PROBLEMS OF REMOTE SENSING: A LOOK AT AMERICAN LAW FOR AN APPROACH TO SENSED STATES' DEMANDS

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With the impending potential privatization of the United States' successful Landsat remote sensing system, attention is being focused on the legal issues surrounding the operation of these "eyes in the sky." Much of the controversy in recent years has concerned the rights of sensed states regarding the use of their territories' images. Jeannette T. Biondo outlines the viewpoints of the various countries involved, and describes the apparent inability of the current United Nations negotiations to result in an agreement. She then proposes ways in which sensed states might make use of American copyright, privacy, and trade secret law to secure the right to participate in remote sensing operations.

I. INTRODUCTION

The technological inventions of the past century have drastically altered the way people and nations interact. The advent of computers and satellites has minimized the importance of political and geographical boundaries in the process of communication. No longer can a mountain, or a government censor, prevent the flow of information domestically or internationally. Many forms of communication are thus able to function without legal impediment.

The new types of legal problems created during the past twenty five years have little historical precedent. Many new processes and forms of information lack universal definition. As a result, legislation has lagged behind innovation as policy makers try to establish a new order of international interaction.

One technology spawning much international debate in the field of information is that of remote sensing satellites. The development of these "eyes in the sky" has raised questions concerning the property rights to

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the information they collect. Their sisters in the sky, communications satellites, also face a crisis over property rights to their broadcasts.

Much of the controversy regarding satellites and information resources is centered on the United States, the technological and systems leader in the field. Given its dominance in satellite and information resources, the United States is an important actor in any debate on information policy and international law. Yet, despite its role of technological and economic leadership, the United States has been slow in developing its own coherent and comprehensive policy on information. The governmental agencies making U.S. information policy are widely dispersed and pressure from special interest groups is intense. As a result, legislative solutions have been piecemeal at best.

The main dichotomy in U.S. policy has been the conflict between the principles of the free flow and collection of information on one hand, and the protection of the property rights to that information, on the other. The example of U.S. policy on the protection of American motion pictures versus the policy on remote sensing satellites illustrates the conflict. American companies broadcast films via satellites in space, yet feel it is theft if an unauthorized party receives the signal and disseminates it for his own use, be it for profit or education. The United States claims that such actions constitute copyright infringement, even though there may exist no copyright agreement between the United States and the state in whose territory the offending party acts. In fact, the United States is a party to few international copyright agreements. The United States maintains that the property right in this information belongs to the concerned American party even though the original satellite's relay of this information was uninvited by the state of the receiver and unprotected in the sky.[1]

The other side of this controversy lies in the collection of information by remote sensing satellites. The United States controls and operates the Landsat system, which orbits the earth collecting information on weather conditions, crops, forests, water supply, and natural resources. This information is then sold to whomever wants to buy it, be it a multinational corporation or a foreign government. The United States collects this information freely, as it is in practice impossible to block its collection. The sensed state has no say as to whether photographs are taken of its country, let alone over who has access to the sensed information. The United States promotes the principles of free flow of information yet accords no property rights to sensed countries. As a result, the U.S. is

1. Sometimes the foreign copyright infringer is the foreign state itself. *See, e.g., Films Thrust beyond Copyright's Umbrella*, N.Y. Times, Oct. 27, 1983, at A30, col. 5.

seen as molding its information policy to serve its own interests, regardless of what might be rights of the other members of the international community.

Most developing countries, however, feel that they should be able to control the collection and transmission of information about their natural resources, particularly when the United States reserves the right to protect certain kinds of its own information. To developing countries this is a vital issue of national sovereignty: an issue which strikes at the very foundation of the entire international system. The question of who should "own" the remotely sensed information is thus at the heart of the information controversy.

Much of the discussion on the issue of property rights to remotely sensed information has taken place in the United Nations Committee on the Peaceful Use of Outer Space (UNCOPUOS). There, "the legal implications of remote sensing of the earth, with the aim of formulating draft principles"[2] has been on the agenda for the past decade. As has been common in the United Nations, the debate over this agenda item has yielded little, if any, progress.

In order to move away from the often stale polemical exchanges of the UN, this article will explore some arguments a sensed country might use in order to illustrate its point of view, based on American legal concepts of the protection of information. Since the United States controls Landsat, the best existing remote sensing system, it seems appropriate to use American legal principles in looking for a solution to sensed countries' concerns. This exercise will require new definitions and flexible ways of looking at this technologically induced problem. While traditional diplomacy has been unable to bring forth solutions, perhaps what is needed is for the developing world to argue with the United States on its own terms. Such action could take debate out of the purely ideological realm and place it within the context of legal positivism.

