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PRECISION-STRIKE RPAS: A WATERSHED IN CANADIAN DEFENCE CAPABILITIES

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JCSP 45

Exercise *Solo Flight*

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Precision-Strike RPAS:
A Watershed in Canadian Defence Capabilities

In June 2017, the Government of Canada released the latest edition of its national defence policy entitled *Strong Secure Engaged* (SSE).[1] This comprehensive document consolidated a number of landmark defence initiatives that, up until that point, had resided deep within the veritable labyrinth of disparate national defence programs. Among these key initiatives was the Royal Canadian Air Force's (RCAF) newly reinvigorated Remotely Piloted Aircraft Systems (RPAS) Project.[2] The RPAS Project had been languishing since its inception in 2000, suffering from a number of programmatic and institutional setbacks. Despite the RPAS Project's dubious history, SSE brought it back to the forefront of Canadian Armed Forces (CAF) procurement initiatives by not only fully funding the program, but also intrinsically linking it to the CAF's overarching defence mandates and core missions.

Arguably, the most remarkable aspect of SSE's rejuvenation of the RPAS Project is articulated under *New Initiative 91* which incorporates a precision-strike capability into the program's operational requirements. [3] Although a seemingly innocuous programmatic bolt-on to what was already recognized as an enterprise RPAS solution for the CAF, SSE's incorporation of precision-strike actually represents the first formal institutional and governmental endorsement of such a capability.

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[1] Department of National Defence, *Strong Secure Engaged - Canada's Defence Policy* (Ottawa: DND Canada, 2017).

[2] Royal Canadian Air Force, "Update and New Name for the Joint Unmanned Surveillance Target Acquisition System (JUSTAS) Project," last modified 06 June 2018, http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=update-and-new-name-for-the-joint-unmanned-surveillance-target-acquisition-system-justas-project/j9u7rzyf; The RPAS Project was previously known as Joint Unmanned Surveillance and Target Acquisition System (JUSTAS) Project. Although there are nuanced differences, the nomenclature of RPAS, Unmanned Aerial Vehicle (UAV) and drone will be used interchangeably throughout the essay.

[3] Department of National Defence, *Strong Secure Engaged - Canada's Defence Policy* (Ottawa: DND Canada, 2017), 73.

The preceding essay will posit that unmanned precision-strike marks a watershed in National Defence capability, strategy and policy. It will argue that, given the inherent challenges associated with unmanned precision-strike, the CAF must demonstrate not only operational agility, but perhaps more importantly, strategic resolve and tenacity if it is to successfully implement this key capability and establish itself as a relevant defence partner in the RPAS domain.

In building towards this argument, particularly in the Canadian context, the essay will present a brief synopsis of the historical development and operational advantages of the armed RPAS concept, followed by an examination of the CAF RPAS nexus as it is has evolved since the inception of the Joint Unmanned Surveillance and Target Acquisition System (JUSTAS) project. The essay will then articulate several challenges and strategic tensions faced by liberal-democratic nations in implementing unmanned precision-strike capabilities. To further underscore the revolutionary nature of this policy-shift within Canada, the essay will propose three thematic risk mitigation strategies that Canada should employ during the implementation of an armed RPAS fleet. The essay will ultimately argue in favour of the CAF's pursuit of an unmanned precision-strike capability but nonetheless asserts that such a tenacious undertaking must be underwritten by decisive risk mitigation strategies, transparent policy and a robust accountability framework.

BUG TO PREDATOR - A BRIEF HISTORY OF RPAS

The history of unmanned aviation, specifically within the military context, dates back to the Great War when the United States (US) Army developed an autonomous biplane-based aerial torpedo armed with a modest munitions payload. Known as the Kettering Bug, this expendable RPAS prototype was designed to fly up to 40 miles into enemy territory using pre-set navigation inputs and carry out its strike by self-scuttling overhead the target.[4]

RPAS force development continued in earnest throughout the mid-20th century, although much of the subsequent advancements focused on enhanced target vehicles and aerial reconnaissance platforms. Despite the operational benefits early-RPAS engendered, the unmanned concept remained a highly contentious issue among many military stakeholders throughout the latter half of the century. Some institutional opponents invoked the *white scarf syndrome*, whereby "pilots are said to constrict research and development on relevant [unmanned aerial vehicle] UAV technologies, retarding their natural, ascendant path".[5] Other stakeholders balked at the cost over-runs of early RPAS developmental efforts, and rather myopically biased their respective constituencies in favour of pre-existing and proven manned platforms of similar capability.[6]

It wasn't until the deployment of the Global Positioning System (GPS) in the 1990s that RPAS innovators finally solved the nagging location accuracy problem that had "haunted UAV systems for the previous three decades".[7] Perhaps the most prolific

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[4] Paul G. Fahlstrom and Thomas J. Gleason, *Introduction to UAV Systems 4th Edition* (West Sussex: John Wiley & Sons Ltd., 2010), 17.

[5] Thomas Ehrhard, *Unmanned Aerial Vehicles in the United States Armed Services: A Comparative Study of Weapon System Innovation* (Washington: Johns Hopkins University, 2000): 30.

[6] Dr. Thomas P. Ehrhard, *Air Force UAVs: The Secret History* (Arlington: Mitchell Institute Press, 2010), 11.

