”NICOLAE TITULESCU” UNIVERSITY OF BUCHAREST

FACULTY OF LAW

DOCTORAL SCHOOL

DOCTORAL THESIS

INTERNATIONAL RESPONSIBILITY OF STATES FOR USAGE OF UNMANNED FLYING VEHICLES

SUMMARY

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SUMMARY OF THE DOCTORAL THESIS

ANNOTATION

When drafting the doctoral thesis, we took into consideration the doctrine of the field, the national legislation of Romania and of other states, international legal instruments, national and international jurisprudence, legal acts of the institutions of the European Union, resolutions and reports of the main and subsidiary bodies of the United Nations, as well as other international intergovernmental organizations' documents, published and deemed relevant, including bibliographic resources consulted online up to 01.07.2022.

LIST OF ABBREVIATIONS AND ACRONYMS (ENGLISH TRANSLATION IN PARENTHESIS)

AESA – Agenția Europeană pentru Siguranța Aviatică (in English, the denomination is the European Union Aviation Safety Agency, abbreviated as EASA)
alin. - alineatul (paragraph)
apud - citare preluată de la alt autor, nu din original (quote taken from another author, not from the original)
art. - articolul (article)
c. - contra (versus)
CEDO – Curtea Europeană a Drepturilor Omului (European Court of Human Rights)
CELEX - identificator unic al documentelor din baza de date EUR-Lex (unique identifier of the documents in the EUR-Lex database)
CIJ - Curtea Internațională de Justiție (International Court of Justice)
CJUE - Curtea de Justiție a Uniunii Europene (Court of Justice of the European Union)
COM - Comunicare a Comisiei Europene (Communication of the European Commission)
coord. - coordonator (coordinator)
DJI – Societatea Comercială Da-Jiang Innovations (Da-Jiang Innovation company)
et al. - și alții (and others)
EUROCONTROL [1] - Organizația Europeană pentru Siguranța Navigației Aeriene (European Organisation for the Safety of Air Navigation)
EASA (abreviere folosită în limba engleză - abbreviation used in English /AESA (abreviere folosită în limba română - abbreviation used in Romanian) – Agenția Europeană pentru Siguranța Aviatică (European Union Aviation Safety Agency)
GGE – Grupul de experți cu privire la sistemele letale din cadrul Convenției cu privire la armele convenționale (Group of Experts on Lethal Autonomous Systems under the Convention on Conventional Weapons)
HG - Hotărârea Guvernului (Government Decision)
IA - inteligența artificială (artificial intelligence)
JOUE - Jurnalul Oficial al Uniunii Europene (Official Journal of the European Union)
lit. - litera (letter)
M.Of. - Monitorul Oficial (al României) (Official Monitor of Romania)
Nr./nr. - numărul (number)
OACI – Organizația Aviației Civile Internaționale (International Civil Aviation Organization)
ONU – Organizația Națiunilor Unite (United Nation Organization)
op. cit. - opera citată (work cited)
OSCE - Organizația pentru Securitate și Cooperare în Europa (Organization for Security and Cooperation in Europe)
OTAN – Organizația Tratatului Atlanticului de Nord (and in English it is referred to as NATO, meaning the North Atlantic Treaty Organization)

[1] The denomination Eurocontrol was also picked up in the Romanian language due to the accession to the international EUROCONTROL Convention on cooperation for the safety of air navigation, which concluded on December 13, 1960. The accession had been conducted through Law no. 44/1996, published in M.Of., Part I no. 115 of June 5, 1996.

p. - pagina (page)
parag. - paragraful (paragraph)
pct. - punctul (point/item)
PESC - Politica externă și de securitate comună (Common Foreign and Security Policy)
pp. - paginile (pages)
RAND – Organizația Cercetare și Dezvoltare[2] (Research and Development Organization)
ș.a. - și alții (and others)
SESAR – Programul Comisiei Europene de Cercetare ATM (European Commission Programme for ATM Research)
SUA - Statele Unite ale Americii (United States of America)
TFUE - Tratatul privind funcționarea Uniunii Europene (The Treaty on the Functioning of the European Union)
TUE - Tratatul privind Uniunea Europeană (The Treaty on the European Union)
UE – Uniunea Europeană (European Union)
UNICEF -- United Nations Children's Fund (în limba engleză/in English)/ Fondul Națiunilor Unite pentru Copii (în limba română/in Romanian)[3]
UNIDIR - United Nations Institute for Disarmament Research (în limba engleză/in English)/ Institutul Națiunilor Unite pentru Cercetarea Dezarmării (în limba română/in Romanian)[4]
UNMOVIC - - United Nations Monitoring, Verification and Inspection (în limba engleză/ in English)/ Comisia de monitorizare, verificare și inspecție a Națiunilor Unite (în limba română/ in Romanian)[5]
vol. - volumul (volume)

[2] In English, it is registered as the RAND Corporation, where RAND is an abbreviation for Research and Development; this entity consists of a group of associated experts in the form of a non-profit organization. A Romanian denomination has not been identified.
[3] In the doctoral thesis, we used the United Nations Children's Fund denomination, but in the references used in our research we specified that it is, in fact, in reference to UNICEF, considering that information is published as originating from the UN agency. The acronym UNICEF is much more popular and is used even on the agency's website, available in Romanian. The Ministry of Foreign Affairs of Romania uses UNICEF as a standard reference (e.g. UNICEF Representation in Romania according to the website https://www.mae.ro/node/16910, accessed on 01.07.2022).
[4] Similarly, in the thesis, we referred to the Romanian denomination, but the reports were published in English, using the UNIDIR acronym. The website where these documents and papers have been published does not have a Romanian translation, so in the references it has been specified that they were published under the acronym UNIDIR. As an example, in the context of point 2.1.3. of the Annex to Decision (CFSP) 2019/615 of the Council on the support granted by the Union for the preparatory activities of the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), published in OJEU L 105 of April 16, 2019, the name UNIDIR is used alongside the Romanian translation of the denomination of the United Nations Institute for Disarmament Research.
[5] Likewise, within our endeavour we mentioned UNMOVIC as the issuer of the reports related to the resolutions adopted by the United Nations Security Council, as the Romanian language is not an official working language within the UN.

I. Doctoral thesis plan

The thesis is structured in 7 chapters, preceded by *"Introductory aspects"* and followed by two appendices. Each chapter comprises several sections, points and sub-points. The doctoral thesis plan incorporates the following:

List of abbreviations and acronyms

INTRODUCTORY ASPECTS

I. The subject of the research

II. The importance, usefulness and topicality of the scientific approach

III. The objectives of the doctoral thesis

IV. Research methods used

CHAPTER I - HISTORICAL CONSIDERATIONS REGARDING UNMANNED AIRCRAFT CONCERNS

SECTION I - THE EMERGENCE AND HISTORICAL EVOLUTION OF THE USE OF UNMANNED AERIAL VEHICLES

1. The emergence of unmanned aerial vehicles
2. The evolution of the use of unmanned aerial vehicles in the period 1990 – 2022

SECTION II - CURRENT USE OF UNMANNED AIRCRAFT

1. States' use of unmanned aerial vehicles in humanitarian and policing actions
2. Use of unmanned aerial vehicles by legal entities
3. The active role of unmanned aerial vehicles in special missions

SECTION III - CONCLUSIONS

CHAPTER II - CONCEPTUAL DELIMITATIONS REGARDING UNMANNED AIRCRAFT DEVICES

SECTION I - SOME ASPECTS REGARDING THE DEFINITION OF UNMANNED DEVICES

SECTION II - THE DEFINITION OF "UNITLESS AIRCRAFT" FROM THE PERSPECTIVE OF INTERNATIONAL LAW AND THE EVOLUTION OF THIS CONCEPT

1. Definition of unmanned aerial vehicles according to customary law
2. The concept of unmanned aircraft in conventional law

SECTION III - ELEMENTS OF DOMESTIC LAW AND JURISPRUDENTIAL NATURE RELATING TO "UNMANNED AERIAL VEHICLES"

1. United States of America (regulations and case law)
2. The United Kingdom and Germany (regulations and case law)
   2.1 The United Kingdom of Great Britain and Northern Ireland
   2.2 The Federal Republic of Germany
3. Romania
4. Other states

SECTION IV - SPECIFIC TERMINOLOGY OF "UNMANNED AERIAL VEHICLES" UNDER EUROPEAN UNION LAW

1. General aspects
2. Elements of legislation

SECTION V - CONCLUSIONS

CHAPTER III - APPLICATION OF THE RULES OF PUBLIC INTERNATIONAL LAW IN THE FIELD OF UNMANNED AIRCRAFT DEVICES RELEVANT TO THE INTERNATIONAL RESPONSIBILITY OF STATES