The article will first examine problems and arguments surrounding the remote sensing issue in international fora. This will lay the groundwork for drawing analogies between remotely sensed information and the treatment of certain kinds of information under U.S. law. The American legal principles to be examined are copyright, the right to privacy, and trade secrets. Under current interpretations, these laws do not lend themselves directly to the control of remotely sensed information. Rather, the concepts need to be extrapolated and applied in a new way to solve the remote sensing controversy. This article therefore removes the dis-

2. United Nations Committee on the Peaceful Use of Outer Space, Report of the Legal Subcommittee, 39 U.N. GAOR (337th mtg.) at 1, U.N. Doc. A/AC.105/337 (prov. ed. 1984).

cussion, for the time being, from the public international law arena and puts it in terms of national private law.[3]

II. General Views

A. The Basics of Remote Sensing

In general, remote sensing is the "observation of a target (object) by means of a device (sensor) which is separated from the target by a given distance. Sensors can be mounted on a large variety of aerial or space platforms operating at different altitudes and for different periods of time."[4] The first and most advanced remote sensing system is the United States' Landsat system, the first of which was launched in July 1972. The Landsat system is composed of a series of earth-resources satellites in polar orbit.[5] Currently, two Landsat satellites, Landsat-4 and Landsat-5 (launched 1 March 1984), are in service, although Landsat-4 is only partially operational. They orbit the earth 440 miles above the surface, and cover an area including some of the oceans and almost all the land every sixteen days.[6] The results of these satellites' measurements are digitized on board the satellite and relayed to the ground receiving station. The processed data can be used to determine crop and forest yields, monitor pollution, and pinpoint sites for oil and mineral exploration.

The Landsat system currently costs the U.S. government $150 million a year and produces less than $20 million in revenue annually. Twelve countries have built Landsat receiving stations at a cost of two to five million dollars each. These stations receive Landsat data relating to the local region as the satellite flies over; the receiving country can then use and sell the data. The fee for this right is $600,000 a year. Landsat information is considered to be public property; anyone can buy it on an open, non-discriminatory basis. Consequently, some businesses have been allowed to buy Landsat information and copy it for resale.[7]

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3. Article 38(1)(c) of the Statute of the International Court of Justice provides: "The Court, whose function it is to decide in accordance with international law such disputes as are submitted to it, shall apply: . . . the general principles of law recognized by civilized nations . . . ." And legal traditions traceable back to the Romans support the use of national legal systems' general concepts as a source of international law. *See* H. LAUTERPACHT, PRIVATE LAW SOURCES ANALOGOUS OF INTERNATIONAL LAW (1927).
4. United Nations Committee on the Peaceful Use of Outer Space, Report on the First International Seminar of Remote Sensing to Operational Agrometeorology, 38 U.N. GAOR (328th mtg.) at 6, U.N. Doc. A/AC.105/328 (prov. ed. 1983).
5. *Id.* at 7.
6. *Up for Grabs: A Potential Goldmine in the Sky*, BUS. WK., Mar. 19, 1984, at 29.
7. *Id.*

The ownership of this Landsat system, however, is about to change. Because of the system's costs, the Reagan administration has decided that the government should turn it over to a private company that can market its products more effectively, and thereby turn a profit. According to an official at the National Oceanic and Atmospheric Administration (NOAA) the United States is ready to sign a contract with a group named "Earth Observation Satellite" (EOSAT), a consortium led by Hughes and RCA. The deal calls for continuing U.S. government support for a transitional period. Funding and final approval may occur during the current session of Congress.[8]

This commercialization of the remote sensing system could provoke an onslaught of criticism from developing countries regarding prices, which will likely be raised, and concern about the continuation of the flow of data. William Lazarus writes, "Given the enormous cost of exploration and extraction of resources, the cost of Landsat data products at ten (or perhaps even one-hundred) times current price will be insignificant to major multinational mineral and petroleum firms."[9] With regard to the continuation of the data flow, there exists the possibility that Landsat's owners could use a data relay satellite to return data directly to the United States, thus circumventing the ground receiving stations that have been established throughout the world. Indeed, without the prodding of the U.S. government, there is no guarantee that Landsat-6 will be sent up to continue the system when Landsat-5 ceases functioning in about three years. Other causes for concern may be a more stringent exercise of property rights over the information produced and a crackdown on the copying of materials.

Among the developing countries, there may be the fear that they may lose some political leverage when Landsat is privatized: the countries generally prefer to deal on a government-to-government basis, as this gives them greater political leverage. But the transfer of Landsat to a private consortium may yield the benefit of encouraging the use of American laws dealing with the private sector.

B. The View from the South

Among the developing countries, it is generally agreed that the sensed states should be involved in both the operation of remote sensing satellites and the dissemination of the information they collect. It is clear that

8. Telephone interview with Cary Gravatt, National Oceanic and Atmospheric Administration — National Environment and Satellite Information Services (Nov. 28, 1984).
9. W. Lazarus, *Landsats, Minerals and Development: A Qualitative Notion of the Down-Side Risk*, in INFORMATION, ECONOMICS, AND POWER 109 (R. C. O'Brien ed. 1983).

these countries, technologically dependent on the West, cannot afford to launch their own remote sensing satellites. Nor are all able to build their own receiving stations. Therefore, some sort of an agreement is needed regarding the dissemination of collected information.

