

“THE LEGALITY OF TARGETED KILLINGS THROUGH UNMANNED AERIAL VEHICLES (UAVS) – AN ANALYSIS VIS-A’-VIS THE HUMAN RIGHTS’ PARADIGM”

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INTRODUCTION

A. BACKGROUND : PLACING THE DISCUSSION IN CONTEXT:

Soon after the Iraqi Army moved into Kuwait, heralding the inevitability of the Gulf War, and before Operation Desert Storm was unleashed, Saddam Hussein is reported to have said, “*The United States depends on its Air Force and everyone knows that no one has ever won a war from the air.*” If this was intended to be a factual statement, it was correct. On the other hand, if it was suggestive of the ineffectiveness of air power, Saddam Hussein had made a serious miscalculation. He was proved wrong twice, with grave and graver consequences. From World War II onwards, air power has had an increasingly significant role to play. Interestingly no country has ever won the air war and then lost the war. On the contrary, there are many instances where winning the air war markedly eased the way to victory. As air power capability improved, more and more reliance was placed on it. In the 1999 Kosovo conflict, the war objectives were fully achieved with the employment of air power alone. It is opined that the role of air power, or more correctly, aerospace power, in the resolution of future conflicts, will only increase.² Therefore the significance of this paper lies in exploring the weapons of resorted to i.e. Unmanned Aerial Vehicles (UAVs) in international conflicts between states and testing their legality on the parameters of the International Human Rights law.

Historically, unmanned military aircraft have been employed successfully in at least five sets of circumstances.³ *First*, as deliberately indiscriminate weapons employed

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²See Air Marshal Vinod Patney, *Essays on Aerospace Power* (KW Publishers Pvt Ltd., 2009).

³See Air Chief Marshal Sir Michael Armitage, *Unmanned Aircraft*, (Brassey’s Air Power: Aircraft, Weapon Systems and Technology Series) Vol.3, Ritana Books) pp. 115 – 124.

against civilian targets during the German VI campaign against Britain in 1944. *Second*, as a weapon for use against point targets such as ships and bridges in the Second World War and later in Korea. *Third*, in circumstances of political hostility but without military confrontation as was demonstrated by the American use of drones and RPVs over North Vietnam and China in the 1960's and 1970's. *Fourth*, by the military in conditions of politically limited war, as seen in Vietnam in the late 1960's and 1970s. And *finally*, in the all out war, for e.g during the Israeli operations over the Bekka valley in 1982. That limited experience together with some indication of the influence of technological developments, should make it possible to give a tentative forecast about the future of unmanned aircraft.

Clearly, in many situations of confrontation short of conflict, drones and RPVs (Remotely Piloted Air vehicles) will continue to fulfil surveillance roles with unique potential for success. Their relatively low cost and the modest political embarrassment likely to be caused by their loss, seems to make them irreplaceable except perhaps by satellite operations. Since satellites are so very expensive, both in system costs and in the cost of launch, unmanned aircraft for surveillance are likely to have particular appeal to second rank powers. However in conditions of actual combat, particularly in major war, the outlook for unmanned aircraft is far more complex.

B. EXPLORING THE MEANING OF AND NEED FOR UAVS (UNMANNED AERIAL VEHICLES)

B.1 Department of Defence (DoD) Dictionary's definition for "UAV":

"A powered aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide the vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. Ballistic or semi ballistic vehicles, cruise missiles, and artillery projectiles are not considered unmanned aerial vehicles."⁴ The Federal Aviation Administration (FAA) defines a UAV as an unmanned aircraft or a "device that is used or intended to be used for flight in the air that has no onboard pilot. This includes all classes of airplanes, helicopters, airships, and translational lift aircraft that have no onboard pilot."⁵ Unmanned aircraft

⁴See also Brendan Gogarty and Meredith Hagger, *The Laws of Man Over Vehicles Unmanned : The Legal Response to Robotic Revolution on Sea, Land and Air*, 19 J.L.Inf.Sci 73 2008 pp. 74-75.

