Mission Command, Autonomy and the RMA Question: The Organisational Impact of Uncrewed Systems

Autopilot through the Fog: Command in the Age of Machines

COMMANDANT (OF 3) ADAM BEATTY

B.A., B.SC., M.SC., M.ENG

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

MASTER OF ARTS IN LEADERSHIP MANAGEMENT AND DEFENCE STUDIES

MAYNOOTH UNIVERSITY

2026

SUPERVISOR: NOT YET ASSIGNED

STUDENT DECLARATION

MA (LMDS)

Student Declaration

1. I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

2. I, the undersigned declare that no Artificial Intelligence (AI) tools were used to complete all or any part of this thesis.

3. Permission is given for the Defence Forces Library and the Maynooth University Library to lend or copy this thesis upon request.

4. The views and conclusions expressed herein are those of the student author and do not necessarily represent the views of the Military College, the Defence Forces or the Maynooth University.

SIGNED: _____ **RANK:** Commandant (OF 3)

Name: ADAM BEATTY **Date:** September 8, 2025

1 Importance of the Research

The implications of uncrewed systems and AI to the Irish Army are interesting to consider. Uncrewed systems comprise a clear threat to our soldiers. The narrowing of the technology gap has created vulnerabilities from hybrid and irregular forces (Husain 2021). Conversely, they could provide considerations for an Ireland which is seeking to invest more in defence.

Whether Uncrewed Ground System (UGS) and Uncrewed Aerial System (UAS) [1] constitute a revolution or evolution of warfare, their proliferation warrants attention and careful consideration. UAS in particular have been seen to lower the 'barrier to entry' to technology which, to-date, was the exclusive purview of technologically advanced conventional militaries. Similarly, they are closing previous technology gaps between unconventional, hybrid and conventional forces.

Drones, once novel, are now routine instruments of warfare. The Second Nagorno-Karabakh War (2020) and the Russo-Ukraine War (2022 to present) are particularly noteworthy in that regard.

Historical precedent illustrates the influence of technology on command, such as through the invention of the telegraph (Cohen 1996). A famous case of this influence was of President Barack Obama supervising May 2011's Operation Neptune Spear. The use of AI shall create tension with the exercise of the doctrine of mission command.

Research on the adoption of uncrewed systems and AI is therefore significant. It is disruptive not only for the conduct of warfare but for military organisation, doctrine and command.

[1] Also known as "drones".

2 Implications for the Irish Defence Forces

Can the history of warfare be disentangled from a history of human technology and innovation? Are the methods of war entirely separate from the tools by which it is waged? Said differently, what advantage if any is secured solely through technological advancement?

Advances in technology are transformational in a military context - interestingly discussed by Cohen's 1995 paper . In military planning, there is a tool known as Relative Combat Power (RCP) which is used as to broadly assess parity of forces prior to combat. It is interesting to consider what impact uncrewed systems have on RCP. It is suggested that drones may constitute both an opportunity to modernise and to close the RCP gap with other conventional forces. Boldly adopting and leveraging uncrewed and AI-enabled systems could enable the Irish Army to fast-track capability development. Opportunities exist to bypass traditional, slow and costly development & procurement processes. This could be analogous to weaker naval nations leveraging the submarine during the early 20th century(Cohen 1996). In 2021 Husain[1] posited that the RCP of a drone swarm which is optimised via Artificial Intelligence (AI) could be comparable to a substantially larger conventional force. Specifically, that AI could coordinate a decisive concentration of force, while drones by their nature are particularly manoeuverable. Indeed, the corresponding structural and command-related impacts could be equally valuable considerations. As Crino and Dreby show, the disruptive effect of small drones is already evident in repeated strikes on critical infrastructure, underscoring how non-state and state actors alike can weaponise commercially available systems (Crino and Dreby 2020). As reported by the EDA, a significant proportion of tactical reconnaissance and strikes are being conducted remotely (Nicholescu 2023). These considerations are important influences on command, leadership, structure and culture.

[1] Cohen's 1996 paper provided similar analysis .