The mere fact that these countries are the sensed object forces their involvement in remote sensing activities. Consequently, the developing countries have encountered problems in identifying those norms of behavior and concepts of property rights satisfactory to all parties. Although views within the developing world vary on the remote sensing issue, in general, the developing countries are united in their opposition to the policies of sensor countries.

For the most part, the sensed states of the developing world feel that they should be consulted before their territories are sensed, that they should have the right of first access to the information regarding their territories, and that they should be able to control the release of the information to others. Most countries feel that remote sensing without prior consent constitutes a direct infringement on their right of national sovereignty. Remote sensing data can provide other parties with a precise view of a country's agricultural and natural resource potential. Dissemination of such information could adversely affect the interests of the sensed state by putting "the space power in an advantageous position in international markets by cornering data on the resources of a country."[10] Lazarus has concluded that "the fears reflected in certain developing countries [sic] push for a more 'restrictive approach' to remote sensing are not chimerical but real in at least one important sector — the use of satellite imagery for mineral and oil exploration/extraction."[11]

Another major concern relates to the concept of permanent sovereignty over natural resources. Many feel that sovereignty should apply to all data and information collected by remote sensing. In 1962, Resolution 1803 was passed by consensus in the General Assembly of the United Nations. Operative paragraph number two states, "The exploration . . . of natural resources . . . should be in conformity with the rule and conditions which the peoples and nations freely consider to be necessary or desirable with regard to the authorization, restriction or prohibition of such activities." Because remote sensing of natural resources apparently falls within the meaning of "exploration," the developing countries believe they should retain the internationally recognized right to "authorize, restrict or prohibit" such activities. Even though the technologies avail-

10. United Nations Committee on the Peaceful Use of Outer Space, 38 U.N. GAOR (383d mtg.) at 8, U.N. Doc. A/AC.105/c.2/SR.383 (prov. ed. 1983) (statement of Mr. Calixto Reyes).
11. W. LAZARUS, *supra* note 9, at 104.

able today did not exist in 1962 when the resolution was drafted, the principle should still be relevant: a state's permanent sovereignty over its natural resources should imply the violation of that sovereignty by remote sensing.

Many sensed states appear to acknowledge the legality of remote sensing as such. However, it is the dissemination of sensed data that they seek to control. As Chile urged in a UN working paper in 1984, "A sensed State shall have access, on a priority basis, to data concerning its territory which are considered crucial for its development. The sensing State may not divulge such data to a third party without the prior consent of the sensed State."[12] Other developing countries have made less demanding proposals for participation in remote sensing activities. Venezuela, for example, has requested only that the sensed state be "ensured full access by the sensed country to the information about its territory and natural resources gathered by the sensing country."[13]

C. The View from the East

The Communist bloc countries' view is similar to that of the developing world, although to it is added its complete aversion toward capitalism. The delegate from the USSR at UNCOPUOS asserted, "We can not agree that remote sensing data concerning territories of sovereign states should be the subject of free purchase and sale. That system would constitute a free market in remote sensing data."[14] The Soviet delegate also stressed that the sensing states must accept international responsibility for any serious damage that could result from the dissemination of data. For example, a large American mining company could discover a probable site for resource exploitation and subsequently use this information to gain an unfair advantage over the poor, information-deprived country within whose boundaries the resources were found. Thus a rich nation and its institutions could do "irreparable damage" to a poor sovereign state. The Soviet delegate complained that the "only people who can not see this [possibility of damage] are those who do not wish to see it. They try in various ways to dilute and if possible to abolish the principle of respect for State sovereignty."[15]

The Eastern bloc countries have also firmly established their view on remote sensing activities in the "Convention on the Transfer and Use of

12. Report of the Legal Subcommittee, *supra* note 2, at 19.
13. United Nations Committee on the Peaceful Use of Outer Space, 39 U.N. GAOR (258th mtg.) at 36, U.N. Doc. A/AC.105/PV.258 (prov. ed. 1984) (statement of Mr. Taylhardat).
14. United Nations Committee on the Peaceful Use of Outer Space, 39 U.N. GAOR (263d mtg.) at 6, U.N. Doc. A/AC.105/PV.263 (prov. ed. 1984) (statement of Mr. Kolosov).
15. *Id.*

the Remote Sensing of the Earth from Outer Space," signed in Moscow on 19 May 1978. This convention expresses the belief that the "inalienable right of all nations to dispose of their natural resources and of information concerning those resources should be respected."[16] The signatory nations agreed among themselves that data or information "about the natural resources or the economic potential of another Contracting Party shall not disclose such information or make it available to anyone except with an explicit consent of the [sensed state]."[17]

The delegate from Romania, although a signatory to the Soviet bloc convention, stressed a different point at the UNCOPUOS meeting. He felt the concept of legal equality was most important to the issue. All states should have access to remote sensing information "without any discrimination and on agreed reasonable terms."[18] At present, the delegate noted, the remote sensing data is too expensive for the developing countries; the sellers of the data thus have unfairly discriminated against the poorest countries.

