

## Emerging use of modern technologies for human rights protection

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Abstract: Recent information technology advances, including the exploration of outer space and artificial intelligence, are not only broadening horizons in the technology sector but are also presenting challenges in other areas. International human rights and humanitarian law may benefit from science and technology outcomes, but in most cases the role of information technology remains unexplored. In this paper we focus on the potential uses of information technologies in human rights protection, with particular emphasis on potential applications in the field of international humanitarian law, where its use may lead to the exposure of human rights violations and contribute to the elimination of gross violations and interference with human dignity and fundamental rights. Evidence of human rights violations collected via the use of information technologies may help to convince the international authorities to take measures to ensure human rights protection. The authors also discuss whether international law is capable of response to new technological advances, by answering the following research question: Can international humanitarian law be applied in situations where an information technology used primarily for another purpose provides evidence of interference with, or the persistent violation of human rights? Through an analysis of the provisions of international humanitarian law, we aim to demonstrate that the protection of human rights is a fundamental pillar of international humanitarian law that must be observed in all sectors and that information technology not only can but must be used to ensure the effective protection of human rights in the international environment.

*Keywords: Humanitarian law, human rights principle, information technologies, outer space*

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## Introduction

Advances in information and communication technologies (ICTs) benefit all subjects of international law such as states, non-state actors, multinational corporations and individuals. All these international community actors are heavily reliant on, make use of and base their decisions on information that is continuously being collected by new types of digital tools. ICTs exist in outer space as well, which is considered a special environment under article 1 of the Treaty on Principles Governing the Activities of States in Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty; UN, 1966), which states that outer space “shall be the province of all mankind” (UN, 1966:1).

The use of ICT as a digital tool may have different kinds of impact, both positive and negative. “The satellite technology in Low Earth Orbit (LEO), in particular large constellations of satellites, is more affordable and capable of providing continued and global coverage with faster data transfer.” (Froehlich, Taiatu, 2020: v). These data may be used for a variety of operations covered by the Outer Space Treaty, as well as for cyber operations, the use of drones in armed conflict and remote sensing instruments based in outer space. All these are especially relevant as an additional source of information on the international protection of human rights and particularly international humanitarian law.

Especially use of drones – remotely piloted, unmanned aerial machines – frame contemporary discourse where we may partly argue that drones operate within a legal vacuum resulting from legal uncertainty as a modern development (Leander, 2013). Alberstadt argues (Alberstadt, 2014), that drones compatibly fit into existing legal regimes, particularly international criminal law and international humanitarian law. However, we consider it necessary to mention that the author himself perceives drones preferably as weapons and subordinates the determination of the legal regime of their use in international law to this.

In more general way, drones and other related ICTs (such as aerial surveillance, remote sensing systems, communication satellites and global telecommunication technologies) have been evolved with the advantage to protect humankind and global common of outer space. The primary objective of ICTs in outer space was monitoring, surveillance and collection of the Earth data with reduced transmission and infrastructure requirements to Earth-based technologies, in order to acquire and process large amounts of meta-data for various policies - transport, air protection, space and others.

The existing ICTs system has gained an additional dimension to its use, precisely by the use of first relatively randomly collected data of international

humanitarian law violations, but also in specific purpose-designed situations. These include situations where the United Nations (UN) has employed drones to facilitate humanitarian missions, such as aerial surveillance in the Democratic Republic of the Congo (UN Launches, 2014) (UN Starts, 2013). These operations exist in parallel to conflict operations with the practical usage of using drones to drop humanitarian supplies in troubled areas, e.g. natural disasters, armed conflict (Alberstadt, 2014).

The diversity of the use of ICTs by international organisations as well as non-state actors, including remote sensing systems, drones (both for humanitarian purposes and in active combat deployment, e.g. in the conflicts in Afghanistan, Yemen, Syria) create a whole range of issues related to international legal regulation as well as application practice. As Krähenmann mentioned, there are humanitarian concerns raised by the used of armed drones (Krähenman, 2020) and we add, that there are number of humanitarian and legal question needed to be addressed in connection to use of ICTs and human rights protection.