[7] *Ibid*., 22.

and recognizable offspring of this late-20th century revolution in RPAS technology was the MQ-1 Predator, which was the first operational RPAS platform to employ satellite positioning technology, and also the first to leverage emergent satellite-based beyond-line-of-sight RPAS Command and Control (C2) architecture.[8]

A direct descendant of the US Defense Advanced Research Projects Agency's (DARPA) *Amber* project, Predator was originally designed as an unarmed aerial Intelligence, Surveillance and Reconnaissance (ISR) platform to fill significant *sense* capability gaps within the US military. First seeing operational service in the Balkans in 1995, Predator quickly proved it was ideally suited for ISR missions that required precision and persistence but entailed an untenable degree of risk for manned platforms.

An armed variant of Predator was subsequently developed by the US in early-2001 to support Central Intelligence Agency (CIA) counter-terrorist missions in Afghanistan. Although the development of a precision-guided munitions (PGM) fitted Predator was quite smooth, the deployment and legal application of this capability was subject to intense debate by the US National Security Council at the time.[9] Unfortunately the events of 9/11 soon thereafter accelerated many of these deliberations, and the US Congress' subsequent Authorized Use of Military Force (AUMF) directive paved the way for a lethal capability that would eventually become as mainstream and extensively employed as traditional manned combat aircraft in the contemporary battlespace.

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[8] Dr. Thomas P. Ehrhard, *Air Force UAVs: The Secret History* (Arlington: Mitchell Institute Press, 2010), 49.

[9] Megan Braun and Daniel R. Brunstetter, "State of the Union: A Decade of Armed Drones," *The Brown Journal of World Affairs* 19, no. 2, (Spring/Summer 2013): 83.

OPERATIONAL BENEFITS OF PRECISION-STRIKE RPAS

> *The ability to deploy an asset capable of staying on task for an extended period, while carrying out either an ISR function or a targeted strike, all without putting a pilot's life at risk, makes a UAS valuable to militaries as a low-risk force multiplier.*
>
> - Danny Garrett-Rempel, RCAF Journal (Winter 2005)

This essay will focus largely on the challenges associated with armed RPAS proliferation in the liberal democratic defence and security complex. Nonetheless, a basic appreciation for the overwhelming operational benefits of lethal unmanned weapons systems will enable a more objective analysis of the value proposition they represent. While some of the benefits described below are not exclusive to armed RPAS, the aggregate capability of persistent, long-range ISR and organic PGM lethality represents what many consider a revolutionary force-multiplier in modern warfare.

Perhaps the most obvious and immediately realized benefit of unmanned air power is the nearly absolute reduction in tangible risk to operators. The ramifications of this defining characteristic have led some theorists to assert that "the morality and legitimacy of the practices of war are undergoing a fundamental transformation",[10] while other more moderate academics argue that RPAS merely "enhances capabilities…in a measured and evolutionary way".[11] Differing macro-perspectives notwithstanding, few experts deny that the diminished risk associated with unmanned air power "enables casualty-sensitive governments to conduct operations when they might otherwise shy away from involvement".[12]

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[10] Samuel Issacharoff and Richard H. Pildes, *Drones and the Dilemma of Modern Warfare* (New York: NYU School of Law, 2013), 1.

[11] Daniel Byman et al., RAND Corporation, *Armed and Dangerous: UAVs and U.S. Security*, (n.p.: RAND Corporation, 2014), 12.

[12] *Ibid*., 14.

Another key attribute of armed RPAS platforms is their ability to simultaneously deliver persistence, distinction and proportionality in a complex, network-centric battlespace. Modern armed RPAS vehicles are capable of loitering over a target area for up to 30 hours and are fitted with advanced payloads including high-resolution electro-optic/infra-red sensors, communications and data relay, target designation pods, electronic support measures suites and PGMs such as Hellfire. Together, these attributes represent a synergistic capability that not only enhances battlespace awareness, but can also deliver lethal effects with surgical precision and minimal collateral risk.

Warfare theorists assert that unmanned weapon systems such as RPAS are ideally suited for "dull, dirty, and dangerous"[13] missions whose complexity, parameters or degree of risk otherwise preclude a manned engagement. Modern armed RPAS capabilities have validated this assertion by projecting fully integrated *sense* and *act* functionalities deep into the conflict zone with the precision and minimal risk expected by operational Commanders.

THE CANADIAN RPAS EXPERIENCE

The roots of Canada's defence-centric RPAS innovation began largely in parallel to that of the US in the mid-20th century and included such indigenously developed drones as the 1960s-era CL-89 Midge and the 1990s-era CL-327 Guardian. Both of these RPAS platforms were considered revolutionary for their time and placed Canada at the leading edge of global RPAS research and development. Despite these pioneering advancements, the CAF did not embark on a demonstrable RPAS pursuit until the turn of the century with the introduction of the JUSTAS program. Initially envisioned as a joint

[13] P. W. Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Press, 2009), 54.

medium altitude, long-endurance (MALE) surveillance drone, JUSTAS struggled to achieve any momentum for over a decade amid a constricting fiscal environment, ambiguous operational requirements and controversial project management practices.[14]

Despite JUSTAS' repeated false-starts, Canada's sizeable engagement in the Afghanistan conflict offered some optimism for the future of CAF RPAS capabilities. Over the course of its 13 year Afghanistan commitment, the CAF fielded a number of interim RPAS vehicles, all of which were introduced to fulfill immediate albeit unarmed aerial ISR gaps over the vast and treacherous operational environment. The true optimism with these platforms lay not in their satisfactory operational outputs, but rather in the gradual inculcation of an RPAS-oriented mindset in all CAF branches. Unfortunately the draw-down of CAF combat operations in Afghanistan brought with it a reduction in the impetus for a joint-RPAS solution. While several of the environments still employ small tactical ISR drones today, the RPAS Project remains in the options analysis phase and is unlikely to deliver an operational capability before 2025.[15]

SSE's endorsement of the PRAS Project including an organic precision-strike capability has engendered a modest amount of cautious optimism for the next chapter in the CAF RPAS saga. Likewise, there remains sufficient corporate knowledge within the CAF to effectively and safely reignite a pan-service RPAS program – for the time being. Nevertheless, the programmatic challenges inherent to RPAS will continue to manifest themselves in various forms as the program progresses.