D. The View from the West

The Western industrialized countries universally accept the United States' principle of "public, non-discriminatory dissemination of remote sensing data."[19] These countries, morever, support the idea of technical cooperation among nations in the development of remote sensing collection and analytical capabilities. Because the industrial democracies dominate the remote sensing industry, those countries stand to benefit from the expansion of trade in technologies related to remote sensing. In particular, the developing countries are dependent on the West for the technical expertise of analysts who can interpret the remote sensing data.

None of the industrial countries agrees that prior consent or primary access should be considered a right of the sensed state. A delegate from France at the 1984 UNCOPUOS conference has pointed out that "it is often impossible to accord priority access to the sensed State due to technical realities."[20] Such "technical realities" include the fact that a

16. Convention on the Transfer and Use of Data of the Remote Sensing of Earth from Outer Space, May 19, 1978, STAFF OF SENATE COMM. ON COMMERCE, SCIENCE & TRANSPORTATION, 95TH CONG., 2D SESS., SPACE LAW 490 (Comm. Print 1978).
17. *Id.* art. V.
18. Report of the Legal Subcommittee, *supra* note 2, at 36.
19. United Nations Conference on the Exploration and Peaceful Uses of Outer Space, National Paper of the United States, 39 U.N. GAOR (53d mtg.) at 7, U.N. Doc. A/Conf.101/NP/53 (prov. ed. 1984).
20. United Nations Committee on the Peaceful Use of Outer Space, 39 U.N. GAOR (263d mtg.) at 4, U.N. Doc. A/AC.105/PV.263 (prov. ed. 1984) (statement of Mr. Pouzoulet).

single remote sensing photograph can cover huge portions of the earth's surface and that it may not be feasible to isolate one country's territory.

But as one Western researcher has written, "It does not . . . seem inconceivable that a mask in the shape of a country's boundaries might be electronically overlayed on a scene. The data within the boundaries could then be separated out of the total scene and rerecorded for dissemination."[21] In a working paper submitted to the Legal Sub-Committee of UNCOPUOS in 1984, the French delegation did include the provision that the sensing state "shall consult a State whose territory is sensed, without delay and upon request by the latter State."[22] This submission acknowledged that the sensed state, at the very least, has the right to let its voice be heard by the sensing nation.

The United States' approach to remote sensing has generally been to ignore calls for prior consent and priority access from the developing countries. Rather, the U.S., in addition to advocating the free collection and dissemination of data, has promoted the view that remote sensing will "advance the cause of world security and will allow for a better use of world resources."[23] According to the American view,

1) Satellites are not able to detect political boudaries.
2) The problems to which remote sensing satellites are addressed are of global proportion.
3) It is unlikely that countries obtaining Landsat data could effectively operate ground stations under a restrictive dissemination system.
4) A restrictive dissemination system would exacerbate the division between rich and poor countries.
5) The sensing of primary data of one country is a right fundamental to the 1967 Outer Space Treaty.[24]

E. Recent Developments at UNCOPUOS

The United Nations Committee on the Peaceful Use of Outer Space has been given the task of formulating draft principles to deal with the legal implications of remote sensing. In particular, the Working Group of its Legal Sub-Committee has been the forum for debate on this issue.

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21. W. LAZARUS, *supra* note 9, at 116. The West German delegate referred to the "practical problems in separating remote sensing data according to territories." United Nations Committee on the Peaceful Use of Outer Space, 39 U.N. GAOR (263d mtg.) at 19, U.N. Doc. A/AC.105/PV.263 (prov. ed. 1984) (statement of Mr. Damian).
22. Report of the Legal Subcommittee, *supra* note 2, at 35.
23. Christol, *Remote Sensing and International Law*, 5 ANNAL OF AIR & SPACE L. 395 (1980).
24. *Id.* at 397.

Over the past decade the working group has reached no significant agreement. 1984, in particular, was a non-productive year. As the delegate from Brazil explained:

> My delegation cannot but express its deep frustration over the lack of progress shown in our work. There is an inability to bridge gaps between different positions, a fact that is leading to a virtual paralysis of our deliberations in clear contrast to the current boom in space activity. Negotiations remain deadlocked on the dissemination of data and the ensuing responsibility.[25]

All parties to the issue have become frustrated with the stubbornly ideological debate. It seems that negotiations may soon break down completely.