SECTION I - THE EMERGENCE OF INTERNATIONAL LAW REGARDING THE USE OF UNMANNED AIRCRAFT

1. Armed Unmanned Aerial Systems in International Law
2. A new legal paradigm applicable to unmanned systems

SECTION II - TREATIES CONCLUDED AND UNDER NEGOTIATION
SECTION III - STATE PRACTICE IN TRADE AND USE OF UNMANNED AIRCRAFT

1. Arms Trade Treaty
2. Restrictions and exemptions on trade in unmanned aerial vehicles

SECTION IV - CONCLUSIONS
CHAPTER IV - ESTABLISHING THE INTERNATIONAL RESPONSIBILITY OF STATES FOR THE USE OF UNMANNED AIRCRAFT AND SOME PROCEDURAL ASPECTS (OUTLINES)
SECTION I - INTERNATIONAL RESPONSIBILITY OF STATES FOR ACTS OF OPERATORS

1. International responsibility of states. Introductory aspects
2. Obligations of states concerning civil unmanned aerial vehicles according to the International Civil Aviation Organization and the interpretation of the Chicago Convention on International Civil Aviation
3. Personal liability of the operator and the establishment, at a national level, of control mechanisms for unmanned aerial vehicles
4. The status of unmanned aerial vehicle operator from the perspective of the International Committee of the Red Cross

SECTION II - THE CONCEPT OF TARGETED KILLING AND ITS RELATION TO UNMANNED AERIAL VEHICLES

1. Definition of the concept of targeted killing
2. The role of drones in the ”*War on Terror*”
3. The types of armed conflicts according to the Hamdan v. Rumsfeld case
4. National legislation of some states on the use of force through precise attacks
   A. The United States of America
   B. Israel
   C. Russian Federation

SECTION III - THE ROLE OF CONSENT - CIRCUMSTANCES EXCLUDING THE UNLAWFUL CHARACTER OF THE ACT IN INTERNATIONAL LAW

1. Case study regarding Yemen, Pakistan and Somalia
   A. Yemen
   B. Pakistan
   C. Somalia
2. The consequences of using the method of targeted killing
   A. On individuals who were citizens of the states that launched the attack
   B. Special view on the jurisdictional aspects and on the joint and several liability of the states
3. Analysis of the relationships between the principles of humanitarian law, in the use of unmanned aerial vehicles, and the provisions of art. 2 para. 4 and art. 51 of the United Nations Charter

SECTION IV - STATE LIABILITY PROCEDURE FOR AVIATION ACCIDENTS

1. The enforcement of art. 26 and Annex 13 of the Chicago Convention on International Civil Aviation. Aviation incident investigation and applicability to unmanned systems
2. Warsaw Convention for the Unification of Certain Rules Relating to International Carriage by Air 1929 and Montreal Convention for the Unification of Certain Rules Relating to International Carriage by Air 1999
   A. Warsaw Convention for the Unification of certain rules relating to international carriage by air in the age of unmanned aerial systems
   B. Convention for the Unification of Certain Rules for International Carriage by Air Done at Montreal by unmanned aerial systems

SECTION V - CONCLUSIONS

1. Prospects regarding information justice

2. The consequences of using artificial intelligence. Human control and the hypothesis of responsibility

SECȚIUNEA A V-A - INTERNATIONAL AND EUROPEAN LAW ON THE USE OF ARTIFICIAL INTELLIGENCE IN THE DOMAIN OF UNAMANNED AND UNITLESS AIRCRAFTS

1. Vienna Convention on Road Traffic (1968)

2. Legal instruments and working documents at European Union evel

A. Legal acts on artificial intelligence adopted by the European Commission and their implementation by EU member states

B. Brief considerations on the action of the European Parliament in the field of artificial intelligence

SECTION V - CONCLUSIONS

CHAPTER VII - CONCLUSIONS AND PROPOSALS OF LEX FERENDA

1.Conclusions

2. *Lex ferenda* proposals

ANNEX 1 - CASE STUDY: THE IMPACT OF UNMANNED AIR SYSTEMS IN THE ACTIONS IN WHICH THEY WERE INVOLVED. THE DIMENSION OF THE INTERNATIONAL RESPONSIBILITY OF THE STATES - SPECIAL LOOK AT ROMANIA

SECTION I - INTRODUCTION

SECTION II - CASES OF USE OF FORCE BY UNMANNED SYSTEMS – ANALYSIS AND COMMENTARY

1. Aspects regarding the precise or directed attack mechanism (targeted killing)

2. Cases of targeted targeted attacks. Brief considerations

A. Qasem Soleimani

B. Mohsen Fakhrizadeh

C. The case of the Mercer Street vessel

D. The cases of Alexander Litvinenko and Sergei Skripal and their relevance from the point of view of the international responsibility of states for wrongful acts

SECTION III - JOINT INTERNATIONAL RESPONSIBILITY OF STATES - THE SITUATION OF ROMANIA

1. Some aspects related to the collective responsibility of states

2. Legal considerations regarding the military airfield at Câmpia Turzii, Romania

Section IV - Conclusions and suggestions

ANNEX 2 - *LEX FERENDA* - DECLARATION ON DILIGENCE IN THE USE OF UNMANNED AND INTELLIGENT SYSTEMS

Bibliography

II. The research problem developed in the doctoral thesis (both in a historical and legal context)

Through the topic that is the object of our scientific research, we aimed to bring the complex issue of unmanned aerial vehicles to the attention of specialized legal doctrine. In this regard, we carried out an analysis of unmanned aerial systems and their role in various socio-economic activities and in the situation of armed conflicts respectively, taking into consideration the responsibility of states for internationally wrongful acts stemming from the use of unmanned aerial vehicles.

The research focuses on/includes the presentation of different categories of unmanned systems and the legal principles applicable to them, as well as the identification of problems

regarding the legalization of these vehicles both at the level of states and the level of international organizations.

The thesis has been drafted as a holistic, multidisciplinary study that correlates specific notions of European Union law with elements of public international law and concepts from the national law of the member states of the European Union, as well as of the United States of America, the Russian Federation and the People's Republic of China.

The unmanned aerial vehicle, also called "*drone*", represents a vehicle that meets specified classification criteria, ranging from a simple device which is carried on air currents, to a technological mechanism with its own propulsion system and which is, as a rule, under the control of a human operator. We consider the terms "*system*" or "*unmanned aerial vehicle*" interchangeable with the term *drone*.

This category of vehicles, although it benefits from being recognized as an essential tool in human activities, is also subject to frequent criticism, in an equal manner, from the various groups of the civil society (who are either in favour or against these systems) and from states; the objections being those concerning the absence of a national and international legal framework capable of protecting fundamental human rights or state sovereignty.

Our study envisages an analysis of appropriate and relevant legal instruments, followed by the clarification of certain aspects highlighted by civil society through its drone non-proliferation campaign. As such, we support the hypothesis that unmanned flight systems should not be expressly prohibited, but their usage should be regulated by specific guidelines drawn up by state authorities and expert groups within international organizations.

Although the term *drone* is frequently used in official state documents and in specialist writing, international organizations and the contents of specialized works, the official names used in the contents of the working papers are Unmanned Aerial Vehicles (UAV abbreviated), Remotely Piloted Vehicles (RPV), Unmanned Aerial Systems (UAS) and Remotely Piloted Systems (RPS). The mentioned designations are accepted by the US Federal Aviation Administration, the European Union member states, and other public administrations in other states[6].

One of the first initiatives to establish a legal definition of the term "*drone*" is found in the *Manual on the Law Applicable to Air Conflict and Missiles*[7]. Here the concept of "unmanned combat aerial vehicle" represents an aerial system of any size, which can carry, launch or guide weapons. Our research focuses on the study of the appropriate legal instruments, followed by the interpretation of certain aspects that civil society has highlighted through the drone non-proliferation campaign.

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[6] **SESAR**, „*Demonstrating RPAS integration in the European aviation system"*, SESAR Joint Undertaking, 2016, pp. 7-8 (https://www.sesarju.eu/sites/default/files/documents/reports/RPAS-demo-final.pdf, accessed 13.03.2022).

[7] For details please consider **Claude Bruderlein** (coord.), „*Manual on the Law Applicable to Air Conflict and Missiles",* Harvard Program on Humanitarian Policy and Conflict Research, 15.05.2009, HPCR, Cambridge, (https://reliefweb.int/sites/reliefweb.int/files/resources/8B2E79FC145BFB3D492576E00021ED34-HPCR-may2009.pdf accessed 06.05.2021). According to rule no. 1, letters dd) and ee) of the Manual on the Law applicable to Air Conflict and Missiles.