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[14] Conrad Edward Orr, "Can Unmanned Aircraft Systems Meet Canadian Air Power Needs?," *Royal Canadian Air Force Journal* 5, no.3, (Summer 2016): 17.

[15] Royal Canadian Air Force, "Update and New Name for the Joint Unmanned Surveillance Target Acquisition System (JUSTAS) Project," last modified 06 June 2018, http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=update-and-new-name-for-the-joint-unmanned-surveillance-target-acquisition-system-justas-project/j9u7rzyf;

PRECISION-STRIKE RPAS – A POLITICAL FLASHPOINT

Despite their intrinsic operational value, the incorporation of precision-strike capabilities in the RPAS calculus has ignited a host of political, social, ethical and legal debates. This has been particularly evident in liberal democratic societies where civil control of the military remains a fundamental tenet. As mentioned earlier, unmanned military aviation in and of itself has faced intense resistance throughout its development. Precision-strike adds yet another layer of complexity to the RPAS equation that in many cases merits prudent consideration and treatment. The following portion of the essay will elaborate on some of the key areas where armed RPAS will significantly challenge CAF and government leadership resolve for staying the precision-strike course.

Ethical and Legal Implications

> *Armed UAVs are not inherently unlawful. But there are growing concerns that they will bring about a dangerous expansion in the use of armed force. The same characteristics that make them attractive to militaries can make armed UAVs particularly susceptible to misuse.*
>
> - UNIDIR, Increasing Transparency, Oversight and Accountability of Armed UAVs

In light of the incredible reach and persistence of armed drones such as Predator, precision-strike actions are no longer constrained by the temporal and geographic boundaries of the conventional battlespace. RPAS platforms can now venture much farther afield, loiter over a specific target for prolonged periods and strike with no demonstrable risk to friendly forces. This insidious albeit exponential growth of the actionable battlefield begets genuine reticence among those civil authorities whose responsibility it is to implement control mechanisms on state-sponsored violence. Given the manner in which this particular capability has been leveraged by some nations, the vernacular has evolved from precision-strike to a more connotative *targeted-killing*.

The concept of targeted-killings has been a key flashpoint for legal debates in the US surrounding RPAS precision-strike operations in its post-9/11 global war on terrorism, particularly those engagements occurring under CIA authority. While few analysts challenge the use of armed RPAS by US military forces in conventional counterinsurgency operations, legal opponents assert that "armed conflict is geographically determined, meaning the US cannot plausibly be engaged in a global armed conflict recognized under international law and CIA personnel are not lawful combatants under the rules of war".[16] Admittedly, Canada is very unlikely to take part in covert extraterritorial assassinations, particularly those outside designated conflict zones, nor employ civilian operatives in unmanned strike actions.[17] Nonetheless, the fact remains that PGM fitted RPAS like Predator are purpose-built for the degree of precision, distinction and proportionality that invites this type of criticism. Regardless of the specific operational context in which the CAF employs precision-strike RPAS, Canada will not be immune to the attendant legal scrutiny experienced by its defence partners.

The comparatively objective legal debate surrounding armed RPAS often evolves into a more subjective ethical examination centering on the core tenets of *just war theory*.[18] RPAS precision-strike on the contemporary battlefield can be undertaken with relative ease and at minimal risk. As a result, an insidious "dichotomy between capturing and killing"[19] has emerged which effectively lowers the natural threshold for violence and fundamentally undermines International Humanitarian Law (IHL) *jus in bello*

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[16] Megan Braun and Daniel R. Brunstetter, "State of the Union: A Decade of Armed Drones," *The Brown Journal of World Affairs* 19, no. 2, (Spring/Summer 2013): 86.

[17] Michael Byers and Kelsey Franks, "Unmanned and Unnecessary: Canada's Proposed Procurement of UAVs," *Canada Foreign Policy Journal* 20, no. 3, (December 2014): 284.

[18] Megan Braun and Daniel Brunstetter, "The Implications of Drones on the Just War Tradition," *Ethics & International Affairs* 25, no. 3 (2011): 338.

[19] Daniel Klaidman, *Kill or Capture: The War on Terror and the Soul of the Obama Presidency* (Boston: Houghton Mifflin Harcourt, 2012).

principles.[20] The premise of this ethical debate is that "government leaders will bypass nonlethal alternatives, such as apprehending alleged terrorists and continued surveillance, and move directly to targeted-killing as the standard procedure for mitigating the perceived threats".[21]

In examining this perspective through the prism of *just war theory*, opponents have concluded that "the use of drones as a means to enhance a state's capacity to act on just cause proportionately and discriminately may lead to the propensity to do the opposite",[22] implying that armed RPAS potentially erode the ethical boundaries between violence and alternative forms of non-lethal intervention. In addition to the problematic legal ramifications associated with armed RPAS implementation, the nuanced ethical margins will surely constitute significant challenges for Canada's national defence establishment moving forward.