Therefor our aim is to conduct normative research to identify legal norms and legal principles applicable to situations where the use of ICTs in the context of space policy has led to findings and evidence that have been used as primary or secondary sources for international accountability, both judicial and political. In the search for an answer to the research question: Can international humanitarian law be applied in situations where an information technology used primarily for another purpose provides evidence of interference with, or the persistent violation of human rights? we will focus on the assessment of the current state of legal regulation of the use of ICTs, both in the legal norms of international humanitarian law and in the decision-making or monitoring activities of international bodies.

The aim of the research is to provide an analysis of the position of ICTs in the existing system of international humanitarian law in order to determine whether there is a legal vacuum or what principles and rules of international law can be applied in cases where the use of ICTs leads to findings confirming an interference with the system of human rights protection or a violation of international humanitarian law. In this research we will proceed from the general to the specific, i.e. we will first focus on the position of ICTs in the system of international humanitarian law, then we will analyse the peaceful use of ICTs and in the empirical part we will point out situations where data (information, images or videos) obtained through ICTs in specific situations have helped to investigate or even prevent human rights violations. At the same time, however, we will highlight cases in which ICTs have been used as evidence in establishing accountability for gross violations of humanitarian law in armed conflict, wherever international courts have used such evidence

in their decision-making. Our research data and sources will thus be international treaties, decisions and opinions of international bodies as well as judicial authorities. These will be correlated in relation to other actors whose input contributes to the monitoring of human rights violations around the world, namely international non-governmental organizations focused on the protection of human rights.

## **1. International Humanitarian Law and Information and Communication technologies – what kind of relations?**

When the basic principles and rules of international humanitarian law (IHL) were being drafted, ICTs did not yet exist and so are not regulated. With recent technological advances, the IHL faces a number of challenges regarding the use or misuse of ICTs in armed conflict. There is no formal international treaty regulating or prohibiting the use of ICTs in battlefield tactics or information gathering. There are two main *ius in bello* uses of ICTs: active and passive.

The active use of ICTs is understood here to mean the use of ICTs in field operations, as regular weapons. International humanitarian law prohibits the development, production, stockpiling and use of biological and chemical weapons. A missile fired from a drone is no different from other commonly used weapons, such as those fired by soldiers or combat helicopters. The key legal question is the same for each weapon: whether that particular use is consistent with international humanitarian law. Areas of international law that may apply to drones, include for example: the law of armed conflict with regard to the targeted killing of terrorists by drones, the consequent extra-territorial use of force with the possible violation of a state's territorial sovereignty and the potential clash with international humanitarian and human rights law regarding drone deployment.

The primary function of ICTs in times of armed conflict is to provide information, surveillance, targeting and reconnaissance. In 1999 unmanned aerial vehicles first began performing a role in direct combat, mainly targeting targets using laser sights, which are then attacked by precision-guided missiles launched from the aircraft or helicopter. The tactical military advantage of arming drones is the speed of response from the moment a target is sighted to the rapid delivery of lethal force by precision-guided missiles. The ability of drones to hover and gather information for long periods of time before an air strike, coupled with precision-guided missiles, represents a positive advantage from a humanitarian law perspective. As noted by the International Committee of the Red Cross (ICRC), “any weapon that makes it possible to

carry out more precise attacks and helps to avoid or minimize incidental loss of civilian life, injury to civilians or damage to civilian objects, or combination thereof (hereafter

referred to as “incidental damage”), of an attack must not be excessive in relation to the concrete and direct military advantage anticipated”. (Robinson, Nohle, 2016:110)

The passive use of ICTs is understood here to mean the misuse of ICTs outside their original purpose. A key legal question regarding international humanitarian law is whether the misuse of ICTs that helps identify human rights violations or the threat of human rights violations is sufficient and proportionate to the task originally assigned in the conflict or outside the conflict.

Our research is focused on this second aspect of the (mis)use ICTs, although we do understand that the use of ICTs in armed conflict may help more effectively target individual combatants and the proper application of the principles of distinction and military necessity under IHL. The growth in the number of cases and judgements where the decision is justified through reference to ICT images points to the urgent need to identify the rules or principles underpinning implementation practices regarding the use of ICTs in cases or potential cases of human rights violations and where the visuals may contribute to the effective implementation of the principles of humanity and proportionality. A qualitative content analysis of international court cases may help establish whether international humanitarian law is also applicable to situations where information technology used primarily for another purpose provides evidence of interference with, or persistent violation of, human rights. Drawing on both the principle humanity, which lies at the heart of international humanitarian law, and human rights protection we argue that proportionality should be used to assess whether human dignity should outweigh the right to privacy and data protection and whether proportionality should be used to determine the legitimacy of using ICTs beyond the original mandate under IHL.

