

New Challenges to the Traditional Principles of the Law of War Presented by Information Operations in Outer Space

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Abstract

With the rapid development of space information technology and constant advancement of militarization of outer space, the legal aspects of information operations in outer space have aroused the attention of international community. Information operations in outer space have brand-new features and means, which are apparently different from those of traditional operations, thus challenging almost all major aspects of the traditional principles of the warfare law. This paper makes a pilot study on challenges to the traditional principles of the law of war against the background of information operations in outer space from the following three aspects of the regulations in the law of war: Jus ad Bellum, Jus in Bello and neutrality.

Keywords: Information operations in outer space, The law of war

1. Introduction

The law of war is a branch of international law. It is a combination of promissory principles, regulations and systems that adjust the relationship between each side of belligerents and between belligerents and nonbelligerents, regulate the conduct of operations during the process of war and armed conflict. The current principles and regulations of the law of war are mainly embodied in the system of "Hague Law", "Geneva Law" and the U.N. Charter. The Hague Conventions and Geneva Conventions established the basic principles of the law of war such as military necessity, discrimination, proportionality, avoiding superfluous injury and unnecessary suffering, prohibition against indiscriminate weapons, prohibition against perfidy, and protecting the rights and interests of neutral powers and persons. And the U.N. Charter creates a broad prohibition against the use of force within the international community.

As a domain of war, information operations in outer space must be subject to the related regulations in the law of war. However, the information operations in outer space have brand-new features and means, which are apparently different from those of traditional operations, and thus challenged almost all major aspects of traditional principles of the warfare law.

2. Jus ad Bellum: Does information attack on space assets constitute a "use of force"?

The Jus ad Bellum provides necessary conditions that justify a nation's resorting to arms. In modern society, the Jus ad Bellum is mainly embodied in the U.N. Charter. The principal tenet of the United Nations is to maintain the global peace and security. Following the Pact of Paris of 1928, the U.N. Charter creates a broad prohibition against the use of force within the international community which is embodied in Article 2(4): "all members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations". However, the U.N. Charter doesn't prohibit all kinds of wars. Article 51 states: "[n]othing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security", so the legitimacy of self-defense wars is approved by the U.N. Charter. The Charter also approves of the operations authorized by the U.N. Security Council for the purposes of maintaining or restoring international peace and security, which is embodied in Article39, 41 and 42 of the Charter. Except for the articles in the U.N. Charter, the international society also approves of the legitimacy of wars

for the national independence and liberation. Besides these 3 conditions mentioned above, the threat or use of force in international relations is illegal.

The U.N. Charter has created a broad and strict restriction against the "use of force". It can be affirmed that the rules on the use of force during peace times set out by the U.N. Charter apply fully to activities in outer space. Thus nations are obliged not to use force in their relations with each other unless they are acting in self-defense or when authorized to do so by the U.N. Security Council. However, the current international laws haven't given any definite definition of the term "use of force" and the information operations in outer space have brand-new features which are apparently different from those of traditional armed conflicts characterized by the mass of troops and armaments and the invasion of territory. So, we have to consider what actions by or against objects in space will be considered to be uses of force. The international community would probably not hesitate to regard as a use of force the destruction of a satellite by a missile or a laser. It would probably react similarly if it could be proven that one nation took over control of another nation's satellite by electronic means and caused it to fire its retro rockets and fall out of orbit. In such a case, the consequences will probably matter more than the mechanism used. The reaction of the international community to lesser kinds of interference is hard to predict. For example, if one nation were able by electronic means to suspend the operations of another nation's satellite for a brief period, after which it returned to service undamaged, it is likely that the international community would consider such an action as a breach of the launching nation's sovereign rights, but not as a use of armed force. (Office of General Counsel, 1999, p.27) However, the difficulty in characterizing certain forms of information operations against space assets as "force," "war," or "aggression" under international law does not mean that international legal institutions cannot respond to such attacks. Chapter VII of the U.N. Charter gives the U.N. Security Council the authority and responsibility to determine the existence of any "threat to the peace" or acts of aggression and the Council can recommend and lead an appropriate response. An information attack on space assets that may not constitute "force" or "aggression" may be considered a threat to the peace and thus subject to Security Council action, including the use of military force. Because Security Council actions are subject to international political negotiation, any response would not likely be quick or a significant deterrent to an aggressor. (Ellis, 2001, p.8)