3 Literature

3.1 Introduction

Much of warfare conducted during the first two decades of the 21st century was heavily influenced by the IED. The threat and the response evolved continually. Crucially, techniques were rarely rendered obsolete. Instead, their effectiveness fluctuated over time. This evolutionary pattern accords with Krepinevich's insistence that RMAs require organisational adaptation alongside technology (Krepinevich 1992) and Metz's observation of incremental rather than discontinuous change (Metz 2000; Krepinevich 1994). This is evidenced by the continued relevance of the Philosophy of IEDD, which endures as international doctrine since the 1970s (Cochrane 2012; Irish Defence Forces 2022). An RMA would perhaps fundamentally transform the battlefield by rendering existing techniques and equipment permanently obsolete. This example may reflect what critics of the RMA thesis argue, that adaptation is cyclical and rarely results in true discontinuity.

3.2 Foundational RMA Theories and Techno-Optimist Views

Cohen suggested to consider the longevity of "basic counting pieces of military power" (Cohen 1995), echoing RCP. Discontinuous jumps in RCP aligns well with Krepinevich's 1992 description, whereby to disregard an RMA likely condemns your soldiers to slaughter.

Krepinevich 1992's paper placed him as a seminal RMA thinker . He framed the RMA as more than just new platforms. It required agile, flat experimentation and organisation. He stressed that information itself would become power and military adoption of superior civilian technology. He also suggested that older systems could still play a role, but increasingly in support of new technologies such as long-range precision strike and drones which would displace armour as the centre of battle . This sits alongside Cohen's idea

that RMAs function like hypotheses to be tested in war (Cohen 1996) and Owens' vision of linked "systems of systems" reshaping force structure (Owens 2002). RMA optimists have felt that evolution in technology and thinking which were displayed during Desert Storm would clear the "fog of war" (Alach 2008, p. 49). More recently, Brose argued that AI, autonomy and ubiquitous sensors will upend legacy concepts in the same way that smokeless powder once did, demanding a radically different force design built around swarms of cheap, expendable system (Brose 2019).

Their works suggest that Cohen and Krepinevich view the RMA concept as not just an abstract model within which to attempt to understand warfare. Instead an RMA is akin to a scientific hypothesis which can be tested. If one's inaction resulted in the 'needless' slaughter of your soldiers, then one erroneously dismissed an RMA. It is clear from the literature, that proponents of the RMA framework do not simply see it as technological. Cultural, bureaucratic, financial, political and other factors influence to transform a technological invention to a military breakthrough. Metz (2000) similarly stresses that revolutions in military affairs are as much social, political and organisational as they are technological. The cultural context shapes whether new capabilities amount to true revolution.

3.3 Critical and Skeptical Perspectives on RMA

Krepinevich also recognised that technology on its own was insufficient. For him, invention without reorganisation was a dead end (Krepinevich 1992). This reinforces Betts' warning that militaries often misuse technology if it is not embedded in doctrine and culture (Betts 1996). Krepinevich's review of the Gulf War air campaign likewise underlined the limits of technology's impact when political control and cultural factors remained intact (Krepinevich 1996). It also reflects Gray's argument that strategic culture, not hardware, usually decides whether an apparent breakthrough becomes a genuine revolution (Gray 2005). Betts (1996) (and to a lesser extent Owens (2002)) cautioned against concluding that the results of Desert Storm confirm the existence of an RMA. He assesses it as improbable that that the US is able to repeat the results of the 1990-1991 Gulf War in the

future. Indeed he appears to have correctly predicted the US' inability to succeed against insurgencies it faced during GWoT. William Owens similarly highlights that while technological advances offer extraordinary military effectiveness, organisational and cultural transformation lag behind and dilute its impact (Owens 2002).

The skeptical tradition applies a kind of Occam's razor to claims of revolution. Rather than positing epochal breaks, it stresses that continuity and incremental adaptation usually suffice to explain apparent change. As Alach argues, much of the supposed RMA discourse is rhetorical excess layered onto what are, in practice, evolutionary adjustments (Alach 2008, .p 50-52). His conclusion is that there is an evolution in military affairs rather than a revolution. Rassler's 2015 study of non-state drone innovation reinforces this skepticism, showing that much of the apparent novelty stems from incremental civilian adaptation rather than decisive military transformation" (Rassler 2015).

3.4 Doctrinal and Organisational Learning Perspectives

The tank case is also an example of organisational learning and failure. Krepinevich showed that Britain had the concept but not the structures to exploit it (Krepinevich 1992). He later extended this logic, showing that historical patterns of military change confirm the decisive role of organisational adaptation over invention alone (Krepinevich 1994). This appears to align with Betts' description of military commanders approaching new technology with "conservative progressivism "(Betts 1996). Conversely inter-war Germany's circumstances allowed for a more flexible approach, resulting in transformation. Metz's (2000) and Owens (2002) articles accurately correlates recent defeat or a perception of weakness with openness to creativity. This was clearly the case for inter-war Germany.

