March, 1963, p. 45.

However, within such low orbits satellites of all sorts abound — reconnaissance, early warning, communications, weather, geological — and the problem of functional identification becomes virtually insurmountable.[146] Even were photographic or infra-red systems detectable, the difficulties in identifying them as illegal reconnaissance apparatus would be even greater than in prelaunch inspection. Manned inspection in space may alter significantly present in-orbit inspection capabilities, but the detection and rendezvous problem,[147] among others, will keep such methods from operational status in the near future. It is notable that the Soviet Union has in effect eliminated the need for functional identification by branding as "espionage" virtually every type of United States earth satellite, including reconnaissance, weather, geodetic, geological, and navigational satellites.[148]

Inability to devise a system capable of functionally identifying reconnaissance craft, and selectively eliminating them from launch or orbit, does not foreclose the possibility of enforcing a ban by criteria not so selective. Thus, the ban could be enforced by means ranging from total space denial of all earth satellites to destruction of all satellites possessing photographic and infra-red apparatus. Total space denial under international auspices would of necessity deny to all countries the right to engage in earth orbitting activities, an alternative not acceptable in view of the nonaggressive nature of reconnaissance satellites, and the innumberable valuable scientific space endeavors which would be foreclosed.[149] Unilateral total space denial would, when more than one nation developed the requisite capability, have the same effect — it would virtually deny space activities to both enforcer and alleged offender. It would seem that the detection and destruction of only satellites using photographic and infra-red apparatus, internationally or unilaterally, would not in such great degree eliminated earth orbitting activities, until it is remembered that most present scientific space endeavors use such apparatus.

One enforcement possibility not often proposed is inspection of the data returned from orbiting craft. Observers at the receiving stations of the launching state could police data returned telemetrically. Inspection of data capsules physically returned, however, would be more difficult, because of the difficulty in determining (and persuading states to divulge) when and where such returns

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[146] *Ibid.*

[147] See Time, December 24, 1965, p. 32.

[148] *E.g.*, Mader, *U.S. Militarist Plans in Space*, International Affairs (Moscow), No. 8, 1965, p. 55.

[149] See discussion by Abt, *supra* note 145.

were to be made. Because in-orbit inspections are not feasible in the near future, pre-launch inspection and inspection of returned data seem to be the most likely possibilities, should all participants ever consent to inspection in any form.

III. International Use for Peacekeeping

Because of the questionable reliability of the information from satellites, caused by concealment measures taken by the observed state and by adverse weather and light conditions, reconnaissance satellites may constitute a major component of any intelligence system, but the system as a whole will require coordination with conventional intelligence methods to provide reliable identification of weapons with a surprise attack capability. In order to achieve this coordination, the United States will be less likely to relinquish completely its satellite system to an international body. This would not prevent it from contributing to a system under an international body while continuing its unilateral use, or alternatively, from making the data from its system available for international consumption. Such international use could provide inspection of an arms control agreement, or, without an agreement, under a stabilization plan such as the previous "open skies" proposal.[150]

The prime factor leading to the failure of the United States and the Soviet Union to reach agreement upon arms control has been difference over the inspection issue. But reconnaissance from space is not the deep penetration into society to which the Soviet Union has objected in previous plans for inspection, which entail intrusion of foreign inspectors. Notwithstanding this fact, the Soviet objection to the "invasion of its secrecy" has been extended to objection to the use of reconnaissance satellites to gather information on force levels and strategic preparations. As Donald Brennan points out,

> ... one understandable reason for Soviet nervousness over our acquisition of such information is that, with conventional fixed missile sites and bomber bases, it is difficult to obtain reliable inventory information about force levels (i.e., numbers of weapons and carriers) without also obtaining targetting information (i.e., location of weapons and carriers.)[151]

A number of arrangements for the use of reconnaissance satellites under international auspices are possible. One of these is that nations

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[150] At present, however, the Soviets have indicated only disapproval of proposals to utilize reconnaissance from space as an alternative to the previously rejected U.S. "open skies" plan. *E.g.*, Mader, *supra* note 148 at 57.