A draft report of fifteen principles has been formulated. But because these principles incorporate each party's point of view, most of the document — from definitions to prior consent, primary access, and responsibility — is still disputed. In 1984 the parties made no progress in further refining these principles. The diverse views of all participants seem to preclude any reasonable agreement being reached in the future unless there is a radical shift in the balance of power away from the information and technology-rich countries. This problem is not new to the international arena where short-term perceptions of self interest rule policy decisions. In essence, the powerful countries are winning the battle: they have yielded nothing, but rather have maintained the status quo in their favor. The developing countries have gained little more than the opportunity to voice their concerns in an international forum.

Since the United Nations has proven unable to resolve these problems to the satisfaction of the developing countries, it seems up to individual nations to formulate a coherent plan to be presented to developed countries which own the remote sensing systems: the United States (Landsat), France (SPOT) and the Soviet Union. The United States, because it maintains the most commercially entrenched system, seems the most important party with which to reach an agreement.

In the past, the developing countries' demands have proved too radical for the United States. It seems that those countries will, therefore, need to develop a new line of reasoning in order to get the U.S. to look at the remote sensing issue in a different light. The following section suggests some ideas on which a future agreement could be based.

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25. United Nations Committee on the Peaceful Use of Outer Space, 39 U.N. GAOR (258th mtg.) at 9, U.N. Doc. A/AC.105/PV.258 (prov. ed. 1984) (statement of Mr. Figueriedo).

III. American Legal Concepts and Their Application to the Remote Sensing Issue

Transfering the issue to the arena of national private law may offer a new way to search for solutions to the legal issues involved with remote sensing. Copyright, the right to privacy, and trade secrets are areas of law whose principles may be applicable to remotely sensed information. The analogies drawn below may offer a new way of looking at a highly controversial issue and provide a catalyst for negotiation.

A. Copyright Law

The Statute of Queen Anne in 1709 established the policy in England, and later in the United States, that a property right exists in printed works. Morally, it was agreed that authors should benefit from the fruits of their labor. During the same period, John Locke developed a theory of the intellectual property right of authors. As Edward Ploman has written, "In its mature form, the theory maintained that the author's rights are not created by law but always existed in the legal consciousness of man. In other words, copyright was a right growing out of natural law."[26]

Many former colonies share the Western legacy of copyright protection due to the incorporation of these foreign legal principles in domestic legislation. Other countries have also adopted various forms of copyright protection. Today, many developing nations still support the concept of copyright, in the interest of promoting and encouraging the development of domestic intellectual works. However, at the same time, a developing country may rely on various forms of foreign information for entertainment, education, and practical innovation in agriculture and industry. Because much of this information may be too expensive to import legally from the foreign copyright owner, a government may allow, through lack of enforcement, independent businesses to copy and sell foreign copyrighted materials for profit. The governments view such activities as fulfilling a social need for information and knowledge.

Copyright protection also serves to protect economic incentives for the production of copyrightable works. Copyright law not only remunerates the author for his work but also serves to regulate trade and commerce. This function is most often seen for information which is treated as a commodity and is bought and sold in the market.

Due to the large number of copyrightable artistic and literary works that are produced in the United States, U.S. copyright law is an impor-

26. E. Ploman, Copyright 13 (1980).

tant source of legal principles in the field. The United States Code provides copyright protection to "original works of authorship fixed in any tangible medium of expression, now known or later developed."[27] These works of authorship include:

1) Literary works
2) Musical works, including accompanying words
3) Dramatic works, including accompanying music
4) Pantomimes and choreographic works
5) Pictorial, graphic and sculptural works
6) Motion pictures and other audiovisual works; and
7) Sound recordings.[28]

But, as the legislative history of the section makes clear, this list of materials eligible for protection was not intended to "freeze the scope of copyrightable subject matter at the present stage of communications technology."[29]

How can the U.S. copyright law be applied to remotely sensed information? It might be argued that remotely sensed data contain no original, man-made inputs. Moreover, it seems as though the sensed country itself apparently has played no part in putting the information into a tangible medium. In the absence of these two essential qualities, it would seem a sensed country has no property rights in remotely sensed information. Nevertheless, it may be possible to draw a helpful analogy.

When an artist paints a painting, he has created a copyrightable work of which he can retain the copyright even if he is no longer the owner of the painting. If a developing country, empowered by the natural law of permanent sovereignty with the ability to enact positive law, were to decide that its land mass is legally equivalent to a piece of art, an analogy to the situation of the artist and painting could be drawn. The people own the land mass and resources, just as an artist might own his painting or sculpture. The equivalence would be especially strong with regard to man-made objects in the landscape, such as dams and cultivated fields, which are inevitably included in remotely sensed information. In this case, any copying of the painting (the land mass) would entitle the copyright owner (the sensed country) to protection from copyright infringement. Such infringement would occur when the information regarding a state's land mass and resources is relayed down from the satellite to a ground station, and reproductions are then made and sold.