Public Misconceptions

> *There is inaccurate reporting and misleading debate about the meaning of automated and autonomous in relation to weapons systems.*
>
> - UK JDP 0-30.2: Unmanned Aircraft Systems

Although implicit in many other domains of RPAS tension, the challenges associated with public suspicion and misconception writ large is key terrain in any armed RPAS implementation strategy. The reluctance to proactively address contentious defence and security issues in the public domain has plagued the inherently media-wary

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[20] International Committee of the Red Cross, "Jus ad Bellum and Jus in Bello," last accessed 18 April 19, https://www.icrc.org/en/document/jus-ad-bellum-jus-in-bello; International humanitarian law, or jus in bello, is the law that governs the way in which warfare is conducted. IHL is purely humanitarian, seeking to limit the suffering caused.

[21] Megan Braun and Daniel R. Brunstetter, "State of the Union: A Decade of Armed Drones," *The Brown Journal of World Affairs* 19, no. 2, (Spring/Summer 2013): 89.

[22] Megan Braun and Daniel Brunstetter, "The Implications of Drones on the Just War Tradition," *Ethics & International Affairs* 25, no. 3 (2011): 346.

military establishment for decades.[23] Meanwhile, the mythology associated with RPAS makes it particularly susceptible to public misconceptions. The confluence of these two factors places nascent unmanned programs, including Canada's RPAS Project, on a tenuous footing.

Adopting a proactive public awareness posture for its newly acquired fleet of armed UAVs in 2014, the United Kingdom (UK) undertook to address what the House of Commons Defence Committee characterized as an emerging "sense of public disquiet"[24] regarding RPAS implementation. Needing to "rise to the challenge of overcoming public suspicion of RPAS and develop public understanding of the capability",[25] the Ministry of Defence (MoD) issued a capstone RPAS doctrinal publication that addressed a wide range of common public misconceptions.[26] Aside from myths regarding legal and ethical rigour, three of the most pervasive misconceptions involved system autonomy, operator psychology and collateral damage.

The nature and extent of RPAS autonomy is often the subject of absurd hyperbole in the public domain. Fomented by opponent rhetoric and media sensationalism, *automated weapons systems* such as armed RPAS are commonly conflated with the much more dubious concepts of Lethal Autonomous Weapons Systems (LAWS) and Lethal Autonomous Robotics (LARS).[27] Colloquially known as killer robots, the United Nations (UN) has recommended a global moratorium on the development of such systems.

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[23] Laura Ball and Angela Febbraro, *Civil-Military Relationships in Canada: NGOs, the Media, and Local Publics*, (Defence Research and Development Canada: Toronto, 2013), 14.

[24] Louisa Brooke-Holland, House of Commons Library, *Briefing Paper 06493: Overview of Military Drones used by the UK Armed Forces*, (London: House of Commons Library, 2015), 10.

[25] *Ibid.*

[26] Ministry of Defence, *Joint Doctrine Publication 0-30.2: Unmanned Aircraft Systems*, (Wiltshire: Ministry of Defence Development, Concepts and Doctrine Centre, 2017).

[27] Christof Heyns, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions* (n.p.: United Nations Human Rights Council, 2013), 7.

The international debate regarding the precise definition and IHL implications of autonomous lethality is ongoing. Nevertheless, according to extant understanding, *automated weapons systems* are "capable of complicated tasks but incapable of complex decision-making" [28]; more specifically they do not have the capacity for non-deterministic decisions regarding the "power of life and death over human beings".[29] With absolute human oversight and accountability hardwired into the operational concept, it is clear that armed RPAS such as Predator and its counterparts in no way exceed the threshold of what the UN considers a lethal autonomous weapons system. While this conclusion may be logically sound, one cannot discount the emotional aspects of public perception, particularly when the media is in control of the narrative.

Another source of public misconception detrimental to armed RPAS support is the concept of operator desensitization. Known in RPAS parlance as the *video-game mentality*, the conceptual premise is that "the physical distance between those operating an armed RPA and the target of the strike makes the act of killing much easier".[30] A 2010 UN Human Rights Council Report lent credence to this theory asserting that operators displaced from the "risks and rigors of battle [were at] risk of developing a 'Playstation' mentality of killing".[31]

Ardently disputed by doctrine and operators alike, the US and UK both cite rigorous adherence to IHL and the overwhelming psychological proximity of operators to

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[28] Birmingham Policy Commission, *The Security Impact of Drones: Challenges and Opportunities for the UK* (Birmingham: Birmingham Policy Commission, 2014), 66.

[29] Christof Heyns, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions* (n.p.: United Nations Human Rights Council, 2013), 6.

[30] Louisa Brooke-Holland, House of Commons Library, *Briefing Paper Number 06493: Overview of Military Drones used by the UK Armed Forces*, (London: House of Commons Library, 2015), 44.

[31] Philip Alston, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions* (n.p.: United Nations Human Rights Council, 2010), 25.

the battlefield as factors that reduce the likelihood of operator desensitization.[32] While debating the veracity of the Playstation syndrome goes beyond the scope of this analysis, it is nevertheless vital to acknowledge the prominence of this adverse public perception and the importance of accounting for it in any armed RPAS implementation strategy.