Cohen's (1996) and Krepinevich's (1992) articles suggest that revising hierarchical structures is among the hardest tasks in realising an RMA. The recurring prescription is not mere acquisition/invention. It is often organisational change, faster decision cycles, decentralised command which realise the gain. Yet both tend to understate the cultural, political, budgetary and career incentives which impede revolutionary change. Owen's 2002 article clearly places him as an RMA optimist . However, when reviewing Desert Storm,

he observed that apparent technological difficulties were, “rooted in deeper differences of service culture, procedures, and operational concepts”. As Keller (2002) observed in his interviews with reform advocates, even within the Pentagon the frustration was less about technology itself than about a sclerotic culture that rewarded continuity over disruptive change. The Stimson Center similarly noted that while UAS had become indispensable to U.S. commanders, their adoption was shaped less by radical reorganisation than by incremental integration into existing bureaucratic routines (Stimson Center 2015).

Schaus and Johnson caution that UAS use also alters escalation dynamics, lowering thresholds without necessarily changing organisational cultures, which may create dangerous gaps between intent and perception” (Schaus and Johnson 2018). This is echoed by Krepinevich (1992).

3.5 AI, Autonomy, Mission Command and Contemporary Debates

In 2000, Metz posited that historic commanders such as or Guderian would likely have found the United States’ AirLand Battle Doctrine (AI) compatible with their operational style. Central to this is the concept of mission command. The tension between mission command’s rapid operational tempo and the temptation of micro-management due to digital visibility is noteworthy.

Cohen warns of that technologies facilitating modern to commanders to perch “cybernetically” beside their troops in combat could have an insidious effect - undermining subordinate commanders (Cohen 1996). He contrasts this with General Eisenhower and Field Marshall von Moltke lying on a sofa reading a book on the eve of battle. His skeptical characterisation of commanders prone to intervene indicates that Cohen is likely a proponent of mission command. Yet as Betts observes, new technology does not sharpen judgment by itself. Militaries often misinterpret or misuse innovations (Betts 1996). Together these cautions suggest that without cultural and organisational restraint, information systems may become instruments of centralised control rather than enablers of mission command.

Alach (2008) concurs, stating that, "mental evolution was as critical" as technological progress.

As a proponent of mission command, the actions recounted by General Guderian are somewhat incongruent. He described driving around the battlefield in his staff car to observe and intervene, at times confronting subordinates he believed were disobeying orders. One such episode involved SS Oberführer Dietrich, whose apparent insubordination proved correct once Guderian examined the situation: "I approved the decision taken by the commander on the spot" (Guderian 1952, p. 117). His preference for active oversight was further reflected in his praise for SS Gruppenführer Paul Hausser (Yeide 2011, p. 73).

The tension between personal intervention and the philosophy of mission command is illustrated by Major Dick Winters during the Battle of Bastogne. Though instinct urged him to relieve Lieutenant Dike and lead Easy Company himself, Winters chose instead to uphold his broader responsibilities as battalion commander. His solution—appointing Lieutenant Ronald Speirs—proved decisive (Winters and Kingseed 2006, p. 186).

Steven Metz argues that the USALB blended modern technology with Auftragstaktik and rapid tempo in ways Guderian or Patton would have recognised (Metz 2000). More recently, Husain suggested that AI could compress the OODA loop to machine speed, accelerating conflict while still leaving space for the enduring principles of mission command (Husain 2021).

So it appears that Cohen underestimates the potential for technology to reinforce Auftragstaktik. His framing risks a reductive binary between passive commanders "on the sofa" and intrusive commanders "in the hatch". Even if a commander's judgment is superior, they cannot personally manage every decision across a dispersed and complex battlefield. What matters is leveraging subordinates' initiative at scale, while reserving intervention for moments of crisis or opportunity. In this sense, the commander amplifies rather than replaces subordinate action. Hence, technology such as uncrewed systems and AI may enhance mission command. Krepinevich (1992) modified structures can enable technology to reinforce Auftragstaktik rather than undermine it. This highlights that the impact of technology is contingent less on the tools themselves than on organisational

culture and doctrinal restraint. In favourable conditions, AI and uncrewed systems may extend, rather than erode, the practice of mission command. Authors such Alach, Gray, Betts (along with conditional optimists such as Cohen, Krepinevich and Metz) identify the incremental change/evolution combined and interactions between many systems to be a key consideration.

