

RMA resources

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Online resources

Federation of American Scientists <http://www.fas.org/index.html>
The FAS conducts analysis and advocacy on science, technology and public policy. Several aspects of their research programme touch RMA and related developments.

InforWar.com <http://www.infowar.com/>
A commercial site hosting a number of articles on information espionage, terrorism and C⁴I. Also includes an excellent resource and links page.

National Security Studies Quarterly <http://www.georgetown.edu/sfs/programs/nssp/nssq/back.html>
The NSSQ is a publication of the Center for Peace and Security Studies, Georgetown University, Washington, DC. Many issues of NSSQ include articles relating to RMA.

Preventive Defense Project Homepage <http://ksgnotes1.harvard.edu/BCSIA/PDP.nsf/www/Home>
The PDP is a research collaboration of Stanford University and Harvard University's Kennedy School of Government. The project focuses on forging productive security partnerships with Russia and its neighbours, engaging an emerging China, addressing the lethal legacy of Cold War WMD, and countering WMD proliferation and potential acts of catastrophic terrorism.

The RMA Debate <http://www.comw.org/rma/index.html>
Hosted by the Commonwealth Institute and sponsored by the Project on Defense Alternatives, this site has many full-text resources and online publications on different aspects of RMA.

Strategic Studies Institute <http://carlisle-www.army.mil/usassi/ssipubs/catalogs/rma.htm>
In-depth reports from the United States Army War College covering RMA, alternative futures and information warfare.

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Key texts on RMA

- Arquilla, John and David Ronfeldt. 1993. 'Cyberwar is Coming!' *Comparative Strategy: An International Journal*, vol. 12, no. 2, pp. 141–65. This text introduces the concepts of 'cyberwar' and 'netwar' as a product of the information revolution, in which neither mass nor mobility will decide the outcome. The paper suggests an emphasis on communications and intelligence in future wars, rather than large armed forces.
- Carter, Ashton B. and John P. White, eds. 2001. *Keeping the Edge: Managing Defense for the Future*. January. A collection of articles on information warfare, RMA and Joint Vision operations. A full-text online publication from the Preventive Defense Project. Also in hard copy from MIT Press, Boston. <http://ksgnotes1.harvard.edu/BCSIA/Library.nsf/pubs/KeepEdgeFront>
- Freedman, Lawrence. 1998. 'The Revolution in Strategic Affairs'. *Adelphi Paper no. 318*, London, International Institute for Strategic Studies. Freedman addresses many aspects of RMA including asymmetric strategies, information warfare, consequences for force structures and America's relations with its allies. The author offers many different definitions of RMA and presents critiques of each.
- Libicki, Martin C. 1998. 'Alternative Futures, Adapting Forces, Future Posture'. *1998 Strategic Assessment: Engaging Power For Peace*. Washington, DC, Institute for National Strategic Studies, National Defense University, ch. 14–16. Three chapters examining possible scenarios for future conflict, and organizational and doctrinal responses to them. Also available online at <http://www.ndu.edu/inss/sa98/sa98cont.html>
- O'Hanlon, Michael. 2000. *Technological Change and the Future of Warfare: Understanding the Revolution in Military Affairs*. Washington, DC, Brookings Institution Press. Examines the hypothesis of a coming RMA from an American military perspective. O'Hanlon provides a historical perspective of RMA, presenting the origins and various schools of thought in the contemporary debate. Ultimately he is sceptical of RMA and develops technical and strategic arguments against it.
- Rathmell, Andrew. 1997. *Cyber-terrorism: The Shape of Future Conflict?* London, International Centre for Security Analysis, Kings College London. Outlines the essence of information warfare, which groups are able and likely to use it, and assesses the response to information warfare. Also available in *Royal United Service Institute Journal*, October, pp. 40–46. <http://www.kcl.ac.uk/orgs/icsa/Old/rusi.htm>
- Toffler, Alvin and Heidi. 1993. *War and Anti-War*. Boston, Little, Brown and Company. A key futurology text on the background of RMA and modern thinking about tactics and war fighting.
- Van Riper, Lieutenant General Paul K. and Lieutenant Colonel F.G. Hoffman. 2000. *Pursuing the Revolution in Military Affairs: Exploiting Knowledge-Based Warfare*. Washington, DC, National Security Studies Program, Georgetown University. The authors argue that exploiting the real RMA will involve far more than buying information technology and precision munitions. Also available as *Strategy and Force Planning Faculty*, New Port (RI), Naval War College Press, 2000, ch. 43, pp. 638–53. Also online at <http://www.georgetown.edu/sfs/programs/nssp/nssq/Hoffman.pdf>