27. 17 U.S.C. §102 (1976).
28. *Id.*
29. H.R. REP. No. 1476, 94th Cong., 2d Sess. 53 (1976).

It is true that the remote sensing company may own the actual photograph, which is only a copy of the sensed state's land, but the sensed state owns the copyrighted original, and thus may have the exclusive right to reproduce the original. The remote sensing company does not have such a right. The United States, which accords national treatment to copyrighted works of foreigners would, in the eyes of the sensed state, thus be in violation of the United States' own copyright laws. This analysis presumes the sensed country's view that the United States should accord copyright protection in the same circumstances which the sensed country accords protection. At the very least, the sensed country feels it is entitled to a royalty payment for the reproductions of the image of its land showing dams, farms, and cities. By asserting a new definition of what is copyrightable, based on United States law, the developing countries could argue that they already have legal control over the information about their own territory. Under this analysis, all that would be required would be an extrapolation of copyright law to cover foreign territory or, at least, the products of foreign labor in its own territory.

Even without an extension of U.S. copyright law, an idealistic suggestion perhaps, why would it be advantageous for the United States to shift its policy to acknowledge property rights in remote sensing information? Why should the United States pay for something it now takes for free? Politically, the United States has a lot to gain by showing, through action, to the developing world that it has respect for all participants of the remote sensing process including the sensed state. Under American custom all parties in a business relationship have some rights. By recognizing the sensed country's part in the remote sensing process, the United States would show it the respect of being a partner and not just a powerless victim. Just as Landsat should be compensated for the value of its efforts to collect and reproduce remotely sensed information, so the sensed state should receive something for the value it contributes to remotely sensed photographs.

For instance, an agreement could be reached that would acknowledge that the sensed country's input had some value and thus the payment of a royalty would be appropriate for the right to collect such data about a country and then sell it to third parties. Such an agreement would be analogous to a publisher-author contract, where the author is entitled to a certain royalty payment for each copy of a work the publisher is able to sell. With the Landsat system about to be commercialized, there is little doubt that profit will be the goal of Landsat's new owners. The sensed countries, which contribute to that profit, may justifiably demand to receive a share.

If the United States were to make this concession and acknowledge that the sensed state did hold a property right in the remotely sensed information, the sensed state might be more likely to moderate its demands for priority access to information about its territory. The United States, which supports the policy of free dissemination of information on reasonable terms, might be willing to pay the sensed states a royalty if they agree to the principle of free dissemination of information. Both parties to this agreement would thus be yielding something to the other. Monetarily, the necessary royalty need only be small for the U.S. to placate the developing countries and to acknowledge their property rights. To the sensed state, however, the violation of its national sovereignty or copyright law (if it had legislated any), would be arrested by its consenting to remote sensing activities and receiving of a royalty. For a low-income developing country, this gain would be great. This kind of compromise reached between nations would be a positive example of international cooperation. The basic principles and logic of copyright laws could be used as the catalyst for this negotiation.

B. Right of Privacy

The legal concept of a right to privacy is, for present purposes, closely related to the concept of copyright. Like copyright, this legal concept can be applied to the argument for acknowledging the right of the developing countries to be involved in some part of the remote sensing process. While the concept of the right to privacy varies from state to state in the United States, it is widely agreed that an individual has the right to be protected with respect to the use of his portrait or photograph for advertising or trade purposes. As the court in *Continental Optical Co. v. Reed* observed, the law has responded to a generally felt need "for the protection of persons against the unauthorized publication of their photographs, such publication being likened to the violation of a sort of natural copyright possessed by every person of his or her own features."[30]

The state of New York is felt to have the most well developed legislation that protects a person's right to privacy. Section 50 of the New York Civil Rights Law provides:

> A person, firm or corporation that uses for advertising or for the purposes of trade, the name portrait or picture of any living person without . . . written consent . . . , is guilty of a misdemeanor.[31]

30. 86 N.E.2d 306, 309 (Ind. Ct. App. 1949) (quoting Warren & Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890)).

31. N.Y. CIVIL RIGHTS LAW § 50 (1976).

Section 51[32] provides for enforcement by injunction and damages.

Based on such American legal principles, countries may be able to attain equivalent protection and rights regarding remote sensing photographs of their territories. They should have a "natural copyright of their own features." In particular, when remote sensing data is used for trade purposes, the foreign country should have some property right. By direct analogy with American law, countries should be accorded the right under international law to consent to or prohibit the use of the photographs.