The third perception narrative discussed in the UK capstone publication is the notion that RPAS lethal engagements elicit a disproportionate degree of collateral risk, particularly with respect to non-combatant casualties. Few drone critics deny that PGM-fitted MALE RPAS afford a degree of precision and distinction that is unrivalled in any given combat engagement. To this point, CIA director Leon Panetta once characterized armed RPAS as "the most accurate weapon system in the history of warfare".[33]

Despite the inherent accuracy of precision-strike RPAS, holistic criticisms regarding collateral damage are intrinsically linked to the predisposition of governments to employ armed RPAS in lieu of non-lethal means. According to opponents, this dichotomy garners a cumulative collateral effect that would not otherwise exist in the absence of armed RPAS. This theory has been the subject of extensive academic analysis, and depending on the manner in which the data is presented, does carry some degree of veracity.[34] Nevertheless, even the UN and International Committee of the Red Cross (ICRC) acknowledge the transformative nature of these weapon systems in the context of IHL:

> Modern remotely piloted aircraft can provide near-real-time video feeds around the clock. If used in strict compliance with the principles of humanitarian law, they can reduce the risk of civilian casualties by

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[32] Louisa Brooke-Holland, House of Commons Library, *Briefing Paper 06493: Overview of Military Drones used by the UK Armed Forces*, (London: House of Commons Library, 2015), 45

[33] Megan Braun and Daniel R. Brunstetter, "State of the Union: A Decade of Armed Drones," *The Brown Journal of World Affairs* 19, no. 2, (Spring/Summer 2013): 91.

[34] *Ibid.*, 91.

> significantly improving overall situational awareness. The ability of drones to loiter and gather intelligence for long periods before a strike, coupled with the use of precision-guided munitions, is therefore a positive advantage from a humanitarian law perspective.[35]
>
> Any weapon that makes it possible to carry out more precise attacks, and helps avoid or minimise incidental loss of civilian life, injury to civilians, or damage to civilian objects, should be given preference over weapons that do not.[36]

It is a paradox of warfare that advancements in the ability to project precision-strike effects further into the battlespace invariably increases the likelihood that precision-strike will in fact be projected. This metaphysical circumstance however is far less salient to the debate than the contextual assurance that any given target prosecution is carried out in rigorous compliance with domestic and international law. It therefore falls upon the state conducting the prosecution to ensure its transparency, oversight and accountability frameworks are sufficient to ensure strict adherence to IHL principles.

Accountability and Transparency

> *In a representative and deliberative democracy, the government is required to provide the public with information on why it proposes to acquire and deploy a new weapons system, how exactly the weapon will be used, and what rules will be established to ensure that in using this new weapon the country will be complying with its obligations under international law.*
>
> - Craig Martin, What Role and Rules for Canada's Armed Drones?

Yet another significant source of friction in the implementation of armed RPAS programs is the question of accountability and transparency. Although critical of Canada's performance thus far regarding RPAS oversight, Craig Martin's assessment of societal expectations is accurate, state-agnostic and worthy of due consideration as it is a

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[35] Ben Emmerson, *Report of the Special Rapporteur: Promotion and Protection of Human Rights and Fundamental Freedoms While Countering Terrorism (A/68/389)* (n.p.: United Nations General Assembly, 2013), 7.

[36] International Committee of the Red Cross, "The Use of Armed Drones Must Comply with Laws," last accessed 18 April 19, https://www.icrc.org/en/doc/resources/documents/interview/2013/05-10-drone-weapons-ihl.htm.

theme that resonates throughout extant RPAS literature. Arguably the reason this topic is so pervasive is that militaries and governments historically have fallen short of accountability and transparency expectations in their respective constituencies.

The US global counter-terrorism campaign is perhaps the most instructive case study by which to analyze the detrimental impact of an ambiguous RPAS oversight framework. The US has employed armed RPAS extensively throughout the post-9/11 global security environment, including in Afghanistan, Iraq, Yemen, Somalia and Pakistan. In many cases, these weapon systems were secretly employed in targeted-killings by non-military agencies far outside the boundaries of named conflict zones, a context that many argue was "unethical due to the lack of due process provided to targeted individuals, the lack of transparency and accountability and the high proportion of civilians killed".[37]

The systemic cloak of secrecy surrounding the US' post-9/11 *signature strike campaign* haunted the US Executive Branch for over a decade, during which the US President consistently "remained a silent party to the ongoing debate about the virtue of targeted killing".[38] Fueled by vocal opponents, the government's plausible deniability tact eventually fomented intense dissonance among the American electorate which sought improved transparency and accountability in the Government's security operations.

Finally in 2013, yielding to intense public and legislative scrutiny, President Obama published a set of codified guidelines that "brought the US drone program out from the legal shadows of the CIA, shifting future drone operations from the CIA to the

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[37] Michael Byers and Kelsey Franks, "Unmanned and Unnecessary: Canada's Proposed Procurement of UAVs," *Canada Foreign Policy Journal* 20, no. 3, (December 2014): 283-284.

[38] Megan Braun and Daniel R. Brunstetter, "State of the Union: A Decade of Armed Drones," *The Brown Journal of World Affairs* 19, no. 2, (Spring/Summer 2013): 87.

Pentagon so they can be more closely monitored by Congress".[39] Unfortunately, the safeguards implemented in the Obama-era *Presidential Policy Guidance*[40] have been systematically dismantled or creatively subverted in the years since. Recent analysis has concluded that the present-day US armed RPAS program has "become less transparent, and…the current Administration has reduced the oversight of strike decisions and rolled back safeguards introduced by the previous Administration".[41] Sufficed to say, the lack of transparency surrounding the US targeted-killing campaign has gradually eroded Government trust both within the US population and on the international stage. The following RAND assessment aptly characterizes the cumulative effects of the alarming lack of oversight that pervades the US armed RPAS program:

> The lack of transparency and clarity in the US government's policies for drones and targeted killing raises some problems. First, it prevents a serious and informed debate on the policies by those outside and undermines public support for the policies both in the United States and around the world. It provides US allies with little incentive to define and clarify their policies as they begin to conduct their own drone strikes and will make it hard for the United States to criticize the policies of other countries (such as Russia and China), were they to use their drones in ways antithetical to U.S. interests.[42]

In many ways, the American and Canadian defence and security apparatuses follow vastly different strategic trajectories when it comes to foreign interventions, RPAS

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[39] Michael Byers and Kelsey Franks, "Unmanned and Unnecessary: Canada's Proposed Procurement of UAVs," *Canada Foreign Policy Journal* 20, no. 3, (December 2014): 282.