[151] Brennan, *supra* note 98, at 137.

turn over their space reconnaissance systems to an international organ. This is perhaps the least feasible program, in view of the difficulty in policing the concomitant ban on unilateral use of reconnaissance satellites, and the hesitancy of nations to entrust their security to an international organ or any other body not under their own control. Concurrent unilateral and multilateral systems of reconnaissance, however, would enable a country to retain the reassurance of unilateral control. A third possibility is unilateral organized use under which nations retain full control of satellite systems but disseminate for international consumption the information gained. Equal quality of information concerning all nations could be assured by an agreement to proliferate the reconnaissance capabilities of the most capable participant. Measures to assure that no valuable information is withheld, however, would be difficult to devise.

All these possibilities would require of the Soviet Union a withdrawal of previous statements on the use of space for intelligence purposes, which is not a likely event. Similarly, they would require the dissemination of highly sensitive information to many nations not all of whom are regarded as stable, to which neither the United States nor the Soviet Union would be particularly amenable. Continuation of the *status quo*, however, may in fact eliminate these objectionable characteristics of international agreement, and yet closely approach achievement of the ends sought by the proposals for international use. It is arguable that continued use or reconnaissance satellites is being accepted as a means of peacekeeping similar to the Open Skies proposal,[152] and as a means for policing the Moscow test ban treaty.[153] The termination of Soviet statements on the illegality of reconnaissance satellites leads one to believe that tacit acceptance of these satellites as a device to stabilize an uneasy "peace" (as opposed to nuclear war) exists today and will continue to develop.

Conclusion

Although, as was predictable, in the sensitive areas of intelligence and military activities the 1967 Space Treaty falls short, the Treaty will have a major effect on reconnaissance from space. The Treaty proscribes non-peaceful activities and military installations and manoeuvres on the moon and other celestial bodies. When recon-

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[152] "Once Scorned 'Open Skies' Plan Now Reality," UPI, New Haven Register, Sept. 26, 1965, sec. 1, p. 5.

[153] Haggerty, *A-Ban Treaty Spotlights Vela Hotel*, Army Navy Air Force Journal, vol. C, August 17, 1963, p. 15; Life, Dec. 30, 1966, p. 100.

naissance from celestial bodies becomes feasible, the questions whether reconnaissance is peaceful and whether it is "military" (which has thus far been uncritically assumed) will be forced to confrontation. Because of the value of reconnaissance to the Soviet Union and the United States, it is somewhat surprising that these principles restricting activities on celestial bodies to those of a "peaceful" and "non-military" nature were proposed by both nations[154] and accepted in the Legal Sub-committee without significant discussion of ramifications. This development is even more curious in view of the fact that it was apparently a realization of these ramifications which caused the United States and the Soviet Union to staunchly ignore the repeated entreaties of other nations to extend these principles to all of outer space.[155]

Today, customary prescriptions are created quickly, compared with the law-creating processes of even the last century. In space, which is a new environment, the development of law, unfettered by old situational concepts, will probably be even more swift. There has been sufficient time for law-creating processes to determine the legal characterization of reconnaissance satellites, as is witnessed by the oftstated argument that in less than ten years state practice has determined that soveriegnty does not extend to outer space. But on the question of the legal status of reconnaissance, time and the new environment of space are not determinative. While the locus of the activity is space, the function or intended effect of the activity is merely an extension of an age-old practice which has always trodden heavily upon sensitive national feelings — viz., intrusion into the social, political and military processes of society to gain information.

Unequivocal expression by the Soviet Union and other Bloc countries that reconnaissance satellites are illegal has apparently ceased. Their position until 1963, however, was one of strong protest of United States reconnaissance activities. Protest has a unique position in the creation or hindrance of international law, and the effects of these strong protests will probably linger, hindering any acceptance by the international community of the legal status of reconnaissance from space. Furthermore, by continuous equivocal comments that United States space efforts are not "peaceful" because they include "space espionage," the Soviet Union possibly seeks to reserve the right to reject legalization of reconnaissance from space, notwithstanding their own use of these instruments. Also, though

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154 U.N. Doc. No. A/AC.105/35, Oct. 21, 1966, p. 7 (United States draft treaty), and p. 12 (Soviet draft treaty).