Another analysis we conducted regards the type of unmanned aerial vehicle missions undertaken by states in the post-War on Terror period, together with the impact these operations had *vis-à-vis* international human rights law and state sovereignty.

The international community has considered the correlation of the use of unmanned aerial vehicles with the obligation to respect the principles of international and humanitarian law; at the same time, some states, such as the United States of America, or international organizations, for example, the European Union, have adopted specific regulations based on the guiding norms developed by the United Nations and the International Civil Aviation Organization.

In the course of the thesis, we brought to attention some relevant issues revolving around unmanned aerial vehicles, such as the incidence of specific mechanisms and the development of targeted killing practices that are carried out according to non-transparent and imprecise legal procedures and for which the means of execution is the armed unmanned aerial vehicle.

The lack of accountability and transparency in the decision-making process (e.g. administrative procedures) constitutes an essential focus for our research; criticism of this practice is outlined, as well as proposals for ensuring legality both from the perspective of the vehicle as an instrument through which the administrative approach is implemented, as well as a consequence of the practice of the courts.

The doctoral thesis considers the practice of international and national courts, along with the conduct of states and international organizations; as such, our purpose is to apply the institution of international law to the responsibility of states for wrongful acts, because we have identified as a recurring criticism the lack of a way to challenge the legality of the use of drones by state authorities.

At the time of writing this thesis, some regulations regarding unmanned aerial vehicles were being debated within international organizations. Concerning the already existing ones, we appreciate that they are lacunary and lack binding legal force, the thesis analyzing and describing *lex ferenda* proposals, including the need to adopt a text aimed at encouraging the development of these types of systems, in compliance with minimum standards on the protection of human rights and the principles of public international law.

III. The situation of the topic in the context of scientific research in the field of law, from an interdisciplinary perspective

The analysis of unmanned aerial vehicles represents, in our opinion, an important topic that concerns both public international law in general and EU law, as well as international human rights law. The systems, regulated as drones in many resolutions of international organizations, analyzed in specialized journals and debated in public forums, are mentioned as devices that help pilots acquire skills or to act as platforms that can be armed with weapons for hitting distant targets, without replacing the human decisional factor.

We appreciate that in our field of research, the international community has adopted some quasi-legal instruments (e.g. the *Missile Technology Control Regime*[8]) to achieve a balance regarding the use of unmanned aerial vehicles, but only a part of these regulations have been adopted through procedures that would make them legally binding. Thus, many other acts have been adopted in the form of declarations (e.g. *the Joint Declaration on the Export and Subsequent Use of Armed Unmanned Aerial Systems*[9]) whereby states agree to take collective or unilateral actions to regulate unmanned aerial vehicle technology and artificial intelligence.

The coherence of the norms adopted by various international organizations and the test of unmanned aerial vehicles, through the lens of the military, police and humanitarian missions in which they took part, is generated by the compliance of unmanned aerial systems with general international and humanitarian law, in particular.

The objective pursued by our endeavor is embodied in an in-depth reflection on the role of unmanned aerial systems and other systems capable of acting through artificial intelligence in the whole of the international legal order and of the European Union, as well as the promotion of a soft-law type of instrument that would allow states to adopt measures limiting the harmful effects of emerging technologies.

We consider the issue current and relevant because it falls under the domain of public international law, as well as that of European law, the scientific approach being part of the prevailing positivist trend, trying to provide the necessary explanations through detailed and in-depth approaches to different concepts and practices of the issues of using unmanned aerial systems and the consequences for illegal actions resulting from their use.

We brought to attention the international liability of states for illegal acts resulting from the actions of agents, direct and indirect, which we investigated in terms of the violation of other established principles of public international law (respect for the territorial limits and sovereignty of states) and European law, noting the correlation of theses like those found in international human rights law (the right to a fair trial, the right to life, the right to private life and others), humanitarian law (the principles and rules of conduct in an armed conflict). Thus, the thesis takes into consideration both the legal norms that govern national security, public health and the institution of tortious civil liability (public order forces, consumer protection, tort liability, civil liability insurance, and personal data).

IV. Objectives of the doctoral thesis

1. Identifying and defining concepts

The main objective pursued in this thesis is to analyze the notion of *"drone"* in the context of public international law, European Union law and domestic law from different states to determine whether, in the absence of specific legal acts or following the interpretation of legal instruments already in existence, we can establish a causal link concerning the liability of States for

[8] The Missile Technology Control Regime is a political agreement settled upon by 35 states, it has no binding legal force, initiated in April 1987 by the G7 states.

[9] Adopted in October 2016, in Washington D.C. Romania is a signatory state of the Declaration (https://2009-2017.state.gov/r/pa/prs/ps/2016/10/262811.htm, accessed 27.06.2021).

non-compliance with conventional or customary law as a consequence of the use of emerging technologies, as is the case with unmanned aerial systems.

A paramount concern that we had during the elaboration of the doctoral thesis was the identification, definition and presentation of the concepts, principles, paradigms and mechanisms specific to unmanned aerial vehicles in the practice of states and the jurisprudence of international courts.

In this context, we have analyzed and explained the notions of unmanned aerial vehicles in the geographical, social, political and legal space to clarify the relationship between the unmanned aerial vehicle and other categories of vehicles controlled remotely by an operator, together with the connection between the type of remote control of other categories of devices, weapons and platforms.

Among the principles of humanitarian law, we have analyzed the principles of proportionality, distinction and necessity, and regarding the use of force, we have considered both perspectives from international law and the internal law of states with public order forces. We assessed the use of drones from the perspective of the institution of international responsibility of states for wrongful acts, the principles of international humanitarian law, the limits of the use of armed force and the concept of state sovereignty.

2. Determining the specific elements of public international law, European law and those found in the legal acts adopted at the national level

Public international law is split into a multitude of sub-branches of law, representing a complex and flexible system, so it is easy to envision how aviation law could be mixed with international humanitarian law to form the basis of a new legal instrument that would regulate the correct use of the drone systems (remotely controlled, autonomous or with artificial intelligence).

We are of the opinion that any endeavor to regulate unmanned systems should take into account the continuous capacity of remotely controlled systems to be employed alongside artificial intelligent; therefore, the attempt to limit the use of drones in a manner similar to the prohibitions that govern anti-personnel mines can't be justified, considering that drones are not a weapon, but a platform with multiple uses.

When looking at specialty doctrine[10], the prohibition, even partial, of unmanned systems would produce positive results in protecting international law by limiting the targeting of civilians, especially in the context of a formation of unmanned systems of the *"swarm"*[11] type, which becomes uncontrollable and which would indiscriminately attack targets.

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[10] **Zachary Kallenborn**, *„Are drone swarms weapons of mass destruction?",* Future Warfare Series no. 60, United States Air Force Center for Strategic Deterrence Studies, Maxwell Air Force Base – Air University, Alabama, SUA, 06.05.2020, pp. 16-17.

[11] To clarify the context of the usage of the term, we state that the technique used is specific to the behaviour of the beehive, the systems acting together like a swarm of bees. In English, this behaviour is called *"swarm"*, the action being that of *"swarming"*, the analogy reflecting the similarity with the behaviour of bees. For more information, check **Zachary Kallenborn** *"Swarm talk: understanding drone typology"*, Modern War Institute - Military Academy at West Point, 12.10.2021 (https://mwi.usma.edu/swarm-talk-understanding-drone -typology/, accessed on 18.03.2020. At the same time, we specify the fact that in the studies elaborated by the research service of the European Parliament [e.g. the work **Jessica Dorsay, Giulia Bonacquisti,** *"Towards an EU common position on the use of armed drones"*, 2017, p. 31

Public international law establishes, by analogy, a series of rules that must be considered when using and equipping this system. Thus, the International Committee of the Red Cross appreciates that the principles of international humanitarian law remain applicable, even if humanitarian law did not foresee the influence of unmanned technology at the time of adopting of the norms in question.

The issue of civilian usage of unmanned systems was the subject of analysis concerning the adoption of legal acts of the European Union and the legal instruments adopted under the auspices of the ICAO, as well as the collective efforts of the states. However, in the field of national security, public order and military operations, unmanned systems have not been the subject of exhaustive legislative approaches, requiring an interdisciplinary approach of some branches of public law[12].

