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*“Whither the human in armed conflict? IHL
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**How does IHL apply in outer space and which
challenges exist for applying existing rules in
outer space?**

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Since the 1950s, with the development and successful launch of different spacecraft such as satellites, humankind began to enter the vast outer space. In ancient Chinese art of military, it says if you control a higher terrain, you can easily win the war. The space is extensive and boundless, and it can provide us a wide field of vision. Many countries explored outer-space for military purposes from the start.

Although Charter of the United Nations regulates, ‘All Members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered.’ The charter also requires all members 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. At the same time, the Charter recognizes that all states have the inherent right of individual or collective self-defense.

Although in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, it regulates ‘States Parties to the Treaty shall carry on

activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.’ And the Treaty also regulates, ‘The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes.’

There are different understandings about ‘peaceful purposes’. Some hold the opinion that ‘peaceful purposes’ means ‘non-military’. Once the exploration and use of outer space are related to military issues, such as carrying out military investigation by satellites or placing weapons in outer space, these activities are not consistent with ‘peaceful purposes’. Others think that the opposite meaning of ‘peaceful’ is ‘aggressive’. So long as the outer space is not used for aggressive purposes, even if it’s used to provide military services or to place weapons, the use is lawful and permissible.

We can conclude from the states’ practice that militarization is an inevitable trend in outer space exploration and use. Undoubtedly, outer-space warfare will be an important part of future armed conflict.

Outer-space warfare is the military confrontation between states. It not only includes military attack and defense happened in outer space and actions taken in outer space with its damage effects occurred in air space or on the earth, but also includes actions taken in air space or on the earth aiming at destroying or invalidating outer-space systems.

Parties to outer-space warfare should abide by international humanitarian law. International humanitarian law is composed of a set of rules which limit the means and method of warfare and protect the victims of armed conflict. We know that law usually lags behind reality. There are no specific legal rules applicable to outer-space warfare up to now. However, the fundamental principles of international humanitarian law should apply. For the fundamental principles embody the essence and core value of international humanitarian law. They are the basic criterion for choosing means and method of warfare.

Now let’s talk about the legal challenges to the application of fundamental principles of International humanitarian law to outer-space warfare.

The principle of distinction

The principle of distinction requires that the Parties to the conflict shall

at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives. Although in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, it regulates that 'States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space'. Astronauts operating military spacecraft in outer-space warfare undoubtedly are combatants and can be legally targeted and attacked. In traditional armed conflict the symbols identifying combatants are their military uniforms. However, in outer-space warfare, spacecraft are tightly sealed and move at high speed, the combatants in which couldn't be seen directly.

So the criterion to choose military targets is the character of the spacecraft. That means it depend on whether the spacecraft are military or civilian. However, in practice most countries develop their space industry by the way of civil-military integration. Many spacecraft can be used for either military or civilian purposes. It's hard to distinguish military objectives from civilian objects promptly. Besides armed forces, according to Additional Protocol I, Article 52, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.

In view of "nature" standard, military satellites are military objectives undoubtedly, even if they also have civil functions. But if ordinary satellites such as commercial communication satellites, navigation satellites, remote sensing satellites and meteorological satellites provide services to armed forces, they can be legally attacked only when the evidence is conclusive.

The "purpose" or "use" standard is more difficult to judge. When some spacecraft only has potential military functions such as its design parameters meet the military standards, it cannot be attacked as military objective. However, when there is convincing evidence showing that a civil spacecraft has an intention to take direct part in hostilities, for example a satellite registered for civil use suddenly changes its orbit and approaches the enemy military spacecraft, this obvious intention to attack will be the legal evidence that it has become a legal target. The difficulty in practice is that it's hard to identify the attack intention. Probably only after being attacked, can a party to the conflict make a judgment.

The 'location' standard may include outer space orbit in the scope of

military objectives. In the land warfare, if the enemy has occupied a piece of land which provide the enemy geographic advantage, this piece of land can be attacked as legal target. For the same reason, in the outer-space warfare, if a particular outer space orbit can be used by the enemy to observe military actions, transfer military information or conduct military operations, a party to the conflict has the right to prevent hostile parties from reaching the orbit. Parties to the conflict can even cause an explosion in the particular area. However, this will lead to space debris problems. For according to international humanitarian law, parties to the conflict have the obligation to protect natural environment. Article 55 to Additional Protocol I requires parties to the conflict 'to protect the natural environment against widespread, long-term and severe damage'.