[40] Presidential Policy Guidance*, Procedures for Approving Direct Action Against Terrorist Targets Located Outside the United States and Areas of Active Hostilities* (Washington: President of the United States, 2013).

[41] George Woodhams, *Weapons of choice? The Expanding Development, Transfer and use of Armed UAVs* (Geneva: United Nations Institute for Disarmament Research, 2018), 9.

[42] Lynn E. Davis, Michael McNerney and Michael D. Greenberg, *Clarifying the Rules for Targeted Killing: An Analytical Framework for Policies Involving Long-Range Armed Drones* (n.p.: RAND Corporation, 2014), 19.

policy is no different. Nevertheless, the decades-long US experience ought to serve as a cautionary tale as Canada considers its approach to armed RPAS oversight mechanisms.

MITIGATION STRATEGIES FOR CANADA

The preceding analysis highlighted several key sources of friction that Canada is likely to encounter along its ascendant path towards armed RPAS implementation. Unlike conventional weapon systems acquisition programs, very few of the more problematic RPAS roadblocks are technical in nature. Instead, many of the RPAS challenges and commensurate mitigation strategies are far more amorphous. The following discussion will elucidate several key strategic risk mitigation methodologies that Canada ought to employ in order to temper the legal and ethical implications, negative public perceptions and oversight challenges. Although cultural and institutional barriers may impede the embodiment of drastic measures such as increased civil-military oversight, it is nonetheless incumbent upon both the CAF and the Canadian government to take an agile, adaptive and transparent approach to its armed RPAS acquisition program.

A Comprehensive Force Employment Policy

Public awareness and education are arguably the most effective tools at Canada's disposal for inculcating the inherent benefits of armed RPAS into the national defence and security narrative. While there are many ways of enhancing awareness on otherwise contentious defence issues, any viable method must first be founded on a clearly articulated strategy or public policy. Although not without their inherent faults, SSE and the National Shipbuilding Strategy are contemporary examples of Canadian governments leveraging a highly publicized capstone strategic framework as a means of engendering public support for enterprise defence programs.

In the context of armed RPAS, Canada ought to adopt a similar methodology. This approach has garnered success in other liberal democratic jurisdictions both as an anticipatory tool and as a reactive measure. The anticipatory method was successfully employed by the European Parliament beginning in 2014 with the ratification of its *Resolution on the Use of Armed Drones*. Acknowledging significant concern for armed RPAS proliferation, the European Parliament called upon the EU to "develop an appropriate policy response at both European and global level which upholds human rights and international humanitarian law".[43] The European Parliament's pursuit of such a proactive policy response culminated in a 2017 resolution that, although not binding in character, established model elements of normative armed RPAS policies for use by prospective government lawmakers. The comprehensive document proposed baseline legal requirements for conducting RPAS strikes, oversight provisions, third-party engagement responsibilities and RPAS export controls.[44] This publically available parliamentary legal framework, although sure to be challenged in the normal course of democratic debate, now serves as an RPAS governance exemplar for EU member states.

On the more reactive end of the spectrum, the United Kingdom has recently published a similar doctrinal framework guiding the employment of armed RPAS. Amid mounting political and public scrutiny regarding its extensive use of armed RPAS, the UK Government was implored by legislators in 2014 to "engage more with the public in explaining the rules of engagement to assist in improving wider public understanding and

[43] European Parliament, *Resolution on the use of Armed Drones (2014/2567(RSP))* (n.p.: European Parliament, 2014): 4.

[44] European Parliament, *Towards an EU Common Position on the Use of Armed Drones* (Belgium: Policy Department, Directorate-General for External Policies, 2017).

acceptance of the use of armed RPAS."[45] One of the MoD's key policy deliverables that arose from this directive was the 2017 Joint Doctrine Publication (JDP) 0-30.2 entitled *Unmanned Aircraft Systems*. Aimed at not only operational and defence procurement stakeholders, JDP 0-30.2 also served as a "guide on UK military thinking to politicians, the media and the general public as well as increasing transparency on UK unmanned and remotely piloted aircraft capability and operation".[46] While primarily doctrinal in tone, JDP 0-30.2 was cleverly dual-purposed as a public awareness communiqué, addressing key areas of RPAS concern including the legal, ethical and oversight dimensions.

The European Parliament and UK publications are instructive case studies for Canada on the substantial benefits of a clearly articulated RPAS strategy and force employment policy. In the most basic sense, they serve to underpin the armed RPAS paradigm by clearly articulating the conditions, context and legal framework under which these weapon systems are employed by state forces. By setting stringent operational parameters, they also hold RPAS force employers and operational stakeholders to account for any actions in contravention of international or domestic law. Finally, as critical instruments of public awareness and education, they dispel RPAS mythology, lend legitimacy to unmanned force development programs and, perhaps most importantly, reinforce the tenets of civil-military control so vital to Canadian liberal-democratic society.[47]

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[45] Louisa Brooke-Holland, House of Commons Library, *Briefing Paper Number 06493: Overview of Military Drones used by the UK Armed Forces*, (London: House of Commons Library, 2015): 32.