## **2. Remote sensing regulation in international law for international peace and security**

Remote sensing is an effective tool that is deployed without physical contact to obtain ground level information in potentially dangerous situations (Avtar et al., 2021: 3). Space technologies, such as satellites, secure us access to hostile territories, “...inaccessible terrains, helped humanitarian teams, support complex emergencies, and contributed to monitoring and verifying conflict zones” (Avtar et al., 2021: 1). According to UN Resolution 41/65 *Principles Re-*

*lating to Remote Sensing of the Earth from Outer Space* the term remote sensing means observing Earth's surface from space "for the purpose of improving natural resources management, land use and the protection of the environment" (Principle I). This surveillance principle is rather limited, as it refers to environmental uses rather than surveillance in conflicts, humanitarian crises and human rights violations.

Remote sensing provides high resolution (HIRES) (Marx & Goward, 2013: 104) or moderate resolution (MODIS) images of a specified territory. The data, in the form of satellite images, are repeatedly analysed via a feature-focused visual identification process. However, in this type of data analysis there is a risk of errors associated with the visual identification process (Witmer, 2015: 2333). Furthermore, the limited availability of data, owing to various factors, complicates efforts to tackle the issue. The availability of imagery relating to a critical time period may be limited because of meteorological conditions, government restrictions on collecting imagery data, the high cost of obtaining evidence provided by other actors and non-state entities, daylight hours or moisture (Tomppo, Czaplewski & Mäkisara, 2000). Inappropriately timed reactions and the failure to secure imagery data may mean that the momentum for capturing the potential evidence is lost (Coalition for the International Criminal Court, 2015).

International judicial authorities have used the technology capacities and capabilities of remote sensing on several occasions, although only as complementary evidence, as the original surveillance mandate does not apply to the collection of images for judicial proceedings (see ICJ judgement of 13 December 1999 in the *Kasikili/Sedudu Island* case relating to a territorial dispute or the ICJ judgment of 6 November 2003 in the *Oil Platforms – Iran vs U.S.* case relating to the use of offshore oil platforms as missile sites for carrying out attacks against neutral ships during the Iran–Iraq war). The subsequent analysis of International Court of Justice (ICJ) and International Criminal Court (ICC) judgments should provide evidence indicating the kind of guidelines that should be applied to the use of remote sensing as an ICT tool for collecting evidence from outer space relating to human rights violations under international humanitarian law.

### **3. Human rights protection as justification of the (mis)use of information and communication technologies and remote sensing**

Remote sensing has been used in human rights surveillance for some time now. When remote sensing is used for purposes other than those stated in

article 1 of the General Assembly Resolution (UNGA Res. 41/65), it is not subject to the 1986 UN Remote Sensing Principles Regime since the scope of these principles is specifically limited to “the purposes of improving natural resources management, land use and the protection of the environment” (UN, 1986). That means there is no treaty, or legally binding document, that could provide the legal framework for the use of remote sensing and ICTs for human rights surveillance.

On the other hand, where remote sensing is used for human rights’ surveillance the primary focus is on the most serious crimes that are prosecuted by the International Criminal Court, namely genocide, ethnic cleansing, war crimes or crimes against humanity (including murder, torture, sexual violence, imprisonment) (Marx & Goward, 2013: 103). Remote sensing imagery is used also in legal proceedings to provide visual evidence to resolve conflicts over highly contested territories (Khorram et al., 2012: 80).

One example from almost three decades ago is the utilization of US satellite images relating to eyewitness reports of the Srebrenica mass graves that Madeline Albright (U.S. Ambassador to the United Nations) presented to the United Nations Security Council (Kempster, 1995). This imagery was later used in the International Criminal Tribunal for former Yugoslavia as evidence of genocide by several actors, including Slobodan Milošević (Marx & Goward, 2013: 105).