155 See note 20, *supra*.

most United States authorities support the legality of reconnaissance, it is not certain whether this nation would accept unhindered reconnaissance of our own processes if the question were put up for unequivocal decision. It is submitted that reconnaissance from space may be characterized as *alegal,* and that most nations are for the present satisfied with this characterization.

This status may change, however, when a reconnaissance satellite is intercepted, if the reconnoitering state chooses to force an answer to the question by protesting the interception. When the question is in this or in some other manner forced to a decision, the determination of legality will depend not so much on the past expressions of the nations concerned, as on their past actions. The consistent use of reconnaissance from space by the United States and its failure to condemn similar Soviet efforts will virtually preclude the United States from successfully asserting that such activity is illegal. The more recent — yet also consistent — reconnaissance efforts by the Soviet Union will bear likewise upon its arguing that these efforts are condemned by international law. Soviet statements since 1963 have been so equivocal that it is doubtful whether it has successfully reserved the right to condemn reconnaissance from space. The "objective" element of customary law — the practice of states — is sufficiently provided by the reconnaissance efforts of both nations. Determination whether the "subjective" element — "acceptance as law"[156] — is fulfilled by the Soviet Union will be decisive.

Aside from the arguments that reconnaissance from space is legal because it is "peaceful" and because it is necessary in proper self-defense, the main thrust of the Western view is based on the fact that the locus of the activity is outside the boundary of the exclusive sovereignty of underlying states. This argument delimits legality primarily according to territorial and spatial criteria.

The importance of territorial and spatial criteria as ordering devices was derived from eras in which these criteria were functionally appropriate. These criteria are inherently valid in allocation of land ownership, and allocation of ordering jurisdiction among land based societies, in which exclusivity of competence is required by the nature of the situation. However, in those places and situations which lend themselves to the activities of numerous participants simultaneously, the inherent relation of spatial and territorial criteria to the conduct ordered decreases, and functional criteria, i.e., description of the activities to be ordered, grow in importance. Of course, even in these situations of multi-national activity, spatial criteria continue

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[156] *E.g.,* WOLFKE, CUSTOM IN PRESENT INTERNATIONAL LAW 51-58 (1964).

to be accorded importance for two reasons: (1) in (geographic) areas of multinational activity near areas of exclusive jurisdiction, spatial criteria, though not so inherently appropriate, are applied with some success in achieving desired goals; e.g., the use of the territorial sea as a security device; (2) nations are hesitant to discard previously acquired competence in handling of spatial and territorial criteria. In space, however, the vast distances and times involved, together with functions virtually unrestricted by distance barriers, decrease to perhaps nothing the lingering relevance of spatial and territorial criteria of legality. Soon we must become competent to utilize primarily functional criteria.

These observations are peculiarly true of reconnaissance from space. The rapid development of traditional sensor devices, and the creation of new sensor devices illustrate that distance barriers, though perhaps often restrictive of the systems, become less so as time passes, making any momentarily established distance criteria of legality eventually meaningless.

It would thus seem that the Soviet argument that it makes no difference to an underlying nation from which altitude it is "spied-upon" is correct, and that U.S. dependence upon an air-space-outer space "boundary" as delimiting the legality of reconnaissance will eventually be recognized as ill-founded. However, this does not require the conclusion that the Soviet argument that these activities are illegal is correct. Rather, it raises the crucial question whether the same reevaluation of changing criteria of legality which invalidates the United States argument does not also invalidate the Soviet argument that all reconnaissance is illegal.

The Soviet position, assuming it has not changed since 1963, is that any attempts by non-Soviet nations to gain information which the Soviets wish to keep secret are illegal. Thus the Soviets' right to proscribe the activity is unrestricted by the spatial location of the observing instrument. While this position may be a significant change from traditional theories, it cannot be claimed to be erroneous simply because it regulates activity outside the Soviet Union; witness the United States application of its anti-trust laws to non-nationals acting outside United States borders, and the generally accepted (though perhaps not followed) international prescription of the allowance of use of one's territory to foment civil trife in other territories. Perhaps the most objectionable aspect of the Soviet view is the broad competence which the Soviets accord themselves in defining the limits of the proscription — all information which they desire kept secret is protected by this secrecy, sovereignty doctrine. The Soviets fail to base this position on an acceptable policy reason, saying only

that it is necessary for the "security" of the underlying state, an argument which is as unacceptable as that of the United States basing the legality of reconnaissance on the all-encompassing right of "self-defense."