Likewise, we considered the specifics of the national regulation of unmanned systems in the USA, the United Kingdom, Germany, Romania, the Russian Federation, and other states. The mentioned aspects were analyzed in the paper's second chapter, entitled *Conceptual delimitations regarding unmanned aerial vehicles.*

3. Identification of the preeminent international legal instruments applicable to unmanned aerial systems and nationally adopted legal acts applicable to unmanned aerial systems

In our analysis, we have identified the international legal instruments, adopted or in the process of being adopted, so we mention, as an example, the Convention on International Civil Aviation signed in Chicago in 1944 and the ICAO guidelines, such as Circular 328/AN/190 on unmanned aircraft, the ICAO Model Regulation for Unmanned Aerial Systems or the Manual on Unmanned Aerial Systems.

At the same time, we have identified applicable domestic law and jurisprudence from states that allow the widespread use of unmanned aerial systems, among which we mention the USA, the United Kingdom and Germany, where the courts have applied both national laws and provisions of public international law to determine whether the measures adopted by the public authorities were promptly justified.

We illustrate that the UK Civil Aviation Authority has published a Drones and Model Aircraft Code[13] to provide all the necessary information for any category of unmanned aerial system. The code can be used as a legal tool and study material for the operator certification theory test.

(https://www.europarl.europa.eu/RegData/etudes/STUD/2017/578032/EXPO_STU(2017)578032_EN.pdf), or **Tania Lațici**, *"Civil and military drones"*, p. 8 (https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/642230/EPRS_BRI(2019)642230_EN.pdf) the terminology of "swarm" is used when the organized attack behaviour of several unmanned systems is analyzed].

[12] **Nils Melzer,** „*Human Rights Implications Of The Usage Of Drones And Unmanned Robots In Warfare"*, Directorate-General For External Policies Of The Union, Study, EXPO/B/DROI/2012/12, PE 410.220, May 2013, p. 15.

[13] *"The Drone and Model Aircraft Code"*, published in October 2019 (https://register-drones.caa.co.uk/drone-code/updates accessed 27.02.2022).

Regarding other types of unmanned systems, we have addressed the problems and risks associated with autonomous vehicles, as well as accidents caused by the companies Uber[14] and Tesla[15]. The considered aspects were analyzed in the content of the third chapter of the paper, which has the marginal title *Application of the norms of public international law in the sphere of unmanned aerial vehicles*.

4. The use of unmanned aerial systems in operations involving the use of armed force and the consequences of international unlawful acts resulting from their use

The international responsibility of states cannot be interpreted as infringing on sovereignty but constitutes a manifestation of international personality, so states are obliged to respect the norms of international law but do not benefit from the internal coercive force[16].

The responsibility of states is upheld in the *Draft articles on the responsibility of states for unlawful international acts*[17], which provides, in art. 1, that any internationally wrongful act of a state engages its responsibility. The constitutive elements of liability are unlawful conduct, and imputability, while doctrine and jurisprudence add the causation of damage to these elements. Additionally, concerning the international responsibility of the states, horizontal aspects of responsibility are provided, so within these mechanisms, we identify a duty of the states as subjects of public international law and also an individual responsibility of the agent, a responsibility that can be civil, administrative or criminal.

According to the doctrine, an artificial intelligence system could act in an inexplicable manner, which could perpetuate the operation even after state authorities have apprehended the operator, if the action had already been programmed into the system or the system had the ability to act based on the vehicle's own intelligence[18]. An autonomous system cannot distinguish between legal and illegal acts, as it behaves based on accumulated, stored knowledge and programmed algorithm.

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[14] The investigation was conducted by the US Department of Transportation's National Transportation Safety Board, and the results of the investigation are available at: https://www.ntsb.gov/news/events/Pages/2019-HWY18MH010-BMG.aspx and https ://www.ntsb.gov/investigations/Pages/HWY18MH010.aspx, accessed on 16.03.2022.

[15] The decision of the Karlsruhe Court, 27.03.2020, OLG Karlsruhe, cause 1 Rb 36 Ss 832/19 (https://dejure.org/dienste/vernetzung/rechtsprechung?Text=1%20Rb%2036%20Ss%20832/19, accessed 04.06.2021); for more details, check **Alexander Gratz**, *„OLG Karlsruhe: Fahrzeug-Touchscreen zur Steuerung des Scheibenwischers als elektronisches Gerät”*, Universitat des Saarlandes, 09.07.2020 (https://verkehrsrecht.gfu.com/2020/07/olg-karlsruhe-fahrzeug-touchscreen-zur-steuerung-des-scheibenwischers-als-elektronisches-geraet/, accessed 04.06.2021).

[16] **Raluca Miga-Beșteliu**, *„Drept internațional public”*, Vol. II, Ed. 2, C.H. Beck Press, Bucharest, 2014, p. 27.

[17] Adopted by the International Law Commission during its 53rd session in 2001 and communicated to the UN General Assembly as part of Resolution no. A/56/10 (https://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf, accessed 05.07.2021)

[18] For more details **Ryan Abbott, Alex F. Sarch** in „*Punishing Artificial Intelligence: Legal Fiction or Science Fiction”,* 53 UC Davis Law Review 1, 2019, pp. 323-384.

One of the hypotheses that can attract the international responsibility of states for the illicit use of force through unmanned aerial systems is the concept of targeted directed attack or targeted killing[19].

The definition of directed attack considers the action procedure of the operator (usually the State), so precisely directed attack is a use of lethal armed force against another person (or group of persons) with *dolus directus*. At the same time, the definition includes the principle of necessity so that the use of force can only be ordered if the person who is the object of the attack is not in the custody of the person using the system[20].

In a report prepared by the UN Special Rapporteur on extrajudicial executions, it is stated that the number of states that own unmanned aerial systems with military capabilities have increased significantly, and since 2015 have become often utilized in situations of tension and internal armed conflicts. At the same time, the Rapporteur identified at least 20 non-state groups that possessed armed unmanned systems or that were improvised to be used in armed actions[21].

Our research in the fourth chapter, entitled *Elements of establishing the international responsibility of states for the use of unmanned aerial vehicles and some procedural aspects*, included both the mentioned aspects and those elements regarding the civil and criminal liability of the drone operator in police missions and military during anti-terrorist operations.

5. Analysis of some aspects related to artificial intelligence

Artificial intelligence can be a component of a system, or a computer program that is an integrated part of a drone, so unmanned aerial vehicles and autonomous lethal systems can be analyzed both as individual technologies and simultaneously as systems that can be organized in formations because the components that allow the autonomous functions are common to the two.

Remotely controlled systems can be improved through computer programs or autonomous modules capable of identifying, without direct human intervention, the targets or objectives indicated by the operator, acting as an informational filter for decisions[22]. We exemplify those small systems, called Black Hornet, that were used in Afghanistan, which gave British troops the ability to monitor hostile areas without the need for their physical presence[23].

We can consider a defining element of artificial intelligence the fact that an autonomous (intelligent) system is a robotic mechanism or a closed-loop function in which information is perceived through sensors, which is subsequently processed through the operating system, and the result is communicated for dissemination to the decision maker.

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[19] **Ion Gâlea**, *„Aplicarea normelor dreptului internațional umanitar în cazul operațiunilor antiteroriste”,* C.H. Beck Press, București, 2013, p. 207.

[20] **Nils Melzer**, *„Targeted killing in international law”*, Oxford University Press, Oxford, 2009, pp. 1-2

[21] **Agnès Callamard**, "*Use of armed drones for targeted killings, Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions*", part of the Human Rights Council resolution of the UN General Assembly no. A/HRC/44/38 of July 3, 2020 (https://undocs.org/en/A/HRC/44/38 accessed 17.07.2021).

[22] **Ibidem**, p. 132.

[23] **Norine MacDonald, George Howell**, *„Killing Me Softly Competition in Artificial Intelligence and Unmanned Aerial Vehicles”*, PRISM, National Defense University Press, Vol. 8, No. 3, 2020, (pp. 103-126) p. 112.

As such, autonomous capability can be understood as the system's ability to act without direct human intervention. However, the ability of the device to perform operations is limited by humans, based on computer programs, the actions being different depending on the environment in which the system operates.

The autonomous function may be under full or partial human control, maintaining some functional degree from design until the cessation of functions.

Thus, all systems can be directly controlled (constant supervision and human intervention for any decision), partly controlled (some functions are left to the human operator while other functions remain in the exclusive competence of the system) or controlled in a supervised manner (human intervention is required only in urgent cases). In Chapter Six, entitled *The International Legal Dimension of the Use of Artificial Intelligence as a Component of Unmanned Aerial Vehicles and State Liability Issues*, our research also considered the risks associated with using artificial intelligence technology by presenting accidents that resulted in physical injuries and material damage.