⁵Fed. Aviation Admin., AFS-400 UAS Policy 05-01, *Unmanned Aircraft Systems Operations in the U.S. National Airspace System—Interim Operational Approval Guidance* (2005) [hereinafter *Interim Operational Guidelines*]. Broadly, federal law establishes three separate types of conveyances: vessels ("which provide transportation on water"), vehicles ("which provide transportation on land"), and aircraft ("which provide transportation [by] air"). See *U.S. v. Reid*, 206 F. Supp. 2d 132, 140 (D. Mass. 2002). In other words, contrary to popular usage, an "aircraft" is not a "vehicle" under law.

are known by a host of names including Remotely Piloted Vehicles (RPVs), drones, robot planes, and unmanned combat aerial vehicles, but do not include missiles and rockets.⁶ Thus, defined, UAVs serve myriad military missions, have commercial and civilian applications, and possess capabilities that are as varied as their designs.

B.2 Why UAVs: For dull, dirty and dangerous missions:

- a) **Dull:** B-2 crews flew 30 hour roundtrip missions from Missouri to Serbia during 34 days of the Kosovo conflict in 1999. The normal two man crews were augmented with a third pilot, but even so, fatigue management was the dominant concern of unit commanders, who estimated 40 hour missions would have been their crew's maximum, The post Kosovo RAND assessment states "...the crew ratio of two man crews per aircraft might have to be increased to four man crews or else provisions made for foreign basing. A serious limiting factor...is that doubling the B-2's crew ratio would require either doubling the number of training as sorties and hours flown by the Air force's B-2 inventory or reducing the number of sorties and flying hours made available to each B-2 crew member – to appoint where their operational proficiency and expertise would be unacceptably compromised." Contrast this to short term imposition on crew endurance with the nearly continuous string of day long MQ-1 mission over Afghanistan and Iraq that have been flown by stateside crews operating on a four hour duty cycle for nearly two years.
- b) **Dirty:** The air force and the navy used unmanned B-17s and F6Fs, respectively, from 1946 to 1948 to fly into nuclear clouds within minutes after bomb detonation to collect radioactive samples, clearly a dirty mission. In 1948, the Air Force decided the risk was "manageable" and replaced the UAV with manned F-84s whose pilots wore 60-pound lead suits. Some of these pilots subsequently died due to being trapped by their lead suits after crashing or to long term radiation effects.
- c) **Dangerous:** The highest loss rates to aircrew and aircraft in Vietnam and the Israeli – Arab conflicts were during these types of missions. One of the primary purposes for the employment of UA is reduction of risk to loss of human life in high threat environments. Assignment of these missions to Unmanned Combat Air Vehicle (UCAV) directly addresses the dangerous mission of attacking or degrading integrated air defense systems.

⁶See Graham Warwick & Bettina H. Chavanne, *Skin in the Game*, Aviation Wk. & Space Tech., Aug. 10, 2009, at 56. "Unmanned Aircraft Systems" or "UAS" arguably is more accurate terminology for unmanned aerial vehicles as the unmanned aerial vehicle is only the airframe component of a coordinated system of associated ground-based personnel and equipment, including flight crew, air traffic control, and so forth.

Conclusion: The attributes that make unmanned aircrafts more preferable to manned aircraft in the above three roles are, in the case of the "dull", the better sustained alertness of machines over that of humans, and for the "dirty" and the "dangerous", the lower cost and cost of human lives if the mission is lost, and greater probability that the mission will be successful. Lower downside risk and higher confidence in mission success are two strong motivators for continued expansion of UAV aircrafts.

B.3 Pros and Cons of the Use of UAVs :

The principal attraction of drones to the military planner is their relatively small size and simple construction. The absence of a crew makes unnecessary a wide span of crew support equipment such as ejections seats, parachutes and survival equipment, manual controls, cockpit and canopy structures with their de-icing equipment, environmental control, filters, oxygen equipment, radios, and interface systems, such as instruments between system and crew, as well as the space and weight represented by the fully geared crew members themselves. By removing all these features, the designer is able to reduce not only the scale and complexity of the aircraft, but he can also reduce the size of the engine and the amount of fuel needed for the mission.

