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# International Legal Framework for Remote Sensing Activities – Rights of the Developing Nations

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## ABSTRACT

*Remote sensing is an advanced technology used to identify, observe and measure an object from outer space without any manual intervention. The amount of information that could be collected vide the remote sensing activities tantamount to invasion in the privacy of an individual as well as to the neighboring nations. Though the Outer Space Treaty has declared the extra territorial space to be treated as a common heritage for all mankind, the rights of the states that are being sensed are violated. This poses a strong threat especially to the developing nations who are brought vicariously under the surveillance of the developed nations having an eye in the sky. The remote sensing technology of the developed nations are more advanced compared to the developing nations. Lack of a clear International legal framework has resulted in such a disparity and the legal subcommittee of the UNCOPUOS has not addressed the condition of the developing nations. The sovereignty principle of the United Nations is under threat by the nations collecting information of other sovereign states and are providing them information back to the sensed state at a cost.*

*The sensed information includes military strategies, minerals and yield of crops and personal privacy. Under the freedom of information, the leading nations such as the United States, European Union and Russia have defended their usage of remote sensing technology on other sovereign territories. The study will highlight the ways in which the rights of the developing nations have been denied and their privacy invaded. Further, the study will provide suggestions and recommendations to treat the sovereign nations equally and the need for an international legal framework to treat the nations equally.*

**Keywords:** *remote sensing, right to privacy, equality among states, remote sensing laws, developing nations*

## I. INTRODUCTION

Space based sensors are used to collect information from the ground and transmit back to the Government agencies like National Aeronautics and Space Administration (NASA), IKI, Russia, Indian Space Research Organisation (ISRO) etc., The objects in the Earth's surface

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are sensed through electromagnetic waves and the wavelengths are measured and processed under different class or type. “Remote sensing is the acquisition of physical data of an object without touch or contact (Lintz and Simonett, 1976, p.1). The field of remote sensing have been defined by different Scientists but for this study we define it as the image derived from the land surface of the property owned by a person or a Sovereign State sensed by another State through its agencies. The first person identified to have taken a photograph “remotely” using Balloons was Gaspard Felix Tournachon in the year 1859. Notably, balloons were used during the American Civil War and by the year 1909, aerial photographs were taken from Aeroplanes. During the World War 1, the aerial photographs were acquired on a frequent basis though the technology was rudimentary. In the 1920’s the use of photogrammetry began and with the use of specialized instruments.

The Environmental Research Institute of Michigan started the symposiums on remote sensing from the year 1962. In the third symposium, Landsat-I was discussed and subsequently in the Eighth symposium Lansat-I images were released. From visual examination of prints, digital analysis was enabled. In the same year, the interpreters were able to identify the introduction of missiles by the Soviet Union which assisted in addressing the Cuban Missile Crisis. The invention of Robert Colwell in the year 1956 (color infrared film) helped to identify diseases in cereal crops. In the same era, aerial photography was used for climatological and meteorological observations. Evelyn Pruitt coined the term “remote sensing” since aerial photography is being used to collect a wide variety of information. By the late 90’s the agencies introduced fine resolution imagery through satellite. Google Earth, released in 2005 provides satellite image of the earth at the disposal of non-specialist population or the common man.

In this century, the high-resolution data available in the hands of the nations are being used for the purpose of collecting information to assist their neighboring states on the positive side and to invade the privacy of the sovereign state on the negative side.

## **II. COMPARATIVE LENS: POSITIVE VS NEGATIVE**

The rights of the developing nations include the citizens of the respective nations and therefore the positive and the negative side will be discussed on the individual front as well as on the sovereign state’s perspective. The Facebook incident created an uproar among the citizens of the nations objecting to the intrusion of the agency on their right to privacy. The lack of an international legal framework stands as a hurdle to justify the violation. For all other human right violation, the justice system and procedure are available in the

international law. However, in the case of remote sensing space activities, involving intruding privacy of individual and the nations there is no law governing and there is no answer to the voices raised.

***Positive perspective – Individual:***

(i) **Development of an area:** The age-old technique of the authorities visiting the area to be developed was time consuming and the population of the respective area was unable to reap the benefits of any policy or programs framed by the Government. Surveying the land, depending on aerial photographs of lesser resolution and the difficulty in identifying the differences in topography, the risks involved and the need of the population delayed many projects assigned at the rural and urban level. The developing nations faced this more than the developed nations due to the huge population residing in the territory. The remote sensing imagery helps the concerned authorities to analyze the images and conclude on the advantages and the disadvantages in the development in an area. Quick decisions are being made and the alternative solutions are also drawn within a lesser time frame. The benefits of remote sensing directly reach the individuals or occupants of the area.

(ii) **Natural disasters:** Remote sensing assists in locating floods, forest fires and other nature disasters and thereby the rescue of the affected people from the location by the disaster management team or the volunteers is eased. Without the assistance of remote sensing imagery, it would be difficult to span out the area under damage with aerial photographs/videos. The data received from the remote sensing agencies assist the volunteers on the field to understand the impact and set on a rescue mission. There are ample examples of the rescue teams saving the lives of people with the assistance of images from space-based sensors. In case of floods, the image shows the extent of damage and helps the rescue team to foresee the measures to be taken.