V. The research methods used

To achieve the proposed objectives, we used historical analysis and comparative law analysis of the evolution of the notions and the legal regime of drones. The methodology chosen for the research was a complex one. We resorted to the historical method, as a set of means intended to study the concept of unmanned aerial vehicles from the perspective of succession in time, which allowed us to identify an early moment of the appearance of these types of vehicles and the evolution to the stage at which the aerial vehicle unmanned has acquired specific military characteristics.

From a legal point of view, we analyzed the international legal instruments with binding value for states, such as those in the field of humanitarian law[24], along with the legal acts adopted by the institutions and competent bodies of the European Union. At the same time, we considered customary law and quasi-legal acts.

We used the geographical method for the preparation of this thesis, considering the nature of remote control of these types of vehicles or devices, both the internal law of the State that controls the vehicle and the internal law of the host state and the victim state being relevant. This method was used in our approach, presenting numerous moments when unmanned aerial systems were used

[24] International humanitarian law applies during armed conflict and includes rules that are intended to protect people who do not take part or no longer take part in hostilities, respectively restricting the means and methods of war used. In this thesis, we mainly referred to the rules included in the four Geneva Conventions from 1949 (known as *"Geneva law"*) and which regulate the following situations: the wounded and sick in the armed forces in the campaign; the wounded, sick and shipwrecked of the armed forces at sea; prisoners of war; civilians in time of war. The 1949 Geneva Conventions were supplemented in 1977 by two Additional Protocols on the Protection of Victims of International Armed Conflicts and the Protection of Victims of Non-International Armed Conflicts, respectively. Anatolie Bulgac, Sergiu Sîrbu, *"International humanitarian law"*, Centrul Editorial-Poligrafic Medicina Publishing House, Chisinau, 2019, pp. 8-10.

in police (Israel), military (Iraq, Pakistan and others) and economic (the USA, UK and EU) missions.

The systemic and teleological methods were incidental, taking into account the documentation that was the research's basis, the identified principles and, above all, the hierarchy of legal norms.

Another research method applied in this paper is the etiological one, through which we analyzed the issue from the point of view of the economic, social, political, historical and purely legal causes of the concepts, principles, paradigms and phenomena circumscribed by the study. At the same time, we used the anthropological method because it allowed the understanding of the object of the research and its results from the perspective of man, of human communities, including the State.

We used the linguistic method to identify the real meanings of a text by intensively using the grammar and lexicon of the language in which it is written, by exploring the denotative language, and sometimes also the connotative one. We specify that the term drone is most often used to create the link between the different legal systems. Last but not least, in this research, we have deemed the comparative method necessary to establish similarities and differences, common principles and paradigms, and different representations and reasonings between different legal systems and legal orders.

VI. The results pursued by the research undertaken

The final objective of the work was to develop proposals to clarify the correct use of unmanned aerial vehicles also to analyze the issue of artificial intelligence in the context of the international responsibility of states.

The problem investigated in the thesis identifies a series of inadvertences that the current legislation cannot solve; nevertheless, a solution must be presented that will also take into account some relevant projects, such as the need to establish a European Robot Agency to regulate a new chapter in law, namely robotics[25].

In this way, we concluded that public international law includes international legal instruments that can limit the commission of illegal acts by states; however, these legal acts are not

[25] See **Gianmarco Veruggio**, *"The EURON Roboethics Roadmap, EURON Roboethics Workshop 27.02-03.03.2006"*, Scuolo di Robotica, Version 1.1, July 2006 (http://www.roboethics.org/atelier2006/docs/ROBOETHICS %20ROADMAP%20Rel2.1.1.pdf, accessed on 25.08.2021). We specify that a unanimously accepted definition of the concepts of roboethics and robotics does not exist; as such, the doctrine holds that robotics is the multidisciplinary field of science and technology that studies the design and construction technique of mechanical, computer or mixed systems and robots for partial replacement total times of man in technological processes, in action on the environment (definition taken from **Ion Coteanu, Lucretia Mareș**, *"Explanatory dictionary of the Romanian language"*, 2nd Ed., Publishing Univers Encyclopedic Gold, 2009, available in electronic format at address https://dexonline.ro/definitie/robotica/definitii accessed on 01.07.2022). As far as roboethics is concerned, the term is not expressly defined in the Romanian language, so according to the specialist doctrine, the terminology can be understood both as a branch of philosophical sciences, in which the ethics of robotic products and the use of their role in our society, as well as the ability of a robotic system to adhere to a code of ethical conduct adopted by humans, with the robot's actions being scrutinized by humans and determining whether that system conforms to programmed social values (see **Patrick Lin, Keith Abney, George A. Bekey,** *"Robot ethics. The ethical and social implications of robotics"*, MIT Press, Massachusetts, 2012, pp. 347-349).

sufficient, so steps have been initiated within the international community to adopt and negotiate new instruments either with binding legal force or from the category of soft-law types capable of causing operators and states to collaborate in order to mitigate the adverse effects of artificial intelligence and drones.

VII. Overall presentation of the doctoral thesis

Chapter I - Historical considerations regarding unmanned aerial vehicle concerns

In the first chapter, we outlined the fundamental approaches to unmanned aerial systems from a historical point of view, thus mentioning the moments when they were identified among the first models of remotely controlled devices in history and their role.

The research continued with the presentation of the progressive evolution of unmanned aerial systems from 1990-2022, which are predominantly used in armed conflicts and anti-terrorist operations. We found that unmanned aerial systems have become the primary means of conducting the conflict and gathering information following the armed conflict between Azerbaijan and Armenia in 2020 and the one between the Russian Federation and Ukraine in 2022.

Our investigation highlighted the role and use of Predator and Reaper drones controlled by the US Central Intelligence Agency in conducting targeted airstrikes against terrorist groups. Later, we observed the adoption of these practices within the armies of other states in the international community.

We conclusively appreciate the opinion expressed by the President of the International Court of Justice, on the occasion of expressing a perspective regarding the problems of unwritten sources of public international law to the Juridical Committee of the UN General Assembly, according to which the technological developments of the last century have allowed the concept of state practice, as a source of law, to be accessible to a broader audience, so that within international organizations, participants in debates promote ideas and discussions on this source and increase the rapid development of customary norms, which include the concept in question[26].

We appreciate that the technology of unmanned devices requires the adoption of a coherent legislative response regarding their development and use, so that any legislator must take into account the aspects provided in art. 36 of Additional Protocol I to the Geneva Conventions of August 12, 1949 regarding the protection of victims of international armed conflicts[27].

Simultaneously, we consider essential the approach aimed at developing beneficial technologies whose effects facilitate a correct application of the legal norms of international law; however, these procedures must be applied under the rule of a minimum standard of compliance

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[26] **Abdulqawi Ahmed Yusuf,** *"The International Court of Justice and unwritten sources of international law"*, Statement of the President of The International Court of Justice before the Sixth Committee of The General Assembly, New York, 01.11.2019 (https://www. icj-cij.org/public/files/press-releases/0/000-20191101-STA-01-00-EN.pdf, point 19, accessed on 24.02.2022).

[27] Adopted on June 8, 1977, entered into force on December 7, 1978. The name of the international legal instrument is taken from Decree no. 224/11 May 1990 for the ratification of additional protocols I and II to the Geneva Conventions of August 12, 1949 published in M. Of. of Romania no. 68-69/14 May 1990. We also considered the names of the international legal instruments to which Romania is a party and which are published by the Ministry of Foreign Affairs (see https://www.mae.ro/node/ 1514, accessed on 30.06.2022).

with the principle of legality. Thus, even if the limiting requirements stipulated by art. 35 and art. 36 of Additional Protocol I to the Geneva Conventions of August 12, 1949, regarding the protection of victims of international armed conflicts were to be ignored, the responsibility of the State can be established, all the more so since the text of the protocol does not also include an obligation to disclose aspects that determine the fact that a system or a weapon violates certain principles of international law.

Chapter II - Conceptual distinctions regarding unmanned aerial vehicles

The concept of an unmanned aerial vehicle is recorded in the specialized literature by the term *drone*, which, etymologically, derives from the denomination of the insect drone because the system is not able to interact with the environment without clear instructions set by an operator, but only to fly over or to have limited interaction with the environment.

We considered important the opinion expressed in the specialized doctrine according to which the drone can be equivalent to a robot because the unmanned aerial system is capable of perceiving, processing and recording the surrounding environment through optical sensors, having the possibility of perceiving objects or events which a human, being could not commonly observe, in fact, an extension and a tool of the human and not a substitute for it[28].