Such simple, small and relatively inexpensive machines clearly hold very considerable attractions, particularly in the reconnaissance role, for eg. Their value as decoys, as triggers that expose enemy defense systems such as radar, as reconnaissance vehicles and in some circumstances as autonomous systems seem certain to ensure them a significant place in the armouries of advanced air forces.

If an attack drone can survive the opposing defenses, then it will be capable of accuracies as low as tens of meters at the target. This, in the case of all but the very hardest assets, such as underground bunkers or missile sites, will be adequate for a system armed with a relatively small yield nuclear warhead.

Mobile targets will present much greater difficulties, but heightened capabilities in electronic intelligence, like optics, and conventional renaissance for e.g. in high flying aircraft and the advent of real time all weather surveillance satellites mean that a very accurate and virtually instantaneous picture of opposing deployments will be made available to military commanders. This will mean that drones can be dispatched to the area of combat in which their intervention is required and developments now in train seem likely to mean that the drone will be able, by target imagery matching, to identify and to attack the mobile targets.

Emerging Technology: Advances in infra red detector design seem likely to produce important operational improvements which improve resolution which in turn leads to

better surveillance and more detailed targeting becomes possible, the field of view is also increased, etc.⁷

While equipment failure has caused some of the accidents, human error has been found to be a significant causal factor in UAV mishaps and accidents.⁸ According to the Department of Defense, 70 % of manned aircraft non-combat losses are attributed to human error, and a large percentage of the remaining losses have human error as a contributing factor.⁹ Many believe the answer to this problem is complete automation. However with automation it is difficult to anticipate all possible contingencies that can occur and to predict the response of the vehicle to all possible events. A more immediate impact can be made by modifying the way that pilots are trained and how they currently control UAVs.¹⁰

Many UAV accidents occur because of poor operation control. The current modes of operation for UAVs are : 1) External Piloting (EP) which controls the vehicle by line of sight, similar to RC piloting; 2) internal piloting (IP) using a ground station and on board camera; and 3) autonomous flight. Some UAV systems are operated using a single mode, like the fully autonomous Global Hawk. Others are switched between modes like the Pioneer and the Mako. The internal pilot is affected by many factors that degrade their performance such as limited field of view, delayed control response and feedback and a lack of sensory cues from the aircraft.¹¹ These factors lead to low situational awareness and decreased understanding of the state of the vehicle during operation which in turn increases the chances of mishaps or accidents.¹²

⁷James T. Hing, Paul Y. Oh, Development of an Unmanned Aerial Vehicle Piloting System with Integrated Motion Cueing for Training and Pilot Evaluation, *Journal of Intelligent and Robotic Systems*, Vol. 54, Nos 1-3, 3-19

⁸Above article, p. 5.

⁹Rash, C.E., Leduc, P.A., Manning, S.D.: Human Factors in U.S. Military unmanned aerial vehicle accidents. *Adv. Hum. Perform. Cognit. Eng. Res.*, 7, 117-131 (2006).

¹⁰Schreiber, B.T., Lyon, D.R., Martin, E.L., Confer, H.A.: Impact of prior flight experience on learning predator UAV operator skills. *Tech. rep.*, Air Force Research Laboratory Human Effectiveness Directorate Warfighter Training Research Division. (2002).

¹¹From Kimon P. Valavanis, Paul Y. Oh, Les A. Piegł, *Unmanned Aircraft Systems – International Symposium on Unmanned Aerial Vehicles, UAV' 08*, Springer, ISBN – 978-4020-9136-0 (Paul Oh, Applied Engineering Technology, Drexel University, 3001 ne Drexel Plaza, Market St. Philadelphia, PA 19104, USA, paul@coe.drexel.edu.) (Kimon P. Valvanis, Dept of Electrical and Computer Engineering, School of Engineering and Computer Science, Univeristy of Denver, USA, kimono.valavanis@du.edu) (Les Piegł, Dept of Comp sciene and engineering, Univreisty of South Florida, USA (piegl@csse.usf.edu)

¹²James T. Hing, Paul Y. Oh, Development of an Unmanned Aerial Vehicle Piloting System with Integrated Motion Cueing for Training and Pilot Evaluation, *Journal of Intelligent and Robotic Systems*, Vol. 54, Nos 1-3, 3-19.