Information warfare

- Arquilla, John and David Ronfeldt. 1996. *The Advent of Netwar*. RAND Organization. This report provides an overview of the 'netwar' concept, and explains the consequences for strategy and doctrine in the information age. <http://www.rand.org/publications/MR/MR789/>

- Buchan, Glenn. 1996. *Information War and the Air Force: Wave of the Future? Current Fad?* RAND Organization, March. Opportunities and risks to the United States Air Force in information warfare. <http://www.rand.org/publications/IP/IP149/>
- Devost, Mathew G. 1995. *National Security and the Information Age*. Burlington (VT), University of Vermont, May. This thesis examines the impact that information technologies have had on the national security of the United States. <http://www.terrorism.com/documents/devostthesis.html>
- Hundley, Richard O. and Robert H. Anderson. 1995. *Emerging Challenge: Security and Safety in Cyberspace*. RAND Organization. An evaluation of the potential for electronic attacks and the potential damage that could be inflicted. Also in *IEEE Technology and Science Magazine*, Winter 1995, pp. 19–28. <http://www.rand.org/publications/MR/MR880/MR880.ch10.pdf>
- International Institute for Strategic Studies. 1999. 'Information Technology: Vulnerability and Threats'. *Strategic Survey 1998/1999*, London, IISS, pp. 51–61. This article assesses the importance of electronic information systems today, and examines their vulnerability and the impact of their failure.
- Jacobson, Mark R. 1998. 'War in the Information Age: International Law, Self Defense, and the Problem of "Non-Armed" Attacks'. *Journal of Strategic Studies*, vol. 21, no. 3, September. Discusses the debate on whether information attacks are an act of aggression and concludes that under current international law they can be viewed as such.
- Kipp, Jacob W. 1995. *The Revolution in Military Affairs and its Interpreters: Implications for National and International Security Policy*. Fort Leavenworth (KS), Foreign Military Studies Office, September. Explores historical origins and criticisms of RMA theory and in particular information warfare. <http://call.army.mil/fmso/fmsopubs/issues/rmapap.htm>
- Osborne, Lieutenant Colonel William B. et al. 1996. *Information Operations: A New War-Fighting Capability*. A research paper presented to Air Force 2025. <http://fas.org/spp/military/docops/usaf/2025/v3c2/v3c2-1.htm>
- Rathmell, Andrew. 1998. *Information Warfare: Implications for Arms Control*. International Centre for Security Analysis, Kings College London. Discusses the possible integration of information warfare with arms control measures. Also available in *Bulletin of Arms Control*, April, no. 29, pp. 8–14. <http://www.kcl.ac.uk/orgs/icsa/Old/cds.html>
- . 1998. 'Strategic Information Warfare: Responding to the Threat'. *Brassey's Defence Yearbook 1998*, Centre for Defence Studies, King's College London, pp. 310–25.
- Soo Hoo, Kevin, Seymour Goodman and Lawrence Greenberg. 1997. 'Information Technology and the Terrorist Threat'. *Survival: The IISS Quarterly*, London, Autumn, vol. 39, no. 3. The authors assess the potential to be gained by terrorist movements from advances in information technology.
- Ullrich, George W. 1998. *Statement in 105/1 United States Congress, House of Representatives, Committee on National Security, Military Research and Development Subcommittee, Hearing: Threat Posed by Electromagnetic Pulse (EMP) to United States Military Systems and Civil Infrastructure*. Washington, DC, 16 July. http://www.fas.org/spp/starwars/congress/1997_h/h970716u.htm

Overview

- Bédar, Saïda and Maurice Ronai (eds). 1999. *Le débat stratégique américain 1998–1999. Défis asymétriques et projection de puissance*. Centre interdisciplinaire de recherches sur la paix et