In the second chapter, we also analyzed the concept of a drone as defined in Romanian legislation, EU legal acts, and the Chicago Convention on International Civil Aviation. We have also taken into consideration the customary law regarding emerging technologies, as the use of drones has emerged due to a relatively long practice of states that has been enshrined in the working documents of international intergovernmental organizations.

In an attempt to establish a legal framework for unmanned aerial systems, the International Civil Aviation Organization interpreted art. 8 of the Chicago Convention on International Civil Aviation in the sense that the drone is a device that is used without the direct intervention of an operator on board, being controlled from a station or that has been programmed in the idea of autonomy[29].

At the same time, in the second chapter, we analyzed the internal legislation of some states and some cases pending before national courts regarding unmanned systems (air or ground), including autonomous control modules. In the chapter, we considered the first issues regarding implementing EU legal acts in unmanned aerial vehicles through the European Aviation Safety Agency.

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[28] **Patrick Lin, Keith Abney (coord.)**, op. cit., pp. 187-188.

[29] *"Global Air Traffic Management Operational Concept"*, Doc 9854 AN/458, First Edition - 2005, 02.09.2013, point B-6, p. 42, (https://www.icao.int/Meetings/anconf12/Document% 20Archive/9854_cons_en[1].pdf, accessed on 12.05.2021).

Chapter III - Application of international public law norms in the field of unmanned aerial vehicles

Within this chapter, we were able to comment on the working documents that could become international legal instruments through which the use of unmanned aerial systems would be precisely regulated.

Our analysis aimed to identify a new paradigm in public international law whereby unmanned aerial systems must simultaneously comply with public international law, humanitarian law and international human rights law for any situation involving the use of force[30].

Also, in our approach, we took into account the relevant concluded treaties and those currently under negotiation, so that we identified international instruments without binding legal force (called quasi-legal or soft-law norms) as applicable, such as the *Regime of Missile Technology Control*[31] or the *Wassenaar Arrangement on the Control of Exports of Conventional Arms and Dual-Use Goods and Technologies*[32].

We then considered the vast issue of international trade in unmanned aerial systems and the incidence of the application of the *Arms Trade Treaty*[33], as well as the special rules applicable to the transfer of emerging technologies and the obligation that the state of destination or acquiring the system be a state that respects human rights.

A possible solution for resuming discussions on the control of the export and import of technologies with unmanned systems, in our opinion, is the *Aachen Treaty on Franco-German Cooperation and Integration*, which establishes a collaborative relationship in the decision-making field of defence and security between Germany and France[34] and with regards to the other EU states, and similar agreements can be adopted with the other states as well.

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[30] **Nils Melzer,** *"Human Rights Implications Of The Usage Of Drones And Unmanned Robots In Warfare"*, Directorate-General For External Policies Of The Union, Study, EXPO/B/DROI/2012/12, PE 410.220, May 2013, p. 15 ; According to art. 6 para. (1) of the International Covenant on Civil and Political Rights of 1966 adopted by United Nations General Assembly Resolution no. 2200A (XXI) of December 16, 1966 and in force since March 23, 1976.

[31] The Missile Technology Control Regime is a political agreement agreed by 35 states, it has no binding legal force, initiated in April 1987 by the G-7 states.

[32] Multilateral agreement concluded between 42 states on July 12, 1996, in Wassenaar. It was supplemented by the Plenary Session of the Wassenaar Arrangement in December 2013 with devices that can collect information through telecommunications networks.

[33] **Rachel Stohl, Shannon Dick,** *"The Arms Trade Treaty and Drones"*, Report published by STIMSON, August 2018, p. 3 (https://www.stimson.org/wp-content/files/file attachments/Stimson_The%20Arms% 20Trade%20Treaty%20and%20Drones_August%202018.pdf); **Cholpon Orozobekova, Marc Finaud**, *"Regulating and Limiting the Proliferation of Armed Drones: Norms and Challenges"*, Geneva Paper 25/20, Geneva Center for Security Policy, August 2020, p. 26.

[34] Signed on 22 January 2019, in Aachen, entered into force on 22.01.2020 (https://www.diplomatie.gouv.fr/en/country-files/germany/france-and-germany/franco-german-treaty-of -aachen/, accessed on 07/05/2021).

Chapter IV - Establishing the international responsibility of states for the use of unmanned aerial vehicles and some procedural aspects (elements)

Throughout this chapter, we analyzed the classic theories of the international responsibility of states for illegal acts, as well as the conditions of responsibility (which are of a subjective and objective order), to which are added fault, damage and causality[35].

From the analysis of the institution of the international responsibility of the states for illegal acts, we considered as conclusive the mechanism of attracting the state's responsibility both for the acts of its agencies and for the failure to act[36].

In the chapter, we sought to identify the obligations of States relating to unmanned aircraft under the Chicago Convention on International Civil Aviation, with the State (through its authorities) charged with ensuring the security and management of air traffic, including through the use of coercive means, in order not to jeopardize its sovereignty or that of other states, whose aircraft or citizens transit or overfly the territory and whose integrity may be endangered by the lack of services provided or the safety measures applied.

Given that the international responsibility of States for wrongful acts can be incurred by the actions of state agents, in chapter four we investigated the responsibility of the operator and the need to extend the notion of a state agent to the producer, programmer and external personnel serving a state. At the same time, in our approach we opposed the replacement of the human operator with a computer system capable of making decisions about the suppression of life.

In the context of the international responsibility of states for wrongful acts, we also considered the concept of targeted attacks and the role of unmanned aerial systems in anti-terrorist operations carried out by the USA, Israel and the Russian Federation.

In the chapter, we analyzed the importance of consent to the authorization of the use of armed force in the territory of another state that is facing problems affecting regional and international peace and security, so we studied the issue of valid consent expressed (as is the case with the States of Yemen and Somalia[37]) and the tacit (as is the case with Pakistan[38]).

At the same time, we have also referred to the liability for aviation incidents according to Article 26 of the Chicago Convention on International Civil Aviation and the applicability of the international legal instrument in the event of aviation incidents, including the accident related to flight MH17[39]. Through our approach, we have demonstrated the applicability of the Warsaw

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[35] **Bogdan Aurescu, Adrian Năstase**, *„Drept internațional public – Sinteze”*, C.H. Beck Publishing, Bucharest, 2018, pp. 370-371.

[36] **Carmen Moldovan**, *„Drept Internațional Public – Principii și instituții fundamentale”*, Hamangiu Publishing, Bucharest, 2017, pp. 287-289; **Aurora Ciucă**, *„Drept internațional public”*, 2nd Ed., AXIS Foundation Press, Iași, 2005, p. 274.

[37] **Max Byrne,** *"Consent and the use of force: an examination of 'intervention by invitation' as a basis for US drone strikes in Pakistan, Somalia and Yemen"*, Journal on the Use of Force and International Law, Vol. 3, No. 1, 2016, pp. 97-125.

[38] **Sikander Ahmed Sigh**, *„International law and drone strikes in Pakistan”,* Routledge Press, Abingdon, 2015, pp. 90-97.

[39] Case MH17 is a file of great relevance, the entire case can be traced through the websites provided by the Dutch Prosecutor General's Office and the Dutch Ministry of Justice at courtmh17.com and prosecutionservice.nl, Official internet addresses made available to the general public by the Dutch State authorities, these are updated after each

Convention for the Unification of specific rules on International Air Transport (1929) and the Montreal Convention for the Unification of particular rules on International Air Transport (1999) to incidents caused by the use of drones.

Chapter V - International practice relevant to unmanned systems and devices

In the fifth chapter, we examined the work of the Group of Government experts on emerging technologies in the field of Autonomous lethal systems under the Convention on the prohibition or limitation of the use of specific categories of classical Weapons that could be considered to produce excessive traumatic effects, or that would strike indiscriminately. Thus, we used in our research the working documents, reports and resolutions adopted during the expert group sessions.

At the same time, we dealt with the problems of unmanned aerial systems and autonomous lethal devices according to the United Nations Institute for Disarmament Research, the Commission on Disarmament and International Security of the UN General Assembly, the European Forum on Armed Drones, as well as the Expert Group with on artificial intelligence within the European Union.

Our research has also focused on using unmanned aerial systems during UN-led peacekeeping missions in States such as Mali[40] or the Democratic Republic of Congo[41]. We have also analyzed the conceptual limitations of territoriality under the *Rome Convention on damages caused by foreign aircraft to third parties on the surface* and the *Chicago Convention on International Civil Aviation*, along with the limitations found in international court considerations.