When a state can tie an attack on its space asset directly to a foreign government, the offended state may retaliate to terminate the ongoing attack. The retaliation may be justified as part of its right to self-defense under Article 51 of the U.N. Charter. (Ellis, 2001, p.11) However, if an aggressor uses information techniques to conduct the operation and inflicts little or no physical destruction, whether this kind of attack can be regarded as "armed attack" is disputable. If an information attack cannot be characterized as an "armed attack," then a conventional response may not be warranted. A conventional response, in this case, may in fact be considered the "armed attack" under Article 51. A response alike would not constitute an "armed attack", but there are still at least 3 obstacles for the retaliation side as follows. Firstly, it is difficult to identify the attacker. Information attack in outer space has the characteristics of long-range and anonymity and the attacker can conduct information attack against space assets in or through foreign countries. Information can flow across international borders while a nation's military, judicial and security agencies can not carry out investigations in a foreign country at will and this kind of investigation may be considered as spy so it can't gain cooperation from related countries. Secondly, it is difficult to produce evidence. Space assets are in an abominable environment characterized by intensive radiation, extreme temperature and micro-gravity. Occasionally, they may be stricken by small meteors or space debris which runs at high speed. So they may be damaged by the natural cause. A space asset usually consists of many complex systems and there are frequent malfunctions and program errors. Because of these factors, the offended state can't produce sufficient evidence that it has suffered from intentional attack. Finally, even though the attacker can be identified and proven to be supported by a foreign government, this foreign country may lack the space information infrastructure that would make it vulnerable to a response alike. To conduct information attacks against space assets doesn't need complex technology and even cult organizations such as "Falun gong" can grasp them. Apparently, North Korea and Iran have the ability to conduct information attack against American satellite while America can't find an appropriate asset of these countries to retaliate in like manner.

3. Jus in Bello: How will the principles of discrimination and proportionality be carried out with regard to the dual-use nature of space assets?

Jus in Bello refers to the laws regulating the conduct of states once armed conflict between them has begun and they can be divided into 2 main branches. The first branch refers to regulations governing the means and methods of warfare. As these regulations were mainly set down during the 2 peace conferences at Hague, they are called "Hague Law". The other refers to the regulations governing the protection of war victims, civilian people and properties. As these regulations are mainly set down during all previous Geneva meetings, they are called "Geneva Law". The *Protocols of 1977 to the 1949 Geneva Conventions* have combined the "Hague Law" and the "Geneva Law" as a whole, which is now entitled "humanitarian law" or "law of armed conflict". The essential of humanitarian law is to balance the principle of military necessity and the principle of avoiding unnecessary suffering and it deals with the problem of justice in the conducting of operation.

Information operations in outer space have presented significant challenges to the traditional principles of international laws concerning the conducting of operations, especially the principle of discrimination. *The 1899 Laws and Customs of War on Land* (Hague Convention II) and *the 1949 Relative to the Protection of Civilian Persons in Time of War* (Geneva Convention IV) as well as the *1977 Protocol I to the 1949 Geneva Conventions* have established the most fundamental principle of the humanitarian law: the principle of discrimination. According to this principle, the lawful use of force should make distinction between servicemen and civilians, combatants and war victims, military targets and civilian assets. The most basic rule of this principle is that civilians and civilian objects must not be made the object of direct attack. Therefore, space objects that are used solely for civilian purposes must not be attacked. However, Article 51(3) of the 1977 Protocol I provides that a civilian non-combatant who takes a direct part in hostilities loses his status as a protected civilian. He then becomes a legitimate object of attack. Therefore, once a civilian space object is used in a military capacity, it automatically loses its right to preclusion from attack.