(iii) **Conflicts:** Incidents of armed conflict and conflicts between ethnic groups have also resulted in innocent citizens being victimized. The individual, who is unknowingly victimized can be protected if the images are available to the authorities on real-time. The spread or increase of small trifle into a huge conflict in an area could be averted with the help of remote sensing images.

(iv) **Agriculture:** Cultivation is the backbone of many countries especially India. The attack of pests and the reason for low yield were unknown till the discovery of aerial photographs and remote sensing at the later stage. In the recent days, the attack of locusts was predicted earlier with the help of satellites. It is not just the common man who is being

benefitted, the weaker and the vulnerable section are the ones protected through this extra territorial service. The damage caused by the attack of pests and the yield of crops in an area are calculated through remote sensing images.

(v) **Climate:** As seen above, the images are used in rescue missions and also in mitigating greater risks due to changes in climate. A cyclone predicted by the agencies proceeds with providing the damage that is foreseen, the area that would be covered by the floods and the human/wildlife residing in the area to be affected. This assists the disaster management team and the voluntary organizations to rehabilitate the people to be affected and the lives are saved from being affected by the natural disaster.

### *Negative perspective – Individual:*

#### **Right to Privacy:**

Remote sensing is not directly related to individuals, but a factual information of the land, water and other resources available on the surface of the earth. Experiences of the marketing community indicate that the ability to integrate data by tying that data to its geographic location is one of the marketing industries most promising and powerful tools in compiling data from widely disparate sources on households and individuals - something that was a practical impossibility a few short years ago (Eitenbichler 1993).<sup>2</sup> The information gathered is local in nature and has strong analysing capabilities resulting in the accusation of invading the personal privacy of individuals. It decreases the citizen's ability to keep their affairs private and the level of information collected is also known to the citizens. The citizens are unwilling to trade the substantial positive benefits mentioned above with the loss of privacy. They are seldom asked for opinions and neither are they are involved in the decision making by the government authorities or the agencies. The right to privacy being constitutional right in most of the countries have not been preserved by the government nor the judiciary.

One of the more visible examples in which privacy concerns have altered government actions is the cancellation of national censuses in the Netherlands and West Germany. Because these governments were unable to assuage or accommodate their citizens' concerns over privacy and the potential misuse of personal information, citizen resistance forced cancellation of the censuses and the many substantial benefits of census taking were lost (Flaherty 1989).<sup>3</sup> The activists have been voicing against dissemination of the information gathered and the mere fact of the intrusion of a person's privacy is a breach.

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<sup>2</sup> Eitenbichler, S.B., ed. (1993). GIS in Business '93 Conference Proceedings. Boston: GIS World, Inc.

<sup>3</sup> Flaherty, David H. (1989). Protecting Privacy in Surveillance Societies. Chapel Hill and London: The University of North Carolina Press. 467.

Warren and Brandeis initially defined the right of privacy as the 'right of the individual to be let alone' and 'the right to one's personality' (Warren and Brandeis 1890).<sup>4</sup> This shows that the issues of privacy are broader and wider than articulated by the Government. GIS implementation and maintenance comes at a higher cost and therefore in most of the developing and developed nations the personal data is sold to private commercial establishments. Personal data thus collected is being used for marketing, banking, insurance, retail and other sectors. It is seen as a real threat and has become highly intrusive of the privacy of an individual. The threat destroys the democratic principles of the government lacking privacy laws and policies.

***Positive perspective – Sovereign State:***

According to the United Nations, remote sensing is an essential activity as during times of calamities and disasters the sensed states receive information from the sensing states. Though the working group of the Legal Sub-Committee of the UNCOPOUS was entrusted with drafting a legal framework it resulted unfruitful due to the upper hand of the developed nations in space activities.

The developed nations have been assisting the sensed states with data during forest fires, floods and to track clouds, growth of the city, discover and map topography.

***Negative perspective – Sovereign State:***

**Equality of States:** Article of the United Nations Charter clearly emphasizes that the states are equal among themselves.<sup>5</sup> The word “Sovereign” connotes the power of a state to exist without any interference and be equal. For varied reasons, political and economical, some nations have shown superiority over other nations or in other words the developed nations have been showing a tendency of domination over the developing nations. The domination though pushed subtly on the developing nations, have been accepted on the threat of economic sanctions. A sovereign state has the power to collect, control and disseminate information confined to its privacy laws, in the wellbeing of its citizens. The procuring of information through remote sensing by the developed nations to is an apparent breach of the sovereignty of a developing nation. As discussed above, the individuals have the right to privacy and similarly a state also has the right to privacy.