The accepted logic behind the concept of a right to privacy may serve as a catalyst for prompting a remote sensing organization, such as the owners of Landsat, into a compromise arrangement with the sensed states. An attempt could be made by a sensed state itself, or by its affected mining company, to bring such a civil case against Landsat for invasion of privacy to a United States court. The most successful approach might be to bring such an action when Landsat has been privatized and thus deal with it as a private commercial company. It would seem clear that the remote sensing photographs were taken without the consent of the sensed party. In addition, the profits accruing to a privatized Landsat operator would clearly indicate the photographs were being used for trade purposes.

A similar legal question to be resolved would be whether a state or a corporation has a right to bring a suit on the issue of a violation of its right to privacy. Is a state or a corporation a personal entity entitled to privacy? If not, farmers of a sensed state might sue in a class action as individuals owning crop information. According to the *Restatement of Conflicts,* "[t]he existence of any such right [to privacy] in a corporation is not clearly established."[33] The possibility thus remains open that in some instances a corporate entity, or a state, might be able to make a case showing an invasion of privacy. The new and increasingly powerful remote sensing satellite may present a new kind of invasion of privacy that has not been examined in American courts in the past. New definitions may therefore need to be established.

If a decision were to be reached in a U.S. court in favor of the sensed country, Landsat's operators might then be more or less forced into establishing a formal arrangement with the sensed entity if its remote sensing were to continue without legal violation. This agreement might be similar to that discussed in the last section on copyright, whereby the sensed entity would be given a royalty from the sale of Landsat photographs of private resources. The implications of such a ruling could have

32. *Id.* § 51.

33. RESTATEMENT (SECOND) OF CONFLICT OF LAWS § 153 comment e (1971).

far reaching effects for other sensed countries as well. Eventually this might lead to the introduction of a new system for governing the remote sensing of territory including an international code of conduct acceptable to all participants in the remote sensing process.

C. Trade Secrets

An additional concept that could be applied to the remote sensing issue is that of trade secrets. As the *Restatement of Torts* states, "One who discloses or uses another's trade secret, without a privilege to do so, is liable to the other if . . . he discovered the secret by improper means."[34] According to the *Restatement,* "It is the employment of improper means to procure the trade secret, rather than the mere copying or use, which is the basis of the liability under the rule. . . ."[35] In general, the definition of trade secrets includes any "formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it."[36] However, it is clear that "[a]n exact definition of a trade secret is not possible."[37]

By analogy, it can be said that the information regarding the supply and location of resources, and the development of industrial installations, can be considered analogous in international law to what is protected as a trade secret in the municipal law of some countries. One may diligently attempt to keep such information secret within one's own country and within an individual business. The acquisition of such information within a state whose municipal law protects it, without permission of the persons to whom that law gives the right to dispose, use, or retain that information, seems improper. The sensing of such information from outer space could thus be seen as acquiring a trade secret by improper means. Once the data are disseminated by the sensing country, the secret no longer exists, and whatever advantage that was held by the owner of the information is gone.

An American case that lends itself well to this argument is *E.I. du Pont de Nemours & Co. v. Christopher.* According to Judge Goldberg,

> This is a case of industrial espionage in which the airplane is the cloak and the camera the dagger. The defendants were hired by an unknown third party to take aerial photographs of new construction at a plant of du Pont in Beaumont, Texas,

34. RESTATEMENT OF TORTS § 757 (1939).
35. *Id.*
36. *Id.* comment b.
37. *Id.*

> on March 19, 1969. The sixteen photographs were later delivered to the third party.[38]

Du Pont argued that the Christophers had wrongfully appropriated du Pont trade secrets, as the plant under construction revealed a new unpatented process for producing methanol. The Christophers argued that they had committed no actionable wrong in photographing the du Pont plant from public airspace. Judge Goldberg, however, ruled that regardless of the legality of the flight pattern, aerial photography in this case constituted an improper means of discovering a trade secret.

This case lends itself exceptionally well to our analogy to remote sensing. Both acts involve the taking of photographs from the air of unconsenting entities. In the case of du Pont, secrets vital to its competitive operations were stolen, as the court ruled. In the case of a sensed state, secrets vital to its resource development could also be improperly obtained by a remote sensing satellite. This form of industrial espionage is so technologically advanced that the affected state may not even be aware that it is being sensed and its secrets stolen. The sophistication of the remote sensing process thus seems injurious to those who are unable to prevent its occurrence and only discover that it has taken place after the trade secret has been widely disseminated. By then, it is too late to prevent damage.

In the *du Pont* case the court defended du Pont's right to have the trade secret exposed to view from the air:

> To require to put a roof over the unfinished plant to guard its secret would impose an enormous expense to prevent nothing but a schoolboy's trick. We introduce here no new or radical ethic since our ethos has never given moral sanction to piracy. We should not require a person or corporation to take unreasonable precautions to prevent another from doing that which he ought not to do in the first place.[39]

No doubt, a sensed country would applaud this statement. Just as a sensed country cannot prevent the taking of photographs from space, it should not have to accomplish this "unreasonable" task in order to safeguard its secrets.