THE LEGALITY OF TARGETED KILLINGS

The international legal community is split over the legality of targeted killing as a counter terrorism tactic under International law. There is no legal agreement as to which legal regime should apply : whether international human rights law (IHR), the law of belligerent occupation, or international humanitarian law (IHL) should govern the legal evaluation of targeted killing, whether the conflict with terrorists classify as international or non-international conflicts or whether terrorists classify as combatants or civilians, whether targeted killings can ever satisfy the requirements of proportionality, necessity, principle of distinction etc. or whether they can also be classified as 'state terrorism'.¹³

Therefore, what follows in this paper is an analysis of the legality of the targeted killings from the International Human Rights perspective.

A. RELATION BETWEEN IHL AND IHR :

The intersection between these two branches is often in dispute while testing the legality of targeted killings. Though the distinction between *jus ad bellum* and *jus in bello* is established, that is the former refers to rules by which a state may lawfully resort to the use of armed force in the international arena¹⁴ and the latter establishes the modalities of conflict once hostilities have been initiated,¹⁵ the legality of targeted killings can be satisfied only if the mandates under both these branches of law are satisfied. However, nations resorting to targeted killings often take the plea that the 'human rights' paradigm is not applicable to determine the legality of resorting to targeted killings against suspected terrorists as was also done by the USA during its predator drone strike in Yemen.¹⁶ However the following points establish that the understanding of applicability of Human Rights paradigm is not limited to peace time.

- 1) ICJ in Nuclear Weapons Advisory Opinion rejected the position that ICCPR can only be applied during peace time.¹⁷

¹³See W. Jason Fisher, Targeted Killing, Norms and International Law, 45, Colum. J. Transnat'l L. 711 2006-07.

¹⁴See Michael J. Glennon, The Fog of Law : Self Defence, Inherence and Incoherence in Art. 51 of the United Nations Charter, 25 harv. J.L.& Pub.Pol'y 539, 551 (2002).

¹⁵Ibid.

¹⁶See Norman G. Printer, The Use of Force Against Non-State Actors under International Law : An Analysis of the U.S. Predator Strike in Yemen, 8 U.C.L.A. J. Int'l L. & For. Aff. 331 (2003).

¹⁷Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, 1996 ICJ Reports 226, 246, ¶48 (July 8); Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, 2004 I.C.J. 136, 139 (July 9); Eric Myjer & Nigel White, *The Twin Towers Attack: An Unlimited Right to Self-Defense* 7 J. CONFLICT & SEC. 1, 7 (2002)

- 2) Several HR instruments specifically include provisions whereby applicability of HRs during wartime is clear and explicit. ECHR is an example. ACHR- 1969, in Art. 27 list non-derogable rights which cannot be abrogated in times of war. ICCPR – Art. 4 – Non derogable rights, which means that some rights can be derogated during war but for that the procedure for derogation has to be followed, which means they continue to apply otherwise.
- 3) In the Convention on the Rights of the Child (CRC), 1989, - the substantial overlap between international human rights protection and international humanitarian law became obvious. Art. 38 (1) obliges State parties to undertake to respect and ensure respect for rules of IHL that deal with protection of children. Thus, a treaty generally applicable in peace time contains provisions that are not only applicable in armed conflicts but are also enshrined in the law regulating armed conflicts. The e.g. of CR not only demonstrates that the law of peace and the law of war overlap but also that, when examining which duties are incumbent on a state in times of armed conflict, it is not possible to avoid taking international human rights law into consideration.
- 4) SC Res 1483 (2003), which lays down basic principles for the occupation and reconstruction of Iraq, requires all “involved” to fulfill their obligations under International law, especially according to those of the Geneva Conventions and requests the secretary General’s Special Representative for Iraq to work for the promotion of human rights protection. Such duties require cumulative application of IHL and HR law.
- 5) Similarly the requirements of para 1 (c) of Art. 3, common to the four Geneva Conventions can’t be fulfilled after considering “the legal guarantees deemed imperative by civilized nations” in criminal proceedings, without applying the human rights instruments. Also, Art. 55 of the fourth Geneva Convention pertaining to health care has to be applied in the light of the Right to Health contained in International Covenant on Economic, Social and Cultural rights.