Richard Falk supports the pre-1963 Soviet position on reconnaissance because of its "probable destabilizing effect."[157] It would seem that he has come upon a valid policy basis for a legal characterization: whether the activity concerned increases or decreases the stability of world order.

Without the use of reconnaissance satellites there exists an undeniable gap in intelligence information possessed by the United States and the Soviet Union. This can hardly be characterized as a stable situation. And it is unlikely that stability would be greater if neither camp had any effective intelligence operation. Use of reconnaissance satellites by both the Soviet Union and the United States, however, would mean that both nations would have more valid information on the forces and intentions of the other, and would have less need to build arms systems capable of meeting a more vast number of unknown possibilities. It may be charged that this is simply a rehash of the previously unsuccessful Open Skies proposals, a charge which is in large part valid. Two of the reasons for which those proposals failed, however, were that they required an intrusion into airspace, relatively proximate to the social processes below, and they required a reversal of the firmly entrenched doctrine of sovereignty in airspace. Neither of the conditions similarly restricts acceptance of the legality of reconnaissance satellites. It is submitted that the period before the crystallization of a legal regime in outer space is a most opportune time to reassess the validity of time-honored fears of a free flow of strategic information.

The decreasing friction between the United States and the Soviet Union over reconnaissance satellites indicates a recognition of their stabilizing effects. This acceptance of intelligence gathering from space, however, is endangered by the provisions of the 1967 Space Treaty. Particularly, the Treaty proscribes all military manoeuvres on the moon and celestial bodies, and the records of the Space Committee indicate a feeling on the part of many representatives (not including those of the United States, the Soviet Union and the close allies of each) that the *spirit* of these proscriptions should extend to all of outer space. As the British representative has pointed out,[158] this

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[157] Falk, *supra* note 42, at 105, 113.

[158] U.N. Doc. No. A/AC.105/C.2/ SR. 71, Oct. 21, 1966, p. 5.

broad, uncritical proscription fails to take cognizance of the peace-keeping nature of numerous activities which technically may fall within the definition of "military."

The abeyance since 1963 of vehement Soviet charges that Western reconnaissance satellites are "illegal" would seem to be in part due to a realization of the stabilizing nature of reconnaissance satellites, and in part due to other considerations. The Soviet equivocation in 1963 on the illegality of military uses of space in general, and reconnaissance satellites in particular, followed the more inclusive Soviet turnabout in 1962 to a position advocating internationalism in space endeavors. The political reason attributed to the Soviet policy change in 1962 is a desire to gain greater acceptance in the international community.[159] However, recent Soviet articles criticizing the "non-peaceful" nature of United States reconnaissance satellites indicates that the only connection between the 1962 policy of "cooperation" and the sudden 1963 dropping of the theretofore strongly impressed charges of illegality of reconnaissance was a desire by the Soviets not to allow themselves to be criticized for preventing adoption of the much desired 1962 (XVIII) Declaration on the Principles Governing the Exploration of Outer Space by a legal objection to an essentially non-aggressive and minor activity. Having dropped the issue for that reason, the Soviets forbear (thus far) to reassert the illegality of reconnaissance satellites and other military uses for these further reasons: (1) a judgment that there may be criticism for reviving an objection dropped in 1963; (2) a desire to foreclose agreement on military uses of outer space until agreement on general and complete disarmament is accepted by the West; (3) a desire to participate in reconnaissance activities; (4) a realization that the stabilizing nature of reconnaissance satellite activity will ensure that Communist past and future successes in expansion by subversion and limited warfare will not be eradicated by nuclear holocaust.

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[159] SENATE STAFF REPORT, *Supra* note 81 at 242-43.