- d'études stratégiques, Cahier d'études stratégiques, no. 25. Analyses, at the operational and strategic levels, the American reform towards RMA, and highlights asymmetric challenges facing American strategy (including information warfare and proliferation of WMD).
- Blaker, James R. and Lieutenant Colonel F.G. Hoffman. 1999. 'Response and Rebuttal: Revolution(s) in Military Affairs: Why the Critique?' and 'An Author's Response'. *National Security Studies Quarterly*, Winter, Washington, DC, Georgetown University. An interesting debate from two different perspectives on RMA. Blaker defends his perception of the coming RMA, and Hoffman provides a critique. <http://www.georgetown.edu/sfs/programs/nssp/nssq/Rebuttal.pdf>
- Bronson, Rachael and Daniel Goure. 1998. *The Diplomatic Consequences of the Coming RMA*. Washington, DC, Center for Strategic and International Studies. The report examines the impact on American relations with its allies and enemies if the current RMA is realized. <http://www.csis.org/html/op980901.html>
- Canadian Navy. *Tendance à la modernisation de la technologie militaire*. Brief description of advances in communication technologies and of their consequences on military operations. <http://www.dnd.ca/navy/marcom/ccp1ten.html>
- Galdi, Theodore W. 1995. *Revolution in Military Affairs?* Federation of American Scientists, December. Competing concepts, organizational responses and outstanding issues of RMA. <http://www.fas.org/man/crs/95-1170.htm>
- Joint Forces Quarterly*. 1995/1996. Winter, no. 10. A collection of ten essays on RMA. http://www.dtic.mil/doctrine/jel/jfq_pubs/wint9596.htm#fa
- Malis, Christian. *La révolution dans les affaires militaires – Signification historique et portée d'un phénomène américain*. Institut de Stratégie Comparée. Analyses the evolution of American military doctrine and discusses the role of RMA in the military policy of the United States. http://www.stratisc.org/act/Malis_RMA.html
- Murawiec, Laurent. 2000. *La guerre au xx^e siècle*. Éditions Odile Jacob, Paris. Genesis of RMA and description of its possible consequences.
- O'Hanlon, Michael. 1998. *Beware the RMA'nia!* Paper presented at the National Defense University, Washington, DC, September. The author presents a sceptical view of RMA debate. <http://www.brook.edu/views/articles/ohanlon/1998NDU.htm>
- . 2000. Transcript of an online discussion forum in which issues arising in his book *Technological Change and the Future of Warfare* were discussed, hosted by the Brookings Institution, Washington, DC, 30 March. <http://www.brook.edu/comm/chat/ohanlon000330.htm>
- Oxburgh, E.R. 1993. 'Détente, Security and Technology'. *The World Today*, London, Royal Institute of International Affairs, 6 August. This paper presents the current technological abilities of the major powers and the implications for global security.
- Shukman, David. 1996. *Tomorrow's War: The Threat of High Technology Weapons*. Harcourt Brace & Company. An account of the role of high technology weapons in future American and British military operations.
- Shultz, Richard H., Roy Godson and George H. Quester, eds. 1997. *Security Studies for the 21st Century*. Brassey's Inc. A collection of articles assessing the perceived changes in approach to security in the twenty-first century.
- Tertrais, Bruno. 1998. *Faut-il croire à la « révolution dans les affaires militaires » ?* Politique étrangère, no. 3/98, p. 611 à 629. Questions the revolutionary aspect of RMA and analyses the influence of information technology on weapons systems and military strategy.