Summary and Conclusion

Krepinevich stands out as a bridge across the literature. He shared the techno-optimist belief that information, precision strike and new organisational forms could drive a revolution. Yet he also stressed that bureaucratic resistance and doctrinal inertia often prevent militaries from realising this potential. His recognition that invention without reorganisation fails, links early RMA theory to later institutional learning perspectives. In this sense, he links the optimism of Metz, Cohen and Owens with the caution of Betts, Alach and Gray. His insights anticipate contemporary debates on AI, autonomy and dual-use technology. This dual perspective is evident across his writings—from his broad historical analysis of past military revolutions (Krepinevich 1994) to his tempered assessment of Desert Storm's limited revolutionary character (Krepinevich 1996).

4 The Research Question

To what extent have uncrewed and AI-enabled systems reshaped mission command, military organisation and the character of warfare in recent conflicts. Do these cumulative changes constitute a Revolution in Military Affairs (RMA)?

- Mission Command
  - How are uncrewed and AI-enabled systems reshaping the philosophy and practice of mission command?
  - To what extent do concepts like the OODA loop and "hyperwar" illustrate these changes?
- Military Organisation and Structure
  - How are Western militaries adapting their structures, force composition and professional cultures in response to uncrewed and AI systems?
  - Are new "elites" or organisational forms emerging, as predicted by RMA theorists?
- Character of Warfare
  - How have recent conflicts demonstrated changes in the conduct and character of war due to uncrewed and AI-enabled systems
  - Do these cumulative changes amount to evolutionary adaptation or a true Revolution in Military Affairs?

5 Methodology

This thesis shall adopt the humanities approach. It shall not seek to measure variables or test hypotheses. Instead, it shall interrogate texts and ideas. The intended method shall be one of critical reading of theorists, doctrine, policy papers and case histories, set against one another. The aim is to identify the assumptions which underpin techno-optimist, sceptical and institutional perspectives on the RMA. Through comparison of theory and practice in recent conflicts, the study will weigh whether uncrewed and AI-enabled systems represent genuine discontinuity or the latest turn in an evolutionary cycle. These debates will also be assessed in the context of the Irish Army, to consider their relevance for national doctrine, organisation and command.

Bibliography

Alach, Z. J. (2008). The revolution in military affairs. In: *Slowing Military Change*. [Online], pp. 49+. Available at: https://link.gale.com/apps/doc/A263786445/AONE?u=nuim&sid=bookmark-AONE&xid=e7caa86e. (Accessed: 12 June 2025).

Betts, R. (1996). The downside of the cutting edge. In: *The National Interest* 45. [Online], pp. 80+. Available at: https://link.gale.com/apps/doc/A18827115/AONE?u=nuim&sid=bookmark-AONE&xid=3a16f899. (Accessed: 12 June 2025).

Brose, C. (2019). The new revolution in military affairs: War's sci-fi future. In: *Foreign Affairs* 98.3. [Online], pp. 122+. Available at: https://link.gale.com/apps/doc/A585763277/AONE?u=nuim&sid=bookmark-AONE&xid=ed50cd4b. (Accessed: 12 June 2025).

Cochrane, B. (2012). "The Development of the British Approach to Improvised Explosive Device Disposal in Northern Ireland". [Unpublished]. MPhil thesis. Cranfield University, Defence College of Management and Technology.

Cohen, E. A. (1995). Come the revolution. In: *National Review* 47.14. [Online], pp. 26+. Available at: https://link.gale.com/apps/doc/A17367744/AONE?u=nuim&sid=summon&xid=e8a5ebae. (Accessed: 12 June 2025).

— (1996). A revolution in warfare. In: *Foreign Affairs* 75.2. [Online], pp. 37+. Available at: https://link.gale.com/apps/doc/A18102376/GBIB?u=nuim&sid=summon&xid=c4fd2389. (Accessed: 12 June 2025).

Crino, S. and Dreby, C. (2020). *Drone attacks against critical infrastructure: a real and present threat*. [Online]. Available at: http://www.jstor.org/stable/resrep24632. (Accessed: 11 June 2025).