International case law relating to the use of remote sensing surveillance outputs – imagery in the form of primary data, processed data and analysed information as stated in UN General Assembly Resolution 41/65 – has contributed to our view that the use of remote sensing surveillance for human rights purposes may be justified given the emergent character of such uses. This is supported by the fact that the international case law goes beyond the natural resources and environmental protection mandate given in GA Res. 41/65. Another example is the periodical review of human rights and human rights fact-finding missions authorised by the Human Rights Council, UN Security Council or other UN bodies and agencies.

In the Oil Platforms case, the Islamic Republic of Iran filed an application against the U.S. regarding the destruction of Iranian oil platforms (ICJ, 1993). The U.S. government then filed a counterclaim with the ICJ accusing Iran of breaching its obligations by attacking vessels in the Persian Gulf and engaging in military actions detrimental to commerce and navigation (ICJ, 1997). Evidence provided by the U.S. and accepted by the Court included images taken by satellite and aerial reconnaissance aircraft of the FAW area and of the four alleged missile sites under Iranian control at the time of the attack (ICJ, 1997). Although the Iranian and American legal representatives had discussed the detail and clarity of the satellite imagery, the ICJ did not con-

sider it sufficiently clear evidence of the presence of Iranian missile-firing equipment, especially when analysed together with testimony from 10 years after the reported incidents and the discrepancies between the English and Arabic versions. Nonetheless, the important message of this case was that satellite imagery can be used if it is not just the primary data alone but is analysed to provide sufficiently clear information at state-of-the-art level.

The relevance of the Oil Platform case and admissibility of satellite imagery can also be seen in the International Tribunal for the former Yugoslavia (ICTY) cases. The first time an international court used satellite imagery as evidence was in the *Kristic* (ICTY, 2004) and *Mladic* (2014) proceedings. “Aerial photos and satellite imagery with freshly disturbed earth shoved a long curving road by a football pitch, with areas that had been freshly dug up. This was the only way to prove violations of human rights as access to those areas was not allowed to UN officials” (Tran: Froehlich, Taiatu, 2020: p. 65). Satellite imagery was used extensively in the ICTY proceedings, mainly because the prosecution had limited time to collect all the evidence and limited access to Bosnian territory. The urgent need to accelerate the evidence collection was the reason behind the decision by the International Commission on Missing Persons to use ICT and remote sensing for other purposes beyond GA Res. 41/65. Human rights protection and the need to enforce liability for the violation of international humanitarian law legitimated the search for mass graves in Srebrenica (Bosnia) in 2015 based on the existence and clarity of the remote sensing surveillance. “Transcripts from the ICTY prove the usefulness of the satellite imagery provided by the U.S. The content of the transcripts however refers to aerial imagery even if the imagery was mostly generated by remote sensing satellites and not only by planes” (Froehlich, Taiatu, 2020: 67).

U.S. intelligence provided satellite imagery in the case of *Popovic et al.* as well (ICTY, 2015). The defence attorneys argued that the “chamber may not rely on such imagery when rendering the final judgment, as no evidence or explanations were presented to the Trial Chambers as to whether these are satellite photographs, photographs taken by unmanned aircraft or photographs taken by freezing the frames of a video recording.” (ICTY, 2015). The character of US intelligence is such that evidence in the form of satellite imagery can be referred to only as “U.S. reconnaissance systems” and the Court ruled that in “courtroom proceedings any information relating to the technical or analytical sources, methods, or capabilities of the systems, organisations, or personnel used to collect, analyse or produce this imagery derived products can’t be relieved” (ICTY, 2015). The primary data was used in a general way, but provided complementary, strong evidence.

Satellite imagery is also admissible and relevant to the monitoring work of UN bodies. The Human Rights Council Working Group on the Universal Periodic Review in 2014 presented its National Report on Human Rights in Ethiopia highlighting that human rights were fundamental rights guaranteed by the Constitution (UNGA, 2014). This was after several nongovernmental organizations had raised awareness in previous years about the violation of human rights, using satellite imagery as evidence to prove changes in community life in the field over time (AAAS, 2014; HRW, 2012)

The armed conflict in the Syrian Arab Republic and the related human rights situation was monitored by the Office of the High Commissioner for Human Rights, which set up an Independent International Commission of Inquiry (HRC, 2011). The Commission's annual reports to the Human Rights Council refer to the escalation of the armed conflict and related increase in human rights violations, which was demonstrated through the use of satellite imagery as part of the necessary evidence for the investigation, in addition to photographs, videos and medical records and reports by non-governmental organizations, such as when Human Rights Watch identified major damage in sites held by rebel groups in Daraa and Aleppo between 22 February 2014 and 25 January 2015, partly through satellite imagery (HRW, 2015).