This case of industrial espionage is one example of the increasingly varied means of procuring trade secrets from unsuspecting entities. The more common form of industrial espionage is electronic eavesdropping, which has historically been considered in U.S. courts as being "improper

38. 431 F.2d 1012, 1013 (5th Cir. 1970).
39. *Id.* at 1016-17.

means." The *du Pont v. Christopher* case "represents a judicial expansion against industrial espionage"[40] which illustrates that the courts have been willing to expand the definition of improper means as new devious practices are devised. Some states have expanded their legislation regarding trade secret violations dealing with industrial espionage. In the state of New Jersey, for example, the "criminal statute governing theft includes trade secrets as a form of property subject to full criminal sanction for theft."[41] With the development of ever more sophisticated means of industrial espionage, including the use of computers and satellite technology, the legislative and judicial attitude in the United States appears increasingly less permissive toward these activities.

Clearly, it appears that a case could be made based on U.S. laws and U.S. legal precedent on behalf of a sensed country or corporation which felt that its trade secrets had been improperly appropriated by a remote sensing satellite. Several hypothetical possibilities exist within this legal realm for bringing a civil action against a remote sensing corporation by a sensed entity.

For example, a nationally-owned mining company of a developing country may feel that the remote sensing carried out by the U.S. government (the owners of Landsat) reveals to the receiver of Landsat photographs trade secrets about its natural resource holdings or extraction process. The mining company may have tried to keep the sensed information secret and may have complained to the U.S. in the past that it did not consent to its territory being sensed from space by Landsat. The information thus acquired by its competitor by purchasing the Landsat product may prove to be damaging to the sensed state's mining company. In seeking a judgment in this case, the government of the sensed state could decide to bring a tort action against the U.S. government as the owner of Landsat in the United States. In doing so, the sensed state, the plaintiff, would yield its sovereignty with regard to the subject matter of the suit by willfully submitting its civil action to a judgment of a foreign court.[42] However, by having the case adjudicated in the United States, the sensed state would hope to illustrate to the U.S., in legal terms, that remote sensing of unconsenting entities can be contrary to established American legal norms. A decision of a U.S. court would have to be adhered to by the U.S. government and such an action may be the best way to establish, in the United States, the rights of countries to control information concerning their resources.

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40. E. KINTNER & J. LAHR, AN INTELLECTUAL PROPERTY LAW PRIMER 183 (1982).
41. *Id.*
42. *See* RESTATEMENT (SECOND) OF CONFLICT OF LAWS § 37.

Even if the foreign state were to lose, it would not be a major matter: U.S. municipal law and American municipal courts' pronouncements are not directly determinative of international law, but are at best merely evidentiary of one state's view. After the developing countries had thus exhausted their non-diplomatic remedies, diplomatic correspondence could follow.

Another interesting case might be presented when and if ownership and operation of the Landsat system is turned over to a private company. For example, a privately held mining company of a sensed country may feel that its trade secret has been appropriated improperly by Landsat. As both parties are private companies, a case similar to those illustrated above could be initiated. Devoid of direct government involvement, the sensed entity might find it easier to present a trade secret case in U.S. courts: the situation might then be seen, for the purposes of the plaintiff and the defendant, in purely legal terms thus somewhat removed from politics. If an American judge were to rule that remote sensing satellites were an improper means, the current system for handling Landsat-acquired information would have to be revised in order to remain within the law.

CONCLUSION

This article has tried to bring some new ideas to light on how to deal with a sensitive issue involving more than one sovereign nation. Particularly, when an issue involves a developing country, which might lack sufficient economic and political leverage to bring about an equitable solution, new tactics must be attempted. By bringing a case to U.S. courts based on an infringement of one of the three legal concepts suggested above, U.S. courts would be utilized as a forum for discussion and subsequently affect the making of public policy on the remote sensing issue.

Of course, the legal, political, and diplomatic problems to this course of action are immense. No developing country is likely to want to submit itself to a decision made by a foreign court either in favor of or against itself. A developing country might not want to risk antagonizing the United States on whose discretion it may depend for assistance. Possibly, no sensed state feels its privacy, trade secrets, or property rights have really been violated by remote sensing. Or perhaps these particular legal principles are not sufficiently analogous to the case of remote sensing.

In any event, lawyers and sensed countries may be inspired to take a new look at the problems of remote sensing and examine how these or other American legal principles apply. Risks must be taken if solutions

are to be found. Action is necessitated now as remote sensing systems will be introduced by Japan, China, and others in the near future. Injuries may already have occurred because highly sophisticated remotely sensed information has been available for over a decade. Further complications may arise due to the potential privatization of the Landsat system. The possibility of using the U.S. court system to render a decision on remote sensing offers some startling possibilities for the settlement of this international problem.