In the area of information operations in outer space, one of the greatest conundrums of international law relates to the issue of dual-use technology. As the space assets are very expensive and many military and civilian space assets have the same functions, for example, the remote sensing, communication, meteorological, navigation and position satellites can be used for both military and civilian purposes, states and entities recognize that it is more economically viable to develop satellites for dual use rather than to confine them to a single purpose. The dual-use nature of space technology makes it difficult to choose a legitimate target. A functionalist approach is required here. A civilian space asset must not cross the line and become involved in military activities. If it takes part in the conduct of hostilities, despite its original civilian status it then becomes a legitimate object for the use of military force. (Goh, 2004, p.271)

The advancement of modern science and technology provides technical possibility for precision striking and may raise expectations and later legal standards for discrimination. Just as in the battlefield of land, sea and sky, precision striking means should be and can be used in the information operations in outer space. Because of the dual-use nature of space assets, the characteristics of these precision striking means are different from those of traditional precision guided munitions. Not all parts of dual-use satellites are involved in the armed conflicts and the attackers can target only those circuits or programs that are lawful targets, for example, the transmitters or bands in a communication satellite used by the military. The attackers can also develop a kind of special computer virus that only targets at those program codes used for supporting combat. Dual-use satellites such as navigation and position, remote sensing satellites provide different services with different level of precision to military and civilian users, so an attacker can make a subtle attack that may degrade the accuracy below the level useful for military demands, but maintain a level necessary for civilian necessities.

Closely connected with the principle of discrimination, the principle of proportionality means that in the course of a legitimate attack, the collateral injury and damage to noncombatants and civilian property must be proportionate to the purpose of the attack. Article 57 of *the 1977 Protocol I to the 1949 Geneva Conventions* states that those who plan or decide upon an attack shall:"...Refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated", "an attack shall be cancelled or suspended if it becomes apparent that the objective is not a military one or is subject to special protection or that the attack may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military one or is subject to special protection or that the attack may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated". The principle of proportionality used to be a custom law of war and the Protocol I developed it into a treaty law thus enhanced this basic principle of the law of war.

Information operations in outer space also challenge the principle of proportionality. It is difficult to correctly assess the collateral effects brought about by the attacking on the dual-use space assets on the civilian life and property as well as their daily life. For example, attacking on dual-use communication satellites may only bring inconveniences to civilian life while it also may severely endanger the flying airliner. It is very hard for the commander who decides upon an attack to accurately and roundly discover related information and it is even harder for him to correctly assess the long-term and collateral effects. Besides these, just as it is difficult to determine whether an information attack on space assets is an "armed attack," it is equally difficult to determine what would be a proportionate response to the attack, especially when the attack inflicts little or no physical destruction.

4. Neutrality: How will established legal principles related to national sovereignty be affected by information operations in outer space?

In the law of war, the term neutrality mainly refers to wartime neutrality, which is the legal status that a nation chooses not to participate in war and not to assist either side. International laws concerning neutrality are the principles, regulations and systems that adjust the relationship and prescribe the rights and obligations between belligerents and nonbelligerents. They are mainly embodied in 1907 *Rights and Duties of Neutral Powers and Persons in Case of War on Land (Hague Convention V)*, 1949 *Relative to the Protection of Civilian Persons in Time of War (Geneva Convention V)*

IV) and its 1977 *Protocol I*, etc. Under the framework of current U.N. collective security regime, the principle of neutrality is still in effect but it must submit to relative articles in the U.N. Charter.

According to the law of war, nations not engaged in a conflict may declare themselves to be neutral. A neutral nation is entitled to immunity from attack by the belligerents, so long as the neutral nation satisfies its obligation not to assist either side. If a neutral nation is unable or unwilling to suspend the use of its territory by one of the belligerents in a manner that gives it a military advantage, the other belligerent may have a right to attack its enemy in the neutral's territory. There is considerable support for the argument that the concept of neutrality has no application during a conflict in which one of the belligerents is a nation or coalition of nations authorized by the U.N. Security Council to use armed force to protect or restore international peace and security. Rights and duties of neutral powers and persons in case of war also apply to the information operations in outer space. If a neutral nation permits its information systems to be used by the military forces of one of the belligerents, the other belligerent generally has a right to demand that it stop doing so. If the neutral refuses, or if for some reason it is unable to prevent such use by a belligerent, the other belligerent may have a limited right of self defense to prevent such use by its enemy. It is quite foreseeable, for example, that a belligerent might demand that a neutral nation not provide satellite imagery of the belligerent's forces to its enemy, or that the neutral cease providing real-time weather information or precision navigation services. (Office of General Counsel, 1999, p.10)