Similarly, there was an independent international fact-finding mission on Myanmar established by the Human Rights Council under resolution 34/22. The Report states that "satellite imagery contributed to the vast amount of primary information on the mission" (HRC, 2018). The Human Rights Council "underlined that satellite imagery and first-hand accounts corroborated widespread, deliberate and targeted destruction, with more than 393 villages partially or totally destroyed in northern Rakkine" (HRC, 2018). Satellite imagery was also very useful in gathering evidence in relation to the human rights violations perpetrated against the Rohingya people, with the HRC noting that "the mass displacement and the burning of Rohingya villages had been followed by the systematic appropriation of the vacated land. As reported, bulldozers flattened burned, damaged and even surviving structures and vegetation, erasing every trace of the Rohingya communities, while also destroying criminal evidence..." (HRC, 2018).

Satellite imagery underpinned the work of the Commission on Human Rights in South Sudan, which was established in 2016. The Commission's work included the analysis of satellite imagery in order to "make such information available to all transnational justice mechanisms" (Froehlich, Maiatu, 2020: 89). Advance notification was given that the satellite imagery would be used in the future to enforce individual responsibility for the violation of human rights and humanitarian law before the "hybrid court for South Sudan,

once established in cooperation with the African Union”, as confirmed in the UN Human Rights Council Resolution (HRC, 2019)

## **Conclusion**

Both the preamble and the substance of the Outer Space Treaty refer to human rights protection as a principle enshrined in the UN Charter and other international laws. However, ICTs advances and implementation practices relating to the use of outer space for humankind, paved the way to additional governing principles being adopted in 1986. These were focused on natural resources management, land use and environmental protection. Nevertheless, later on, satellite surveillance monitoring the earth from outer space identified several threats or potential violations of international law (related to land use) and, more seriously, the threat or actual violation of human rights. Satellite surveillance outputs obtained by the use of remote sensing technology became part of international case law, even in the most serious criminal proceedings relating to the violation of international humanitarian law. Neither the Outer Space Treaty, the Principles, or International humanitarian law provided a legal framework underpinning the surveillance of human rights from outer space; however, various cases and related judgements, as well as investigations and reports have demonstrated that satellite imagery has a role to play in proving law-breaking and human rights and humanitarian law violations.

Current practice, specifically the collection of data from the use of ICTs, whether mandated by the UN or as a by-product of the main use of ICTs, points to two basic findings that are not necessarily contradictory. The data collected has significantly assisted the investigation of a number of situations in which human rights violations have been committed. In a number of cases, it was the discovery of violations of human rights principles and international humanitarian law that led to UN action that helped to prevent even more serious violations. In the proceedings analysed before international courts or military tribunals, this data from ICTs has helped to provide evidence of war crimes and crimes against humanity and has contributed significantly to the conviction and accountability of individuals.

Satellite imagery as the ICTs outcome may be used to support the work of international organizations and international judicial authorities. However, we have to be aware of the challenges of interpreting satellite imagery and of the need for outer space surveillance and primary data collection via remote sensing to be mandated by the UN, along with subsequent analysis and in conjunction with the continued observance of human rights and taking into account the proportionality of these actions. In the current situation

proportionality should be both the leading principle for evaluating the urgency of using remote sensing to identify potential unlawful actions, the risk of attack, human rights infringements and a collective information tool for future judicial proceedings regarding the violation of human rights, especially in armed conflicts.

The use of ICTs in outer space and aerial imagery is another means of collecting information, but again the principle of proportionality has to be applied when considering the necessity of collecting substantial information and related timeline. The misuse of surveillance purely for intelligence purposes exceeds the general mandate stated in the Principles and goes beyond proportionality and emergencies justifiable under human rights protection as a general principle of international law.

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