

# New Technologies and the Law of Armed Conflict

Hitoshi Nasu · Robert McLaughlin  
Editors

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*Editors*

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# Foreword

Since adoption of the 1977 Protocols Additional to the 1949 Geneva Conventions, the law governing armed conflict has developed primarily through the jurisprudence of international tribunals or by means of treaties setting forth restrictions and prohibitions on the weaponry of war. The latter have included conventions on non-detectable fragments, mines, booby-traps, incendiaries, blinding lasers, chemical weapons and cluster munitions. Other new treaty laws in the field have generally been limited to conventions enhancing the protection of especially vulnerable persons and objects, such as children and cultural property. Indeed, no treaties developing the general principles of law governing the conduct of hostilities have been adopted since the Additional Protocols. All indications are that this trend towards relying on weapons law to limit warfare will continue.

Interestingly, efforts to craft new weapons legal regimes are increasingly led either by states that have a low likelihood of ever using these weapon systems in combat or by non-governmental organisations. In other words, the process appears to be slipping from the hands of those states which have the greatest immediate vested interest in the weapons in question and that best understand when and how those weapons are likely to be employed. This trend appears to be accelerating. Paradigmatic examples include anti-drone advocacy and the campaign to ban autonomous weapon systems. The former is paradoxical since most experts agree that although drones, like all weapons, may be used in violation of the law of armed conflict, their unique characteristics, especially their sensor suite and ability to loiter over a proposed target, usually render them more discriminate than manned systems. The latter is likewise enigmatic in the sense that the critics seem to have adjudged autonomous weapons unlawful *per se* based purely on speculation as to how they might perform and without consideration of how they could be employed tactically to minimise civilian harm. As these examples illustrate, contemporary weapons campaigns are often characterised by counter-factual and counter-normative assertions that are often laden with emotion. With the stakes so high and the debate so confused, informed dialogue by serious legal experts is badly needed.

The publication of this book, therefore, could not have been more propitious. *New Technologies and the Law of Armed Conflict* offers a highly sophisticated legal examination of four new technologies that will dramatically alter the face of future warfare—cyber, space, nano and unmanned systems. The editors and authors have clearly grasped the essential point that the relationship between law

and weaponry is synergistic; new technologies of war inevitably affect the content and understanding of the law of armed conflict and the law equally serves to constrain their development, availability and method of use. This being so, it is crucial that legal thinkers stay ahead of this dynamic. Working closely with operators and technical experts, they must identify the valid legal issues that new technologies raise, seek to understand how the weaponisation of new technology might influence the extant normative regime, and try to ascertain whether new law is needed to address unique characteristics of the systems. Such an understanding is especially imperative when, as in the case of each weapon examined in this book, the technology used to conduct military operations serves both civilian and military purposes. *New Technologies and the Law of Armed Conflict* aptly achieves these goals.

To examine the impact of the four new technologies on the legal battlefield, the editors convened a carefully crafted group of scholar-practitioners for a forum at the Australian National University in 2012; the product of the event is this book. It is an approach that allowed for a robust peer vetting of the issues and the various perspectives thereon. Of particular note in this regard is the composition of the forum and of the authors invited to contribute to the book. The editors include an experienced retired senior military legal officer with impressive scholarly credentials and an accomplished academic with a deep understanding of military affairs. Joining them are serving and retired legal officers and distinguished academics. What sets this effort apart from others is that many of the authors have extensive practical experience in dealing with the legal issues that the weapons and weapons systems raise. They are therefore uniquely situated to help remedy the knowledge, applicability, interpretation and perspective deficit which presently plague much of the legal analysis with respect to these systems.

Simply put, *New Technologies and the Law of Armed Conflict* is a book that matters. It will undoubtedly shape the development of the legal regimes that emerge through interpretation of existing law and promulgation of *lex scripta* to govern the weapons examined. As importantly, the book offers a mature application of weapons law that can be used as a blueprint for examination of other new technologies. I recommend it unreservedly to those who are involved in the ongoing weapons debates, as well as those interested in the broader relationship between law and war, and congratulate the editors and authors on this fine work.

Newport, Autumn 2013

Michael Schmitt  
Charles H. Stockton Professor  
United States Naval War College

# Acknowledgments

This book records the outcomes of a forum held at the Australian National University in September 2012, which asked scholars and practitioners working in the field of the law of armed conflict to critically examine what they held to be the primary legal challenges arising from the use of certain new technologies in armed conflict, and future directions of legal development in light of the specific characteristics and challenges each technology presents for both the law of armed conflict and the battlespace. Many of the chapters which appear in this book were first presented at this forum, and we thank all who presented and contributed to discussions. Many of the speakers at the forum subsequently developed their work into a chapter of this book, based on lively discussions at the forum, and additional authors became involved in the book project.