Chapter VI - The international legal dimension of the use of artificial intelligence - component of unmanned aerial vehicles and the international responsibility of states

Artificial intelligence is a concept with multiple meanings and definitions, the unanimously accepted characteristic being that of the functional autonomy regime that can identify within the components of information systems capable of improving the processing and reading capacity, up to advanced devices capable of performing virtual or physical tasks, this is due to the interaction of the surrounding society with technology. Our approach also aimed to clarify the risks associated with using intelligent systems, such as the Harpy drone[42], that can operate autonomously.

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hearing with a summary of what was discussed and a video recording of the hearing (https://archive.ph/9mtbT and https://archive.ph/tCfg3). The Court estimates that it will rule at the latest on 15.12.2022.

[40] **Rida Lyammouri**, *„After Five Years, Challenges Facing MINUSMA Persist”*, Publications, Policy Brief PB-18/35, OCP Policy Center, November 2018, p. 5; **Khalil Dewan**, *„France's Shadow War in Mali Airstrikes at the Bounti Wedding”*, Stoke White Investigations Ltd., 2021, p. 7.

[41] UN Security Council Resolution no. 1279 (1999) of 30 November 1999 regarding the situation in the Democratic Republic of the Congo (http://unscr.com/en/resolutions/1279 accessed on 13.08.2021); **Kasaija Phillip Apuuli,** *„The Use of Unmanned Aerial Vehicles (Drones) in United Nations Peacekeeping: The Case of the Democratic Republic of Congo”*, American Society of International Law, Vol. 18, No. 13, 13.06.2014 (https://www.asil.org/insights/volume/18/issue/13/use-unmanned-aerial-vehicles-drones-united-nations-peacekeeping-case, accessed on 14.08.2021).

[42] **Alan Backstrom, Ian Henderson**, *„New capabilities in warfare: an overview of contemporary technological developments and the associated legal and engineering issues in Article 36 weapons reviews”*, ICRC Review, Vol. 94, No. 886, Summer 2012, pp. 483-514.

By analyzing the particularities of remotely controlled vehicles, we could see similarities in the development, adoption and implementation of legal acts on unmanned and intelligent land vehicles. Thus, we consider it necessary to amend the *Vienna Convention on Road traffic* to supplement the driver's definition with the possibility that the vehicle can be controlled autonomously with little intervention from the persons on board.

The literature emphasizes that the implementation and use of artificial intelligence, especially in the judicial context, may pose risks due to factors that may influence the act of justice, including The availability and quality of data (the accuracy of a solution has a significant dependence on the quality and quantity of data used) or human impact (reducing jobs for people, but excessive staff loss due to the use of artificial intelligence can also jeopardize companies' ability to maintain the necessary expertise capital if an intelligent solution cannot be implemented)[43].

At the same time, we took into account the work of the European Parliament and the European Commission in the field of artificial intelligence, especially following the adoption of the *White Paper on artificial intelligence* and the draft Regulation COM(2021)206[44]: *"Proposal for a regulation of the European Parliament and the Council laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts".*

Chapter VII - Conclusions and lex ferenda proposals

In the last chapter of the thesis, we have set out the general conclusions and formulated some *lex ferenda* proposals that concern both formal and substantive issues, to which we will refer next.

We believe that the steps taken to clarify the situation of the damage are multiple, but unmanned systems and artificial intelligence technology will require a real legislative revolution. We take the majority view of the doctrine because it covers some functional legal institutions concerning emerging technologies. However, we believe that the current civil liability paradigm does not provide sufficient guarantees for an injured person to obtain compensation for the damage and successfully identify the natural person or legal entity responsible on his own.

States are required to adopt preventive operational measures to protect an individual whose life is compromised by the criminal acts of another individual, but this does not amount to a requirement that the states must prevent any possible violence, and in the field of the fight against terrorism, the states must, on the one hand, sanction the guilty and on the other hand, take preventive measures appropriate to the general situation[45].

Thus, we *acquiesced* to the above-mentioned doctrinal considerations, primarily when we refer to the fight against terrorism, which has acquired a hybrid character with the use of emerging

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[43] **Laura Maria Stănilă**, *„Inteligența artificială: Dreptul penal și sistemul de justiție penală. Amintiri despre viitor"*, Universul Juridic Publishing, Bucharest, 2020, pp. 222-223.

[44] Communication of 19 February 2022 of the European Commission no. COM(2020) 65 final - White Paper on Artificial Intelligence (https://ec.europa.eu/info/sites/default/files/commission-white-paper-artificial-intelligence-feb2020_ro.pdf accessed on 12.08.2021).

[45] **Bianca Selejan-Guțan**, *„Protecția europeană a drepturilor omului"*, 5th Ed., Hamangiu Publishing, Bucharest, 2018, p. 90.

technologies in extraterritorial police operations, and the establishment of the causal link between the action of the state and the effects of the attack has not been achieved with certainty, because the state authorities were not transparent and did not allow access to justice for those interested or affected by the decision to use force.

States are increasingly resorting to the new tactical paradigm offered by unmanned aerial systems, where the operator is introduced into combat without being physically present on the battlefield. However, we believe that States will use unmanned systems for non-lethal or peacekeeping missions, so we exemplify the situation in the US, where police forces have initiated experimental efforts to use Reaper drones in missions to monitor crowds or dangerous people in internal armed incidents[46].

As a result, all States would benefit from a body that centralizes internal policies for using artificial intelligence and enables international collaboration within international organizations to adopt standard practices.

Regarding the *lex ferenda* proposals, in the doctoral thesis we formulated a series of criticisms and proposals to remedy some of the aspects uncovered through the research and analysis of legal instruments, reports and studies carried out by international organizations, States, groups of experts and scientists.

Thus, in order to summarize the points outlined in the thesis, we specify that at the level of the European Union, it is necessary to adopt a legal act on artificial intelligence (COM/2021/206 final), as well as to develop and adopt a detailed Directive based on the framework project of European Parliament resolution 2016/2662(RSP), to identify minimum rules for the use of unmanned aerial systems in armed conflicts by the Member States of the European Union.

At the same time, we stress the need to promote a legal act on the technical components contained in the proposal for Regulation 2021/0105(COD) because we believe this will increase the quality of the entire set of robotic components.

We consider it worthwhile to extend the proposal for establishing the European Agency for artificial intelligence to create a body (specialized institution) in the coordination of the UN to monitor the transfer of intelligent technologies and adopt strategic guidelines for developing artificial intelligence for States.

We also highlight that States must conclude a memorandum allowing the commercialization of information-gathering equipment and advanced technologies only by States that have committed to respecting fundamental human rights. At the same time, we consider that the Memorandum should include obligations to conduct impartial investigations into cases of misuse of technologies, with States having due diligence obligations.

We believe that the regulation of intelligent systems must be achieved through a legally binding instrument; however, given the difficulties encountered by States in the informal and formal negotiations at the UN, we consider that a step-by-step transition can be made by adopting a joint

[46] **Kyle Grayson**, *„Cultural Politics of Targeted Killing: On drones, counter-insurgency, and violence"*, Routledge Press, New York, 2016, p. 203-204.

declaration by the producing States, developers and users of such systems, through which to assume the due diligence of correct use and respect for human rights.

We also consider that without changing the paradigm of civil and criminal liability of the operator, fully autonomous technologies cannot be allowed, so the EU's actions include those measures that we consider essential to be undertaken by the entire international community so that the victim's right to turn against all participants and decision-makers who have allowed an autonomous, flawed or non-compliant system to be used is recognized.

In Annex 2 of the thesis, we have formulated a proposal for a draft declaration that States can adopt, because we believe that this is a way of getting States to reach a compromise, recognizing the capabilities and limitations of technology. The proposal builds on the issues negotiated at the level of expert groups under the Convention on Conventional Weapons and the first UN Committee, as well as on the proposals of the UN Special rapporteurs.

Annex 1 - Case study - The impact of unmanned aerial systems in the actions in which they were involved, the extent of the liability of States and a special look at Romania

In the case study, we analyzed the joint international responsibility according to the *Guiding Principles for shared responsibility in international law* [47] and specific cases in which extraterritorial force was used (e.g. Qasem Soleimani case). At the same time, we analyzed the jurisprudential situation of the ECHR regarding the situation of Romania and the typical international responsibility of States in supporting certain types of illegal international acts.

Annex 2 does not represent our personal creation in its entirety, but we have identified and selected those rules that can be implemented and that aim to standardize conduct, and whose implementation cannot be achieved by recourse to sanctions. The provisions chosen to form the declaration's content are those found in the reports of UN expert groups, draft legal acts that have been the subject of debate and negotiated at the EU level, and the statements of the specialized doctrine.