Besides the military objectives deployed in outer space, the identity of the personnel who work on the ground is also difficult to identify. According to international humanitarian law, civilians shall enjoy general protection against dangers arising from military operations, unless they take a direct part in hostilities. The "direct" participation means acts of war which by their nature or purpose are likely to cause actual harm to the personnel and equipment of the enemy armed forces. In outer-space warfare, when technicians of Commercial satellite co., Ltd. maintain or repair dual-use satellites, it's hard to decide whether they can be legally attacked.

The principle of proportionality

The principle of proportionality requires the Parties to the conflict should refrain from launching 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. The foregoing principle of distinction is about how to choose legal targets, and the principle of proportionality goes a step further, it's aimed at avoiding or minimizing incidental damages when attack military objectives.

Military confrontation in outer space can use either soft or hard means of warfare. The soft means is also called interference type attack. It will prevent the enemy satellites from receiving signals and then prevent them from working properly. People may think that this kind of means of warfare don't destroy the satellites directly and will cause less incidental loss and damage. So they think that the soft attack is more humane and

more in line with the principle of proportionality.

Actually however, military confrontation in outer space involves huge combat systems. Many military facilities depend heavily upon satellite positioning systems. Once the satellite positioning systems are interfered with, the weapons will not be able to target accurately, they may attack non-military objectives and violate the principle of proportionality.

For example, State A attacks State B's satellite and render its system ineffective. State B's satellite sends error signals to its space shuttle. The space shuttle drops bomb in accordance with the wrong instructions, and the bomb deviated from its original target and exploded, damages civilian objects. Such an attack is likely to violate the principle of proportionality.

The hard means of warfare attack targets directly and destroy them physically. This kind of means usually use directed energy weapons such as missiles. It is the most effective means of warfare to control outer space and to defeat enemies. However, space debris it causes will move rapidly in outer space, once the space debris collide with spacecrafts, no matter the spacecrafts are military or civilian, and no matter they belong to whom, they probably be destroyed completely. At the same time, our daily life depends upon space technology more and more. It reflected in many aspects such as health-care, finance and transport. Attacks to satellites may cause incidental loss of civilian life and civilian objects severely.

When parties of the conflict attack military objectives on the ground from outer space, even though space-based weapons usually are accurate and intelligent, they have great lethality and will cause severe damages on a large scale. It will be likely to against the principle of proportionality.

In these cases, a reasonable commander is hard to judge whether his order be in line with the principle of proportionality.

Moreover, Article 58 of Additional Protocol I require parties to the conflict to take necessary precautions to protect the civilian population, individual civilians and civilian objects under their control against the dangers resulting from military operations. In outer-space warfare, space forces often provide information support to military operations and they usually be attacked by surprise. So it's not realistic to take precautions such as giving advance notifications or evacuating civilians before attacks.

Conclusion

The foregoing analysis shows that there are huge legal challenges to the international humanitarian law when it applies to outer-space warfare.

That means the existing international humanitarian law is not clear enough to guide and regulate outer-space warfare. It should be strengthened.

The international community does not have a unified legislature, and international legal rules regulating outer space warfare can only be formulated by sovereign States reaching agreements. However, the ability of military exploration and use of outer space varies greatly from country to country. Based on different realistic needs, countries have different interpretation of the principles of international humanitarian law. It's difficult to come to an agreement.

Under such international social background, we can use the 'soft law' form. For example, international organizations or international conferences can reach resolutions or declarations, and academic institutions can offer proposals. Although these documents don't have legal effects and cannot bind the parties of armed conflict, they are helpful to the final formation of international humanitarian rules.

In short, outer-space warfare is a new type. Compared with traditional armed conflict, the means and methods it uses are different. The existing international humanitarian law was developed from traditional warfare, and it encounters some difficulties when applying to outer-space warfare. We should draw attention to this phenomenon, study the legal challenges intensively, communicate and cooperate closely, and try our best to establish new rules which can reflect the common interests of the international community.