Gray, C. S. (2005). *Another bloody century: future warfare*. London: Weidenfeld & Nicolson.

Guderian, H. (1952). *Panzer Leader*. First published in Great Britain by Michael Joseph Ltd, 1952. Futura edition 1974; reprinted 1976, 1977, 1979, 1980, 1982, 1987. London: Futura Publications. ISBN: 0860070883.

Husain, A. (2021). AI is shaping the future of war. In: *PRISM* 9.3. [Online], pp. 50–61. Available at: https://www.jstor.org/stable/48640745.

Irish Defence Forces (2022). *Explosive Ordnance Disposal Instructions*. Issued by the Director of Ordnance on the instruction of the Chief of Staff. [Internal Document].

Keller, B. (2002). The fighting next time. In: *The New York Times Magazine*. [Online], pp. 32. Available at: https://link.gale.com/apps/doc/A84142167/AONE?u=nuim&sid=bookmark-AONE&xid=32d76c20. (Accessed: 12 June 2025).

Krepinevich, A. F. (1992). *The Military-Technical Revolution: A Preliminary Assessment*. [Online]. Available at: https://csbaonline.org/uploads/documents/2002.10.02-Military-Technical-Revolution.pdf.

— (1994). Cavalry to computer: The pattern of military revolutions. In: *The National Interest* 37, pp. 30–42. Available at: http://www.jstor.org/stable/42896863. (Accessed: 7 September 2025).

— (1996). Revolution in warfare? Air power in the Persian Gulf. In: *Foreign Affairs* 75.4. [Online], pp. 144. Available at: https://link.gale.com/apps/doc/A18420016/ITOF?u=nuim&sid=summon&xid=7d84949f. (Accessed: 12 June 2025).

Metz, S. (2000). The next twist of the RMA. In: *Parameters* 30.3. [Online], pp. 40. Available at: https://link.gale.com/apps/doc/A67502101/AONE?u=nuim&sid=bookmark-AONE&xid=edea42d1. (Accessed: 12 June 2025).

Nicholescu, K. (Mar. 2023). *Remarks at Future Soldier Technology Conference*. Author's personal observation. London, 7 March.

Owens, W. A. (2002). The once and future revolution in military affairs. In: *Joint Force Quarterly*. [Online], pp. 55+. Available at: https://link.gale.com/apps/doc/A99817512/AONE?u=nuim&sid=bookmark-AONE&xid=f9fa2e22. (Accessed: 12 June 2025).

Rassler, D. (2015). *Remotely piloted innovation: terrorism, drones and supportive technology*. [Online]. Available at: http://www.jstor.org/stable/resrep05632.6. (Accessed: 11 June 2025).

Schaus, J. and Johnson, K. (2018). *Unmanned aerial systems' influences on conflict escalation dynamics*. [Online]. Available at: http://www.jstor.org/stable/resrep22318. (Accessed: 11 June 2025).

Stimson Center (2015). *Military utility, national security, and economics*. [Online]. Available at: http://www.jstor.org/stable/resrep10852. (Accessed: 11 June 2025).

Winters, R. D. and Kingseed, C. C. (2006). *Beyond Band of Brothers: The war memoirs of Major Dick Winters*. First edition. New York: The Berkley Publishing Group. ISBN: 0425208133.

Yeide, H. (2011). *Fighting Patton: George S. Patton Jr. through the eyes of his enemies*. [Online]. Available from ProQuest Ebook Central. Minneapolis: Quarto Publishing Group USA. Available at: https://ebookcentral.proquest.com/lib/nuim/detail.action?docID=3399615. (Accessed: 12 September 2025).

Glossary of Terms

Revolution in Military Affairs A hypothesised period of rapid change in warfare driven by the interaction of new technologies, organisations and concepts.

List of Acronyms

AI Artificial Intelligence.

AI United States' AirLand Battle Doctrine.

EDA European Defence Agency.

GWoT Global War on Terror.

HiTL Human in the Loop.

IED Improvised Explosive Device.

IEDD Improvised Explosive Device Disposal.

ISR Intelligence, Surveillance and Reconnaissance.

MDMP Military Decision Making Process.

OODA Observe Orient Decide Act.

RCP Relative Combat Power.

RMA Revolution in Military Affairs.

UAS Uncrewed Aerial System.

UGS Uncrewed Ground System.

UOS Uncrewed and Optionally Crewed Systems.

Index