We gratefully acknowledge the Australian Centre for Military and Security Law, the ANU College of Law and its College Outreach Activities Support Team (COAST) for their support in convening the forum. We thank various governmental departments, in particular the Commonwealth Attorney-General's Department, Australian Defence Force, Department of Defence, and Department of Foreign Affairs and Trade, Australian Red Cross and the International Committee of the Red Cross for their generosity in allowing their staff to share their expertise and specialist knowledge at the forum. We are also grateful to the Australian Research Council for supporting research by Hitoshi Nasu, Margaret E. Kosal and Thomas A. Faunce and helping us complete the manuscript under its Discovery Project funding scheme (Project ID 110102637).

We thank our Assistants, Kiri McEwan, Natasha Purvis, Helen Trezise, Michael Keefe and Shiang Ye, who helped put together this book. Kiri McEwan took the admirable leadership in managing the editorial assistance team, particularly during the difficult time while the editors were away in Europe. Michael Keefe and Shiang Ye diligently kept the verbatim record of the forum discussions and Shiang also helped in the final stages of the preparation of the manuscript. Natasha Purvis and Helen Trezise provided exceptional research and proofreading assistance to the editors.

Last, but certainly not least, we express our gratitude to Prof. Michael N. Schmitt for his friendship, guidance and inspiration that kept the editors and many of the contributors inspired throughout this project.

Geneva and Vienna, June 2013

Hitoshi Nasu  
Robert McLaughlin

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# Abbreviations

ABM	Anti-Ballistic Missile
ABMT	Anti-Ballistic Missile Treaty
AMW	Air and Missile Warfare
ASL	Archipelagic Sea Lane
AWS	Autonomous weapon system
CIA	Central Intelligence Agency
COLREGS	International Regulations for the Prevention of Collisions at Sea
COPUOS	Committee on the Peaceful Uses of Outer Space
CTS	Consolidated Treaty Series
CTBT	Comprehensive Test-Ban Treaty
DARPA	Defence Advance Research Projects Agency
DDoS	Distributed Denial-of-Service
DNA	Deoxyribonucleic Acid
EF	Edema factor
ENMOD	Environmental Modification Techniques
FDA	Food and Drug Administration
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
HCOC	Hague Code of Conduct Against Ballistic Missile Proliferation
HRAW	Hague Rules of Air Warfare
IADC	Inter-Agency Space Debris Coordination Committee
ICJ	International Court of Justice
ICOC	International Code of Conduct for Outer Space Activities
ICRC	International Committee of the Red Cross
ICTY	International Criminal Tribunal for the former Yugoslavia
ILM	International Law Materials
IED	Improvised explosive device
ISR	Intelligence, Surveillance and Reconnaissance
LAR	Lethal autonomous robotics
LF	Lethal factor
LOSC	Law of the Sea Convention
MIC	Metastable Intermolecular Composite
NATO	North Atlantic Treaty Organisation
NPT	Nuclear Non-Proliferation Treaty

PA	Protective Antigen
PAROS	Prevention of an Arms Race in Outer Space
PCIJ	Permanent Court of International Justice
PPWT	Prevention of the Placement of Weapons Treaty
PTBT	Partial Test-Ban Treaty
RCA	Riot Control Agent
RNA	Ribonucleic acid
RNEP	Robust Nuclear Earth Penetrator
RPA	Remotely Piloted Aircraft
SATCOM	Communications satellite
SCADA	Supervisory Control and Data Acquisition
UAV	Unmanned Aerial vehicle
UCAV	Unmanned Combat Aerial Vehicle
UK	United Kingdom
UN	United Nations
US	United States

# Treaties and Cases

## Treaties

- Agreement Governing the Activities of States on the Moon and other Celestial Bodies*, 18 December 1979, 1363 UNTS 3 (entered into force 11 July 1984).
- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*, 22 April 1968, 672 UNTS 119 (entered into force 3 December 1968).
- Amended Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Amended Protocol II) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 3 May 1996, 2048 UNTS 93 (entered into force 3 December 1998).
- Charter of the United Nations*, 26 June 1945, 1 UNTS XVI (entered into force 24 October 1945).
- Comprehensive Nuclear-Test-Ban Treaty*, 26 August 1996, UN Doc A/50/1027 (not yet in force), adopted in GA Res 50/245 (10 September 1996).
- Constitution of the International Telecommunications Union*, 22 December 1992, 1825 UNTS 331 (entered into force 1 July 1994).
- Convention on Civil Aviation*, 7 December 1944, 15 UNTS 295 (entered into force 4 April 1947).
- Convention on Cluster Munitions*, 30 May 2008, 48 ILM 357 (2009) (entered into force 1 August 2010).
- Convention on International Liability for Damage Caused by Space Objects*, 29 November 1971, 961 UNTS 187 (entered into force 29 March 1972).
- Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 10 October 1980, 1342 UNTS 137 (entered into force 2 December 1983).
- Convention on Registration of Objects Launched into Outer Space*, 14 January 1975, 1023 UNTS 15 (entered into force 15 September 1976).
- Convention on the International Regulation for Preventing Collision at Sea*, 20 October 1972, 1050 UNTS 16 (entered into force July 1977).