[46] Ministry of Defence, *Joint Doctrine Publication 0-30.2: Unmanned Aircraft Systems* (Wiltshire: Ministry of Defence Development, Concepts and Doctrine Centre, 2017): iv.

[47] Philippe Lagassé, *Accountability for National Defence: Ministerial Responsibility, Military Command and Parliamentary Oversight* (Montreal: IRPP Study No. 4, 2010): 28.

A Transparency and Accountability Framework

> *[The Department of National Defence] must provide far more transparency and accountability, first of all in explaining the reasons for acquiring armed drones, and then in articulating the purpose for which they will be deployed, and precisely how and pursuant to what limits they will be used.*
>
> - Craig Martin, What Role and Rules for Canada's Armed Drones?

As illustrated throughout the essay, there are countless facets to the armed RPAS oversight dilemma, each requiring careful consideration and policy treatment before Canada can confidently field the capability. The fundamental requirements of transparency and accountability are derived from international governance bodies such as the UN Institute for Disarmament Research (UNIDIR) who advocate for improved oversight of armed RPAS "in order to reduce potential for their misuse, and thus enhance civilian protection, ensure the rule of law, and help to maintain stability".[48] If Canada seeks to employ armed unmanned airpower unencumbered by excessive scrutiny, it is imperative that it does so in accordance with not only international law, but also with due regard for international expectations regarding transparency and accountability.

Although not exhaustive, recommended actions regarding Canadian RPAS transparency include clearly justified acquisition requirements, unambiguous operational standards and restrictive norms and rigorous legal analysis behind the use of force. Canada must also continue to develop transparent control mechanisms regarding its interactions with other states in the armed RPAS domain. More specifically Canada must voluntarily promote, endorse and respect multi-lateral export control regimes such as the US *Joint Declaration for the Export and Subsequent Use of Armed or Strike-Enabled Unmanned Aerial Vehicles* that implores signatories and the international community to

[48] United Nations, *Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles*, (n.p.: United Nations Institute for Disarmament Research, 2017), 5.

"take appropriate transparency measures to ensure the responsible export and subsequent use of these systems".[49]

In terms of accountability, it is critical that Canada institutes clear operational Chain of Command (CoC) and government accountability frameworks with respect to all RPAS activities. This will serve to assure an unassailable system of "human oversight and authority and of accountability for weapon usage".[50] Likewise, it is important to establish mechanisms to "conduct prompt, thorough, effective, independent, impartial and transparent investigations into all incidents resulting in death or serious injury as a result of…armed drone strikes and publish the results of each investigation in a timely manner".[51] As a complimentary pillar to the investigative arm, accountability also entails the establishment of mechanisms for effecting judicial proceedings against those who act in contravention of their authorities or legal boundaries. Although the National Defence and Federal Accountability Acts establish the general framework for these judicial mechanisms, Canada should formulate unambiguous RPAS-specific policy to which operators, Commanders and ministerial officials will be held to public account.

This perspective on transparency and accountability might seem superfluous given the culturally entrenched tenets of Canadian military discipline and bearing. Nonetheless, amid fractious public support, it is profoundly important that all possible avenues for the erosion of society's trust in armed RPAS be taken into account, no matter how seemingly benign. In an environment of intense political partisanship, it is highly

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[49] United States Department of State, *Joint Declaration for the Export and Subsequent Use of Armed or Strike-Enabled Unmanned Aerial Vehicles* (Washington: US Department of State, 2016).

[50] Ministry of Defence, *Joint Doctrine Publication 0-30.2: Unmanned Aircraft Systems* (Wiltshire: Ministry of Defence Development, Concepts and Doctrine Centre, 2017), 42.

[51] European Parliament, *Towards an EU Common Position on the Use of Armed Drones* (Belgium: Policy Department, Directorate-General for External Policies, 2017): 28.

probable that even the mere appearance of impropriety will be exploited by fervent political opponents, scandal-thirsty media and an already apprehensive public.

Leading the Development of International Norms and Standards

The moral and legal impetus for the development of international RPAS norms and standards is derived from a breadth of salient UN analyses including Special Rapporteur reports and commissioned studies. Citing "the destabilizing potential of armed UAVs across a range of contexts",[52] UNIDIR recently underscored the importance of addressing this largely unregulated domain. In its objective assessment, UNIDIR contended that "common standards for transparency, accountability and oversight could ensure that armed UAVs are used in compliance with the rule of law and in ways which contribute to international peace and security".[53] These findings were subsequently echoed by the European Union[54] and defence policy think-tank RAND;[55] both advocating for increased regulatory leadership by their respective jurisdictions.

Canada has earned a prominent position as a global leader in international law through its contributions to such landmark initiatives as the International Criminal Court and the Mine Ban Treaty. As such, the current dearth of armed RPAS regulations represents a strategic opportunity for Canada. Through its membership in key international regulatory forums, Canada could lead the development of multi-lateral agreements that improve global RPAS transparency and establish meaningful accountability frameworks. Likewise, Canada's leadership in this domain will lend

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[52] George Woodhams, *Weapons of choice? The Expanding Development, Transfer and use of Armed UAVs* (Geneva: United Nations Institute for Disarmament Research, 2018): 12.

[53] *Ibid.*, 13.

[54] European Parliament, *Towards an EU Common Position on the Use of Armed Drones* (Belgium: Policy Department, Directorate-General for External Policies, 2017).