Moreover, the military strategies and the natural resources available in a state are being compromised through VHR remote sensing. The developed nations do not approach the

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<sup>4</sup> Warren, S.D., and L. Brandeis (1890). "The Right to Privacy." Harvard Law Review 4.5: 193- 220.

<sup>5</sup> Lee TH (2004) 'International Law, International Relations Theory, and Preemptive War: The Vitality of Sovereign Equality Today. Law and Contemporary Problems 67: 147-167

sensed states for their consent. The information gathered also includes sensitive information which normally would not have been disseminated by the concerned sensed state by itself. The question arises as to whether this amounts to spying or a remote espionage on a sovereign state.

**Informational Rights:** According to Raysman et al.<sup>6</sup>, informational rights include “all rights in information created under laws governing patents, copyrights, mask works, trade secrets, trademarks, publicity rights, or any other law that gives a person independently of contract, a right to control or preclude another person’s use of or access to the information on the basis of the rights holder’s interest in the information.”

The informational rights such as copyrights, trademarks, patents etc., are infringed by the sensing states. The WTO agreement states that the protection of the rights is only with reference to “creation of the mind”. In the remote sensing activity, a person or agency captures the image with the help of the remote sensors from the space and there is no creation of the mind.

**Prior Consent:** Article IV of the Principles Relating to Remote Sensing of the Earth from Outer Space expresses the principle of freedom of exploration and use of outer space on the basis of equality”. Therefore, the freedom to explore negates the question of receiving consent from the sensed state. The United States has an overwhelming lion’s share of the global remote sensing market and as a result, its practices most likely form the norm on any remote sensing issue. The position of the United States, which is echoed by other Western spacefaring nations, is the principle of public non-discriminatory distribution of remote sensing data.<sup>7</sup>

### III. POLICIES ON REMOTE SENSING:

Remote sensing laws and policies in the United States are divided into three eras: 1972 – 1983, 1984 – 1992 and 1992-2004.<sup>8</sup> The first era was only about the United States National Policy driven by the Cold War goals that data will be available on a quid pro quo basis. The second era attempted commercialization of the U.S. Landsat system and the advent of the National Center for Remote Sensing, Air, and Space Law U.S. Department of Commerce / National Oceanic and Atmospheric Administration 6 French Satellite Probatoire

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<sup>6</sup> Raysman R, Pisacreta EA, Ostrow SH, Adler KA (2014) Intellectual property licensing: forms and analysis. Law Journal Press, USA.

<sup>7</sup> Litfin K (1998) Satellites and Sovereign Knowledge: remote sensing of the global environment. *The Greening of Sovereignty in World Politics*, pp: 193-222.

<sup>8</sup> Joanne Irene Gabrynowicz, *The Perils of Landsat from Grassroots to Globalization: A Comprehensive Review of U.S. Remote Sensing Law with a Few Thoughts for the Future*, 6 *Chi. J. Int'l L.*45 (2005).

d'Observation de la Terre, SPOT 1, and India's Indian Remote Sensing Satellite, IRS-IA. The United States, India and France commercialized the data and the user community was the commercial market. The third era began with the Federal Remote Sensing Statute and the Landsat system was restored to the public sector. Government entities used the data for security and also for environmental conservation.

#### **IV. REMOTE SENSING LAWS:**

“Remote Sensing” is a concept which falls under the umbrella of International law as nations are involved and the activities are related to space. As discussed above, the Outer Space Treaty has provided exploration rights and common to mankind principles and therefore there has been no specific law relating to remote sensing activities. The working group of the Legal Sub-Committee of the UNCOPOUS was unable to provide a solution to the unaddressed issue. The major drawback is the dominance of the space faring nations or mostly the developed nations over the developing nations who are the victims.

The United States and Canada have a transparent remote sensing legal regime though the Canadian Statute is based on US Land Remote Sensing Policy Act with a few distinctions. Korea, China and Germany look to the US laws in framing their own legislations. While Australia and Argentina have their own Space laws incorporating remote sensing activities. India has an overall comprehensive policy and Malaysia frames regulations. Developing nations like Belgium and Nigeria are developing their own national space laws inclusive of remote sensing activity.

Independent National Space Laws and Remote Sensing Laws do not address the issue between two states as there is no agreement between the states on the policy of its own. The developed nations may show restraint being the dominant parties in the sector. The developing nations have a duty to knock the doors of the Legal sub-committee of the UNCOPOUS to bring about a fair play.

#### **V. CONCLUSION**

The general principles, trends and practices with regard to remote sensing are the same across the nations. The difference is with regard to sharing of information and dissemination of information to the commercial sector. National space laws are being drafted by the nations in the space race, but there are no signatories and the applicability of the national law universally maybe questioned on the ground that the Outer Space Treaty works on the principle of common heritage to all mankind. The negative impacts need to be divulged, eliminated, minimized, or accommodated and weighed against the positive. The government's

need to be informed is in direct conflict with the individual's right to be let alone. An international legal framework with all the stakeholders or all the spacefaring nations as members will assist in resolving the disparities and the major concerns with regard to privacy and espionage.

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