- Convention on the Law of the Sea*, 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994).
- Convention on the Prohibition of Anti-Personnel Mines*, 3 December 1997, 2056 UNTS 211 (entered into force 1 March 1999).
- Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques*, 18 May 1977, 1108 UNTS 151 (entered into force 5 October 1978).
- Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, 10 April 1972, 1015 UNTS 163 (entered into force 26 March 1975).
- Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction*, 13 September 1992, 1974 UNTS 45 (entered into force 29 April 1997).
- Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction*, 18 September 1997, 2056 UNTS 211 (entered into force 1 March 1999).
- Convention on the Safety of United Nations and Associated Personnel*, 15 December 1994, 2051 UNTS 363 (entered into force 15 January 1999).
- Framework Convention on Climate Change*, 9 May 1992, 1771 UNTS 177 (entered into force 12 March 1994).
- Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950).
- Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea*, 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950).
- Geneva Convention Relative to the Treatment of Prisoners of War*, 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950).
- Geneva Convention Relative to the Protection of Civilian Persons in Time of War*, 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950).
- Hague Convention (II) with respect to the Laws and Customs of War on Land*, 29 July 1899, 187 CTS 429 (entered into force 4 September 1900).
- Hague Convention (V) Respecting the Rights and Duties of Neutral Powers and Persons in the Case of War on Land*, 18 October 1907, 105 CTS 305 (entered into force 26 January 1910).
- Hague Convention (VII) Relating to the Conversion of Merchant Ships into War-Ships* 18 October 1907 205 CTS 319 (entered into force 26 January 1910).
- Hague Convention (XIII) Concerning the Rights and Duties of Neutral Powers in Naval War*, 18 October 1907, 205 CTS 395 (entered into force 26 January 1910).
- Hague Declaration (II) on the Use of Projectiles the Object of Which is the Diffusion of Asphyxiating or Deleterious Gases*, 29 July 1899, 187 CTS 453 (entered into force 4 September 1900).
- Hague Declaration (III) Concerning Expanding Bullets*, 29 July 1899, 187 CTS 459 (entered into force 4 September 1900).

- Limitation of Anti-Ballistic Missile Systems Treaty*, 26 May 1972, 944 UNTS 14 (entered into force 3 October 1972, no longer in force due to US withdrawal, effective 13 June 2002).
- Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, 8 June 1977, 1125 UNTS 3 (entered into force 7 December 1978).
- Protocol Additional to the Geneva Conventions of 12 August 1949 relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II)*, 8 June 1977, 1125 UNTS 609 (entered into force 7 December 1978).
- Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, 17 June 1925, 94 LNTS 65 (entered into force 8 February 1928).
- Protocol on Blinding Laser Weapons (Protocol IV) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to have Indiscriminate Effects*, 13 October 1995, 1380 UNTS 370 (entered into force 30 July 1998).
- Protocol on Explosive Remnants of War (Protocol V) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 28 November 2003, 2399 UNTS 100 (entered in to force 12 November 2006).
- Protocol on Non-Detectable Fragments (Protocol I) to the Convention on Prohibition or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 10 October 1980, 1342 UNTS 171 (entered into force 2 December 1983).
- Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III) to the Convention on Prohibition or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 10 October 1980, 1342 UNTS 171 (entered into force 2 December 1983).
- Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Protocol II) to the Convention on Prohibition or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects*, 10 October 1980, 1342 UNTS 137 (entered into force 2 December 1983).
- Regulations Concerning the Laws and Customs of War on Land, Annex to the Hague Convention (IV) Respecting the Laws and Customs of War on Land*, 18 October 1907, 205 CTS 277 (entered into force 26 January 1910).
- Rome Statute of the International Criminal Court*, 17 July 1998, 2187 UNTS 90 (entered into force 1 July 2002).
- St Petersburg Declaration Renouncing the Use, In Time of War, of Explosive Projectiles Under 400 Grammes Weight*, 11 December 1868, 138 CTS 297 (entered into force 11 December 1868).
- Statute of the International Court of Justice*, 26 June 1945, 1 UNTS 993 (entered into force 24 October 1945).

- Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms*, 8 April 2010, 50 ILM 340 (entered into force 5 February 2011).
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water*, 5 August 1963, 480 UNTS 45 (entered into force 10 October 1963).
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205 (entered into force 10 October 1967).
- Treaty on the Non-Proliferation of Nuclear Weapons*, 1 July 1968, 729 UNTS 161 (entered into force 5 March 1970).

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