This Court has held that the protection offered by human rights conventions does not cease in cases of armed conflict, save through the effect of provisions for derogation of the kind to be found in Article 4 of the International Covenant on Civil and Political Rights (hereinafter referred to as the “ICCPR”).¹⁸ Respect for the right to life cannot be

¹⁸Advisory Opinion on the Israeli Wall, *supra n. 1* at 178, ¶ 106. See also Advisory Opinion on the Threat or Use of Nuclear Weapons, *supra n. 16* at 239, ¶ 24. Plan of Action for the years 2000-2003, Actions Proposed for final goal, 1.1, para 1 (a) “in the conduct of hostilities, every effort is made – in addition to the total ban on directing attacks against the civilian population as such or against civilians not taking a direct part in hostilities ...to spare the life, protect and respect the civilian population.” 31 October- 6 November 1999, Res. I, Annex 2,

derogated even at the time of war.¹⁹ In principle, the right not arbitrarily deprived of one's life also applies in hostilities.²⁰ This Court has held that a state's jurisdiction, as it has been provided under ICCPR, is not limited only to a state's national territory but also extends to acts done by the state in the exercise of its jurisdiction outside its own territory.²¹ In all such cases, a State is bound by the provisions of ICCPR.²² This is also consistent with the constant practice of the Human Rights Committee²³, which has given a ruling on the legality of acts by Uruguay in cases of arrests carried out by Uruguayan agents in Brazil or Argentina²⁴ and decided to the same effect in the case of the confiscation of a passport by a Uruguayan consulate in Germany.²⁵ The travaux préparatoires of the ICCPR also confirm the Committee's interpretation of Article 2 of ICCPR²⁶ which show that, in adopting the wording chosen, the drafters did not intend to allow States to escape from their obligations when they exercise jurisdiction outside their national territory.²⁷

B. THE TWIN REQUIREMENTS OF 'NECESSITY' AND 'PROPORTIONALITY' :

The requirements of necessity and proportionality present in customary international law on the use of force have been deemed applicable to the post-Charter jus ad bellum.²⁸

The ICJ has held that the state of necessity "can only be invoked under certain strictly

¹⁹Advisory Opinion on the Threat or Use of Nuclear Weapons, *supra n.* 16 at 239, ¶ 24.

²⁰*Id.* See also Hans-Joachim Heintze, On the Relationship between human rights law protection and international humanitarian law, IRRC December 2004, vol 86, pp. 789-813.

²¹Advisory Opinion on the Israeli Wall, *supra n.* 1 at 179, ¶ 109; 180, ¶ 111.

²²Advisory Opinion on the Israeli Wall, *supra n.* 1 at 179, ¶ 109.

²³*Id.*

²⁴Lopez Burgos v. Uruguay, case no. 52/79; Lilian Celiberti de Casariego v. Uruguay, case no. 56/79.

²⁵Montero v. Uruguay, case no. 106181.

²⁶ICCPR, art 2(1) ("Each State Party to the present Covenant undertakes to respect and to ensure to all individuals within its territory and subject to its jurisdiction the rights recognized in the present Covenant....").

²⁷Advisory Opinion on the Israeli Wall, *supra n.* 1 at 179, ¶ 109. See also the discussion of the preliminary draft in the Commission on Human Rights, E/CN.4/SR.194, ¶ 46; United Nations, *Official Records of the General Assembly, Tenth Session, Annexes, A/2929, Part II, Chap. V, ¶ 4* (1955).