Regional analysis

NORTH AMERICA

- Copeland, Thomas E., ed. 2000. *Information Revolution and National Security*. Strategic Studies Institute, United States Army War College, August. A collection of essays concentrating on the exploitation of the information revolution by the United States Armed Forces and the potential vulnerabilities and threats involved. <http://carlisle-www.army.mil/usassi/ssipubs/pubs2000/inforev/inforev.htm>
- Defense Technical Information Center. 1998. *The Revolution in Military Affairs and Joint Vision 2010. Annual Report to the President and the Congress by Secretary of Defense William S. Cohen*, ch. 13. A projection of defence strategies and re-organization in the twenty-first century. <http://www.dtic.mil/execsec/adr98/chap13.html>
- Dewar, Captain J.S. 1998. *Revolution in Military Affairs: the Divergence Between the Most Dangerous and the Most Likely*. Toronto, Canadian Forces College. Introduces North American concepts of RMA and discusses the dilemmas facing Canadian forces. <http://wps.cfc.dnd.ca/irc/amsc/amsc1/008.html>
- Hoffman, Bruce. 1994. *Responding to Terrorism Across the Technological Spectrum*. Strategic Studies Institute, United States Army War College. The evolving nature of international terrorism is addressed, and the author asserts that improvements in technology will increase the lethality of terrorism. Also available in *Terrorism and Political Violence*, Autumn 1994, vol. 6, no. 3. <http://carlisle-www.army.mil/usassi/ssipubs/pubs94/rspond/rspond.htm>
- Libicki, Martin. *The Revolution in Military Affairs*. Washington, DC, Institute for National Strategic Studies, National Defense University. A summary of a conference sponsored by INSS and its War Gaming and Simulation Center to support Project 2014, a study of the future national security environment undertaken for the Joint Staff. Two questions structured discussion: what sort of opponent should the United States be planning against over the long term, and how should American doctrine respond to foes that could use civilian information technologies in sophisticated ways. <http://www.ndu.edu/inss/strforum/z1106.html>
- MacGregor, Douglas A. 1997. *Breaking the Phalanx: A New Landpower for the 21st Century*. Connecticut, Praeger Publishers. MacGregor discusses the need for reorganization in the land forces of the American military.
- McLean, Lieutenant Commander E.G. 1998. *Canada 21's Navy: A Disaster in the Making Entering into the 21st Century*. Toronto, Canadian Forces College. Assesses and evaluates the differences between separate recommendations on the modernization of Canada's Naval Forces. <http://www.cfcsc.dnd.ca/irc/nh/nh9798/0062.html>
- Metz, Steven and James Kievit. 1994. *The Revolution in Military Affairs and Conflict Short of War*. Strategic Studies Institute, United States Army War College, July. Presents a detailed analysis of the current RMA debate, as well as addresses the potential costs and risks. <http://www.cs.virginia.edu/~alb/misc/rmaWarCollege.html>
- Scales, Major General Robert H. 2001. *Future Warfare Anthology*. Strategic Studies Institute, United States Army War College, June. Report on likely uses of military strategies as a projection of national security policy in the post-Cold War era. <http://carlisle-www.army.mil/usassi/ssipubs/pubs2001/futrwar/futrwar.htm>

- Semiamaw, Colonel W. 1998. *The Revolution in Military Affairs: All That Glitters Is Not Gold*. Toronto, Canadian Forces College. A look at contemporary RMA and technology in Canada following the Gulf War. <http://www.cfcsc.dnd.ca/irc/amsc/amsc1/038.html>
- Williams, Cindy and Jennifer M. Lind. 1999. Can We Afford a Revolution in Military Affairs? *Breakthroughs*, United States Department of Energy, Spring, pp. 3–8. A short report focusing on the financial implications of RMA in the United States and possible sources of funding. <http://web.mit.edu/ssp/db21/breakthroughs.html>
- Wirtz, James J. 1999. *QDR 2001: The Navy and the Revolution in Military Affairs*. Washington, DC, National Security Studies Program, Georgetown University. The author evaluates the Navy's potential role in RMA, including its ability to conduct joint power projection operations. Also available in *National Security Studies Quarterly*, Autumn 1999. <http://www.georgetown.edu/sfs/programs/nssp/nssq/Wirtz.pdf>

EAST ASIA

- Ji, You. 1999. *The Armed Forces of China*. London, Tauris Publishers. Discusses in depth the actions of the People's Liberation Army in modernization and preparing for twenty-first century warfare, including preparations for an offensive air force and a blue-water navy.
- Pillsbury, Michael. 2000. *China Debates the Future Security Environment*, hosted by FAS, January. This full-text online publication goes into details of the People's Liberation Army's preparations for future war scenarios and includes an extensive bibliography of Chinese language publications on the topic. Also available in hard copy from the National Defense University Press. <http://www.fas.org/nuke/guide/china/doctrine/pills2/index.html>
- Wortzel, Larry M., ed. 1999. *The Chinese Armed Forces in 21st Century*. Strategic Studies Institute, United States Army War College, December. A collection of articles examining China's likely strategy in the next few decades, particularly its relations with the United States, Taiwan and its military procurement ambitions. <http://www.fas.org/nuke/guide/china/doctrine/chinese.pdf>