[47] For details, see **André Nollkaemper, Jean d'Aspremont et al.**, *"Guiding Principles on Shared Responsibility in International Law"*, The European Journal of International Law Vol. 31, No. 1, 2020, pp. 15-72.

SELECTIVE BIBLIOGRAPHY

I. COURSES, TREATIES, MONOGRAPHS

A. ROMANIAN AUTHORS

1. AURESCU, Bogdan, *„Noua suveranitate”,* Legal Studies, All Beck Publishing, Bucharest, 2003;
2. BÎRSAN, Corneliu; SEVERIN, Adrian ș.a. (coord.), ”*Enciclopedia Juridică Română”* , Vol. III, Universul Juridic Publishing, Bucharest, 2022;
3. CIUCĂ, Aurora, *”Persoana fizică în dreptul internațional public”,* Lumen Publishing, Iași, 2017;
4. CIUCĂ, Aurora, *„Drept internațional public”,* 2nd Ed., AXIS Foundation Press, Iași, 2005;
5. COCOȘATU, Mădălina, ”*Drept internațional public. Sinteze și aplicații”,* 2nd Ed.,Pro Universitaria Publishing, Bucharest, 2016;
6. CONSTANTIN, Valentin, *”Drept Internațional”*, Universul Juridic Publishing, Bucharest, 2010;
7. DEACONU, Ștefan, *”Drept Constituțional”,* 4th Ed., C.H. Beck Publishing, Bucharest, 2020;
8. DIACONU, Ion, *”Introducere în dreptul internațional public – Note de curs”*, Pro Universitaria Publishing, Bucharest, 2014;
9. DIACONU, Ion, *”Manual de drept internațional public”*, Lumina Lex Publishing, Bucharest, 2007;
10. DIACONU, Ion, *”Răspunderea internațională în dreptul internațional”,* Pro Universitaria Publishing, Bucharest, 2013;
11. DRAGOȘ, Dacian C.; KOVAC, Polonca; MARSEILLE, Albert T., ”*Laws of transparency in action - a European perspective”*, Palgrave MacMillian Press, Cham, 2019;
12. FUEREA, Augustin, ”*Dreptul Uniunii Europene - principii, acțiuni, libertăți”*, Universul Juridic Publishing, Bucharest, 2016;
13. GÂLEA, Ion, *”Aplicarea normelor dreptului internațional umanitar în cazul operațiunilor antiteroriste”,* C.H. Beck Publishing, Bucharest, 2013;
14. GÂLEA, Ion, *”Manual de drept internațional – Vol. 1”,* Hamangiu Publishing, Bucharest, 2021;
15. JUGASTRU, Călina, *”Prejudiciul: repere românești în context European”,* Hamangiu Publishing, Bucharest, 2013;
16. MAXIM, Felicia, *”Aspecte teoretice și practice privind tratatul”*, Universul Juridic Publishing, Bucharest, 2012;
17. MIGA-BEȘTELIU, Raluca, *”Drept internațional public”,* Vol. II, 2nd Ed., C.H. Beck Publishing, Bucharest, 2014;
18. MOLDOVAN, Carmen, *”Drept Internațional Public - Principii și instituții fundamentale”*, Hamangiu Publishing, Bucharest, 2017;
19. NĂSTASE, Adrian; AURESCU, Bogdan, ”*Drept internațional public – Sinteze”,* C.H. Beck Publishing, Bucharest, 2018;
20. PODARU, Ovidiu; BACHIȘ, Anda, ”*Drept Contravențional”,* Hamangiu Publishing, Bucharest, 2021;
21. PODARU, Ovidiu; BOARIU, Anca ”*Drept administrativ. Administrația Publică. Actul Administrativ”*, Hamangiu Publishing, Bucharest, 2020;
22. POPESCU, Roxana Mariana, ”*Introducere în dreptul Uniunii Europene”*, Universul Juridic Publishing, Bucharest, 2011;
23. POPESCU, Roxana Mariana, *”Raportul dintre dreptul comunitar (al Uniunii Europene) și dreptul internațional”*, Universul Juridic Publishing, Bucharest, 2013;

24. SELEJAN-GUȚAN, Bianca, *"Protecția europeană a drepturilor omului",* 5th Ed., Hamangiu Publishing, Bucharest, 2018;
25. SELEJAN-GUȚAN, Bianca; CRĂCIUNEAN, Laura-Maria, *"Drept Internațional Public",* 2nd Ed., Hamangiu Publishing, Bucharest, 2014;
26. STĂNILĂ, Laura Maria, *"Inteligența artificială: Dreptul penal și sistemul de justiție penală. Amintiri despre viitor",* Universul Juridic Publishing, Bucharest, 2020;
27. VOICULESCU, Nicolae; BERNA, Maria Beatrice, "*Tratat de drept social internațional și european"*, Universul Juridic Publishing, Bucharest, 2019.

B. FOREIGN AUTHORS

1. ABEYRATNE, Ruwantissa, *"Aviation Security Law",* Springer, Berlin, 2010;
2. ABEYRATNE, Ruwantissa, *"Aviation Security Legal And Regulatory Aspects",* Routledge, Berlin, 2018;
3. ABEYRATNE, Ruwantissa, *"Convention on International Civil Aviation a Commentary"*, Springer, Cham, 2014;
4. BARELA, Steven J. (coord.), *"Legitimacy and Drones Investigating the Legality, Morality and Efficacy of UCAVs"*, Routledge, New York, 2016;
5. BARROS, Ana Sofia; RYNGAERT, Cedric; WOUTERS, Jan (coord.)*,"International Organizations and Member State Responsibility Critical Perspectives"*, Brill Nijhoff, Leiden, 2017;
6. BEST, Katharina Ley; SCHIMD, Jon; TIERNEY, Shane ș.a., *"How to Analyze the Cyber Threat from Drones",* RAND, 2020;
7. BHUTA, Nehal; BECK, Susanne ș.a. (coord.), *"Autonomous Weapons Systems: Law, Ethics, Policy",* Cambridge University Press, Cambridge 2016;
8. BOOTHBY, William H., *"Conflict Law - The Influence of New Weapons Technology, Human Rights and Emerging Actors",* Asser Press, Haga, 2014;
9. BOOTHBY, William H., "*Weapons and the Law of Armed Conflict – Second Edition"*, Oxford University Press, Oxford, 2016;
10. CRAWFORD, Emily, *"Identifying the Enemy Civilian Participation in Armed Conflict",* Oxford University Press, Oxford, 2015;
11. CRAWFORD, James, *"Brownlie's Principles Of Public International Law",* Ed. 9, Oxford University Press, Oxford, 2019;
12. CRAWFORD, James*," State Responsibility – The general part",* Cambridge University Press, Cambridge, 2013;
13. CUI, Yadong;*"Artificial Intelligence and Judicial Modernization",* Springer, Singapore, 2020;
14. FLEMING, Sean, *"Leviathan on a Leash: a theory of state responsibility"*, Princeton University Press, Princeton, 2020;
15. MELZER, Nils, *Targeted killing in international law*, Oxford University Press, Oxford, 2009;
16. MICHAEL J. Boyle"*The Drone Age – How drone technology will change war and peace"*, Oxford University Press, Oxford, 2020;
NOLLKAEMPER, André, PLAKOKEFALO, Ilias, *"Principles of Shared Responsibility in International Law an Appraisal Of the State of the Art",* Cambridge University Press, Cambridge, 2014.

The complete bibliography consists of: 36 courses, treatises and monographs in Romanian; 105 courses, treatises and monographs in languages other than Romanian; 190 studies and articles; 33 international legal instruments; 34 EU legal acts; 39 legal acts adopted at national level; 95 judgments and criminal prosecution files of international and national courts; 14 resolutions of the

European Parliament; 27 normative administrative acts, opinions, points of view and studies developed by the European Aviation Safety Agency; 18 UN Security Council resolutions; 19 resolutions of the UN General Assembly and subsidiary bodies; 28 working documents and reports of the Group of Government experts of the United Nations Convention on certain conventional Weapons; 27 studies and reports drawn up by specialized UN institutions (e.g. UNIDIR); 33 reports drawn up by national authorities and agencies, 60 reports and studies drawn up by international research institutes (expert groups/think tanks, humanitarian organizations, international non-governmental organizations, associations of non-partisan officials, etc.); 60 websites of national public institutions, agencies of intergovernmental organizations, non-governmental organizations containing their information and statements.