²⁸Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 245 (July 8) (hereinafter referred to as the "Advisory Opinion on the Threat or Use of Nuclear Weapons").

defined conditions which must be cumulatively satisfied."²⁹ Article 25 of the Articles on Responsibility of States for internationally wrongful acts is one such condition³⁰ which provides that a state cannot take the ground of necessity for precluding the wrongfulness of its act which is not in conformity with an international obligation of that State if such act was not the "only way for the State to safeguard an essential interest against a grave and imminent peril."³¹ Thus the threshold is very strict and it will be seen as to whether the State explored alternative means before resorting to targeted killings, before the latter's legality is satisfied. Also a State cannot justify its wrongful acts on the ground of necessity if it has contributed to the situation of necessity.³²

In Armed Activities on the Territory of the Congo, this Court had held that "the armed taking of airports and towns many hundreds of kilometers from [the defending state's] border would not seem proportionate to the series of trans-border attacks it claimed had given rise to the right of self-defense....." Thus the principle of proportionality which operates in tandem with the requirement that a use of force in self defense is necessary – namely that the defensive force should be tailored and not go beyond what is necessary to halt or repeal the armed attack to which it is responding.³³ The unilateral use of force by states conducting air strikes along the border will be an act of 'aggression' which has been defined under UN General Assembly Resolution (hereinafter referred to as the "UN GAR") 3314 as "*the use of armed force by a State against the sovereignty, territorial integrity or political independence of another state...*"³⁴ if the requirements as stated in the definition are not satisfied.

²⁹Gabcikovo-Nagymaros Project (Hungary/Slovakia), I.C.J. Reports 1997, 40, ¶ 51. See also Advisory Opinion on the Israeli Wall, *supra* n. 1 at 39, ¶ 140.

³⁰Advisory Opinion on the Israeli Wall, *supra* n. 1 at 39, ¶ 140.

³¹Responsibility of States for internationally wrongful acts, art. 25(1)(a), Fifty sixth session, U.N. Doc. A/RES/56/83 (2002) (hereinafter referred to as the "Articles on Responsibility of States for internationally wrongful acts"). See also ILC Articles, *supra* n. 8, art 33.

³²Articles on Responsibility of States for internationally wrongful acts, art 25(2)(b) (".....In any case, necessity may not be invoked by a State as a ground for precluding wrongfulness if:.....(b) The State has contributed to the situation of necessity.").

³³See Frederick L Kirgis, 'Some Proportionality Issues Raised by Israel's Use of Armed Force in Lebanon' (ASIL Insight 17 Aug 2006) <http://www.asil.org/insights/2006/08/insights060817.html>.

³⁴Under Art. 3(g), States are prohibited from sending armed bands, groups, irregulars or mercenaries, which carry out acts of armed force against another State of such gravity as to amount to an act of armed aggression. GA Res 3314 (XXIX), 14 Dec 1974 [Definition of Aggression].

C. TARGETED KILLINGS CAN ALSO QUALIFY AS 'EXTRAJUDICIAL KILLINGS':

Drone strikes can amount to extra-judicial killing.³⁵ The killing of 6 suspected members of the Al-Qaeda terrorist organization in Yemen by a Predator unmanned aerial vehicle operated by American forces in November 2002 was considered to be 'a clear case of extrajudicial killing' by the Special Rapporteur.³⁶ If the use of predator drones fail to qualify the requirements of IHR, it can be said to be irreconcilable with the comprehensive prohibition of extra-legal, arbitrary and summary executions.³⁷

D. PRINCIPLE OF NON-DISCRIMINATION SHOULD BE SATISFIED :

First, the principle of non-discrimination which obligates States not to discriminate on grounds including political opinion should be adhered to. Similarly, 'Right to Life' which is also recognized as customary law³⁸, also stands violated as those who are targeted are arbitrarily deprived of their lives.³⁹ *Secondly*, Right of Derogation⁴⁰ from ICCPR is not absolute⁴¹ and *additionally*, a State derogating should inform the other

³⁵See Report of the Special Rapporteur on Civil and Political Rights, Including the Questions of Disappearances and Summary Executions, U.N. GAOR, Hum. Rts. Comm., U.N. Doc. E/CN.4/2003/3, ¶¶ 37-39 (2003); Press Release, Amnesty International, *Amnesty International Claims Government Must Not Sanction Extra-Judicial Executions*, Nov. 8, 2002, available at <http://www.amnestyusa.org/news/2002/yemen/11082002.html>. See also Norman G. Printer, Jr., *The Use of Force Against Non-State Actors under International Law: An Analysis of the U.S. Predator Strike in Yemen*, 8 UCLA J. Int'l L. & Foreign Aff. 331, 332 (2003).