However, it seems that there is a limited exception to this principle for communications relay systems. The primary international agreement concerning neutrality, the 1907 *Hague Convention Respecting the Rights and Duties of Neutral Powers and Persons in Case of War on Land*, states in Articles 8 and 9 that "A neutral Power is not called upon to forbid or restrict the use on behalf of the belligerents of telegraph or telephone cables or of wireless telegraph apparatus belonging to it or to companies or private individuals," so long as such facilities are provided impartially for both belligerents. The plain language of this agreement would appear to apply to communication satellites as well as to ground-based facilities. (Office of General Counsel, 1999, p.10) There is nothing in this agreement, however, that would suggest that it applies to systems that generate information, rather than merely relay communications. These would include the satellite imagery, weather, and navigation systems mentioned above, as well as other kinds of intelligence-producing systems such as signals intelligence and hydrophonic systems. For example, if a belligerent nation demanded that the U.S. government deny GPS navigation services to its enemy, and if the U.S. were unable or unwilling to comply, the belligerent may have the right to take necessary and proportional acts in self-defense, such as jamming the GPS signal in the combat area. (Office of General Counsel, 1999, p.10)

Above analyses mainly aim at the government of a neutral nation while the neutral does not have to forbid the supply of war materiel by resident individuals or companies, nor is it required to stop the passage of such goods across its territory. Subject to any national regulations, neutral nationals may continue trading with either or both belligerents. With respect to information operations in outer space, this means that a neutral is under no obligation to ensure that its nationals or companies do not provide materiel from their space assets to one or both belligerent parties. This means that individuals or companies in neutral states may, for example, sell high-resolution remote sensing imagery to either or both belligerent states. (Goh, 2004, p.271)

International consortia present special problems. Information systems built around space-based components require such huge investments and access to such advanced technology that even developed nations prefer to share the costs with other nations. Where an international communications system is developed by a military alliance such as NATO, few neutrality issues are likely to arise. Other international consortia, however, provide satellite communications and weather data that are used for both civilian and military purposes, and they have a breath of membership that virtually guarantees that not all members of the consortium will be allies in future conflicts. (Office of General Counsel, 1999, p.11) There exists the possibility that one or some of the co-owner of these space assets may illegally make use of these assets for their own interests during armed conflicts, thus making the assets involved in an armed conflict and become lawful targets of armed attack. Some international consortia have attempted to solve this problem by limiting the use that may be made of the system during armed conflict. The INMARSAT agreement, for example, states that the mobile communications service provided by the system may be used "exclusively for peaceful purposes." This provision provides less than a perfect solution; however, since the member nations and the INMARSAT staff have concluded that this language permits use of INMARSAT by U.N. peacekeeping or peacemaking forces acting under the auspices of the U.N. Security Council, even if they are engaged in armed conflict to accomplish their missions. (Office of General Counsel, 1999, p.11)

5. Conclusion

Information operations in outer space have significantly challenged the traditional principles of the law of war. These challenges are essentially determined by the characteristics of law and technology. Law is inherently conservative while technology is constantly advancing, and the speed of technological advancement far surpasses that of the legal system. More than 50 years has passed since the first manmade satellite went into the space and the classical space warfare is

still not in existence up to now. But the existing and foreseeable techniques of information operations in outer space have already challenged almost all fundamental principles of the warfare law. It is unlikely that the international legal community will soon meet these challenges and generate a comprehensive, coherent body of international law concerning the information operations in outer space. Even if the international legal community eventually deals with the issue and is able to develop a coherent set of guidelines, it is imperative that we realize law itself will not guarantee our interests and security in outer space. Struggle in outer space, especially military struggle in outer space, can only be the competition of strength. The international law concerning the information operations in outer space can critically aid our diplomatic and military struggles.

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