[55] Daniel Byman et al., RAND Corporation, *Armed and Dangerous: UAVs and U.S. Security*, (n.p.: RAND Corporation, 2014).

legitimacy to its own internal RPAS precision-strike narrative; the inference being that popular support to a CAF armed RPAS initiative is more easily achieved if it is framed in the context of Canadian-brokered international norms and standards.

Another international regulatory leadership opportunity for Canada that could serve to mitigate RPAS implementation risk is the proactive development of its own comprehensive national RPAS policy. This *lead by example* approach was proposed by RAND as a complimentary mechanism to the direct leadership paradigm described above. Conceived as a viable US approach to influencing international RPAS policy, RAND's analysis concluded that a "well-articulated and internationally supported normative framework, bolstered by a strong US example, can shape armed drone proliferation and employment in the coming decades [and] strengthen the chances of long-term US public support".[56] Despite being proffered as a US solution, RAND's conclusions, particularly those concerning public support, are perhaps even more germane to Canada given the absence of *exceptionalism* north of the border.

The risk mitigation methodologies proposed herein are but a small cross-section of a broader RPAS implementation regime to which Canada should subscribe. Central to this regime are the cognitive pillars of transparency, accountability and leadership, all of which underpin the attendant strategy, doctrine and policy that will constitute the material elements of an enterprise RPAS acquisition program.

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[56] Daniel Byman et al., RAND Corporation, *Armed and Dangerous: UAVs and U.S. Security*, (n.p.: RAND Corporation, 2014), 22.

A CASE FOR ABANDONING ARMED RPAS IN CANADA

> *Given the risk of "mission creep", the legal and ethical uncertainties and the questionable strategic value of armed UAVs, Canada should be very cautious about acquiring that capability.*
>
> - Michael Byers, Unmanned and Unnecessary

As with any emergent Canadian defence and security issue, the armed RPAS paradigm is not without its detractors. Some critics deliver an objective and cogent counter-argument while others invoke a common refrain of hyperbole and rhetoric, both of which resonate with RPAS opponents. Defence experts such as Michael Dawson paint an ominous image of convergence between Canada's armed RPAS trajectory and the legally tenuous US campaign of extrajudicial assassinations. Although the likelihood of such an outcome is very much debatable, Dawson provocatively warns that "acquiring armed drones would risk involving Canada in all manner of military follies and morally questionable acts of assassination".[57] Like others in this camp, Dawson plays on the emotive aspects of armed RPAS programs. Nonetheless, his ultimate conclusion that Canada should acquire them "for surveillance and reconnaissance *only*"[58] aligns closely with a domestic narrative that sees value in forging a defence path distinct from the contentious RPAS strategies of the US.

On the more objective end of the debate, former Chairman of the Canadian Institute of Strategic Studies Fraser Holman posits that precision-strike RPAS simply does not reconcile with Canadian defence priorities. Viewing armed RPAS largely as a tool for extraterritorial conflicts of choice, Holman asserts that the reach and persistence of MALE unmanned platforms make them ideally suited for Canada's fundamental

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[57] iPolitics, "The Canadian Military Wants Armed Drones. Here's Why We Should Say No," last accessed 18 April 2019, https://ipolitics.ca/2016/04/01/the-canadian-military-wants-armed-drones-heres-why-we-should-say-no/.

[58] *Ibid.*

mandate of asserting national sovereignty along its remote frontiers. Holman concludes that unmanned airpower's "wide application to surveillance is almost assured; when it comes to delivering weapons… the case is not as persuasive for Canada at present".[59]

Whether invoking emotional responses or leveraging inconsistencies in national defence strategy, opponents of armed RPAS in Canada are influential and informed stakeholders. They seek to depict an image of national defence that espouses Canadian societal values and, in their view, is fundamentally at odds with the concept of precision-strike RPAS. The national defence apparatus should welcome these perspectives and incorporate them into a meaningful implementation and governance framework that assuages public concern and underscores the operational imperatives.

CONCLUSION

With their inherent qualities of low-risk, persistence and precision lethality, armed RPAS represent a synergistic force-multiplier in the context of the today's complex, network-centric security environment. Although plagued by repeated false-starts since the inception of the JUSTAS program, the CAF has recently reinvigorated its pursuit of an enterprise precision-strike MALE RPAS solution that will re-establish Canada's footing as a global stakeholder in the unmanned airpower domain. Despite the tacit endorsement tendered by legislators and the Canadian electorate thus far, the RPAS Project will invariably face a host of challenges, most of which will focus on the legal, ethical, transparency and accountability dimensions of unmanned precision-strike in a liberal democratic society. In response to these frictions, the Canadian government will be

[59] Fraser Holman, *The Future of Drones in Canada* (n.p.: Center for International Governance Innovation, 2013), 8.

compelled to embrace innovative, adaptive and agile risk mitigation strategies that will at times be at odds with CAF cultural norms.

Of course none of this will come easily and there will be setbacks. Fervent and influential opponents of armed RPAS poise ready to exploit any perceived breach in the implementation strategy. Likewise societal indifference and apathy can easily be converted into dissonance should the national defence apparatus be perceived as resistant to the tenets of civil-military control. Despite the magnitude and complexity of the task at hand, armed RPAS presents a tremendous value proposition for Canada. Whether asserting sovereignty in the far north, conducting critical battlespace ISR or prosecuting targets in a combat zone, armed RPAS is a transformative challenge that Canada must face with tenacity, innovation and resolve if it is to succeed.

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