³⁶Report of the Special Rapporteur on Civil and Political Rights, Including the Questions of Disappearances and Summary Executions, U.N. GAOR, Hum. Rts. Comm., U.N. Doc. E/CN.4/2003/3, ¶ 39 (2003).

³⁷'Government shall prohibit by law all extra-legal, arbitrary and summary executions ...Exceptional circumstances including a state of war of threat of war, internal political instability or anyother public emergency may not be inviked as a justification of such executions.' Principle 1, Principles on the Effective Prevention and Investigatin of Extra-legal, Arbitrary and Summary Executions (Recommended by Economic and Social Council Resolution 1989.65 of 24 May 1989.

³⁸Case Concerning the Barcelona Traction, Light and Power Company, Limited (Belgium v. Spain), 1970 I.C.J. Rep. 3, ¶ 34 [hereinafter Barcelona Traction]; United States Diplomatic and Consular Staff in Tehran, Judgment, 1980 I.C.J. Reports 44, ¶ 95

³⁹ICCPR, art. 6(1); Louise Doswald Beck *The right to life in armed conflict: Does International Humanitarian law provide all the answers?* 88 IRRC 864 (Dec. 2006); NILS MELZER, TARGETED KILLING IN INTERNATIONAL LAW 186-9 (OXFORD UNIVERSITY PRESS, 2001).

⁴⁰ICCPR, art 4(1).

⁴¹ICCPR, art 4(2).

State parties immediately through the intermediary of the Secretary-General of the U.N. of the provisions from which it has derogated and the reasons for such derogation

CONCLUSION:

The ongoing development and use of unmanned aerial vehicles (UAVs) illustrates well the observation that "law lags science; it does not lead it."⁴² UAVs exemplify the modern information age, an era of computer automation, the Internet, high-definition imagery, and "smart" -technology. More can be done virtually and by remote control today than has been done at any time in history, and the corresponding actual and potential savings of personnel and resources are tangible.⁴³ In aviation parlance, UAVs are the leading-edge of contemporary aeronautical science and engineering and a product of a century of manned flight experience. However, UAV operations have outpaced the law in that they are not sufficiently supported by a dedicated and enforceable regime of rules, regulations, and standards respecting their integration into the national airspace.

UAVs are transformational technologies.⁴⁴ Their application in the military and civil arenas, in both domestic and international forums, is robust and evolving relentlessly. For example, the Israel Space Agency has commented that the numbers of unmanned aircraft in the Israel Air Force will outnumber manned aircraft in 20 years. But American lawmakers and the general population alike are understandably cautious, if not apprehensive, about integrating UAV operations into the already busy airways amid post-September 11, 2001, national security concerns. As a practical matter, as valuable as automation is in today's global marketplace, the notion of airplanes without pilots is uncomfortable for many people at a deep level, as the human element remains critical in aviation—a fact reinforced in January 2009 when Captain Chesley "Sully" Sullenberger successfully and remarkably ditched a commercial airplane into the Hudson River in New York after a bird strike disabled the entire power-plant of the jetliner.

Against this backdrop, the United States Government Accountability Office has synthesized the challenge of UAV operations:

Routine UAS access to the national airspace system poses a variety of technological, regulatory, workload, and coordination challenges. Technological challenges include

⁴²Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 319 (7th Cir. 1996).

⁴³See, e.g., Jack M. Beard, Law and War in the Virtual Era, 103 Am. J. Int'l L. 409, 412-13 (2009).

⁴⁴Elizabeth Bone & Christopher Bolcom, Unmanned Aerial Vehicles: Background and Issues for Congress, CRS-3 (2003), available at <http://www.fas.org/irp/crs/RL31872.pdf> (last visited Mar. 8, 2010).

developing a capability for UASs to detect, sense, and avoid other aircraft; addressing communications and physical security vulnerabilities; improving UAS reliability; and improving human factors considerations in UAS design. A lack of regulations for UASs limits their operations and leads to a lack of airspace for UAS testing and evaluation and a lack of data that would aid in setting standards. Increased workload would stem from FAA's expectation of increased demand for UAS operations in the national airspace system without a regulatory framework in place. In addition, coordination of efforts is lacking among diverse federal agencies as well as academia and the private sector in moving UASs toward meeting the safety requirements of the national airspace system.⁴⁵

From a legal and enforcement perspective as well, two important questions remain. First, do the interim guidelines established by the FAA carry the force and consequences of law? And second, is it the role of a judge to decide if those guidelines are regulatory in nature as opposed to a violation of an FAR?⁴⁶

While UAV operational vulnerabilities and open-ended legal and practical questions remain, the national airspaces in general can and should accommodate UAVs in the near future in a manner that caters to safety and national security. One study recommends ten actions for integrating UAVs over the next several years:

(1) agreeing upon a concept of operations for UAV flight in civil airspace; (2) developing a classification scheme and definitions for UAVs as they relate to operations in civil airspace; (3) establishing regulations for UAV system certification, flight operations, and ground controller qualifications; (4) developing effective technologies and procedures to prevent collisions of UAVs with other aircraft, the ground, or other obstacles; (5) instituting security controls and approvals for UAV operations; (6) developing and implementing communications solutions for UAV systems; (7) developing an aeronautical data exchange, processing, and synchronization network that accounts for unique UAV requirements; (8) harmonizing UAV regulations, certification standards, and operational procedures; (9) ensuring interoperability with the air traffic system and assessing potential impacts on the air traffic system and its regulatory and operational environment; and (10) gaining public acceptance and actively communicating with all potential affected parties.

⁴⁵Consolidating the vast number of viewpoints on the issue of UAV integration may be a necessary first step to crafting a streamlined and uniform policy respecting UAV operations in the domestic and international airspace. The long list of government and industry initiatives and organizations concerning UAV airspace operations alone is illustrative of the fact that solutions to the technological, regulatory, workload, and coordination challenges for UAVs are only in an initial phase of development.

⁴⁶Interview with S.V. (Steve) Dedmon, Assistant Professor, Embry-Riddle Aeronautical Univ., in Daytona Beach, Fla. (Dec. 3, 2009).

Until a single policy is adopted, the emergence of UAVs presents a nearly clean slate for lawmakers to craft a regulatory environment that enhances the interrelated objectives of commerce, safety, and national security. For the UAV industry to thrive, insurers, engineers, manufacturers, operators, military tacticians, and other stakeholders must have a firm and predictable set of laws that establish rights and liabilities emanating from UAV operations. This is not to say that lawmakers should throw caution to the wind by enacting an overly progressive set of rules that stimulates UAV development at the expense of other valid legal and practical concerns. Lawmakers should not wait passively for the UAV industry to offer absolute assurances relative to UAV functionality, either. Rather, UAV-related law and policy should stimulate industry advances and progress hand-in-hand, while ensuring the legislative and judicial function of promoting contract, tort, property, and regulatory rights that promote the public welfare.

To that end, recent (albeit stalled) efforts by the United States Congress to develop and fund a plan for the safe integration of commercial unmanned aircraft systems into the national airspace in general as soon as possible, and perhaps by 2012, should be applauded. Moreover, the fact that United States senators Byron Dorgan and Kent Conrad and Congressman Earl Pomeroy recently obtained final approval of Section 935 of the National Defense Authorization Act for 2010 to establish North Dakota as a veritable test-bed for UAV development and integration into the national airspace bodes well for the future of regular, safe, and lawful UAV activity.⁴⁷ Ultimately, the current standing of UAV law is unmistakable: all stakeholders are at the proverbial starting line, and to realize the full benefits of unmanned aviation activity, further significant manual work remains to be done.

⁴⁷Press Release, Byron Dorgan, U.S. Senator, Delegation Says Congress-Approved Bill Will Help North Dakota Become Hub of UAV Research Training (Oct. 23, 2009), available at <http://dorgan.senate.gov/newsroom/record.cfm?id=319286>.