EUROPE

- 'European Defence Autonomy?' 2000. *Survival: The IISS Quarterly*, London, International Institute for Strategic Studies, Summer, vol. 42, no. 2. A collection of six articles on the future of European co-operative security.
- Gregory, Shaun. 2000. *French Defence Policy into the Twenty-First Century*. Macmillan, June. This study presents wide-ranging analysis, setting out the background and policy framework of French defence, charting the transformation of policy between 1989 and 1996, and examining the role of the French military within and beyond Europe into the twenty-first century.
- Laird, Robbin F. and Holger H. Mey. 1999. *The Revolution in Military Affairs: Allied Perspectives*. Washington, DC, Institute for National Strategic Studies, National Defense University, April. Discusses RMA perspectives from Europe, France and Germany, with particular focus on defence industries. Also available at <http://www.ndu.edu/inss/macnair/mcnair60/m60cont.html>

Quille, Gerrard. 1998. *The Revolution in Military Affairs and the UK*. London, International Security Information Service Briefing no. 73, December. This paper analyses the current debate on RMA and considers some of the possible implications for British defence policy. <http://www.nyu.edu/globalbeat/usdefense/Quille1298.html>

Unterseher, Lutz. 1999. *Europe's Armed Forces at the Millennium: A Case Study of Change in France, the United Kingdom, and Germany*. Project on Defense Alternatives Briefing, November, report no. 11. Presents technical information on defence procurement and spending in these three countries. <http://www.comw.org/pda/9911eur.html>

AUSTRALASIA

Dickens, David. 1999. *The Revolution in Military Affairs: A New Zealand View, Part I*. Wellington, Centre for Strategic Studies, Victoria University. Discusses a New Zealand Defense Force along RMA trends and evaluates its potential effectiveness. http://www.vuw.ac.nz/css/docs/working_papers/WP14.html

Evans, Michael. 2000. *The Middle Way: Australia's Response to the Revolution in Military Affairs*. Washington, DC, National Security Studies Program, Georgetown University. Also available in *National Security Studies Quarterly*, Winter. The Australian armed forces' response to RMA. The author explains the current developments in Australian military organization, and highlights the differences in approach to RMA between Australia and other states. <http://www.georgetown.edu/sfs/programs/nssp/nssq/Evans.pdf>

SOUTH ASIA

Anand, Vinod. 2000. *Evolution of a Joint Doctrine for Indian Armed Forces*. New Delhi, Institute for Defence Studies and Analysis. This paper stresses the importance of joint operations in future Indian operations, and also discusses the possible applications for new technology. <http://www.idsa-india.org/an-jul-600.html>

Mahnken, Thomas G. and Timothy D. Hoyt. 2000. *Indian Views of the Emerging Revolution in Military Affairs*. Washington, DC, National Security Studies Program, Georgetown University, 2000. The authors relate India's ability to achieve RMA to its recent development of nuclear weapons, and assess the Indian Army's organizational and technological deficits. Also available in *National Security Studies Quarterly*, Summer. <http://www.georgetown.edu/sfs/programs/nssp/nssq/thoyt.pdf>

MIDDLE EAST

Cordesman, Anthony. 1999. *The Revolution in Military Affairs and Developments in the Persian Gulf*. Washington, DC, Center for Strategic and International Studies, September. Examines the military balance in the Gulf region, particularly Iranian and Iraqi capabilities. <http://www.csis.org/stratassessment/reports/RMAandGulf.html>

RUSSIAN FEDERATION

Kipp, Jacob W. 1995. *The Russian Military and the Revolution in Military Affairs: A Case of the Oracle of Delphi or Cassandra?* Kansas, Foreign Military Studies Office, June. Russia's current state of military affairs is analysed and the potential to improve its military capabilities is assessed. <http://www.fas.org/nuke/guide/russia/agency/rusma.htm>

DEVELOPING STATES

Demchak, Chris C. 2000. *The RMA in Developing States: Dilemmas of Image, Operations and Democracy*, National Security Studies Program, Georgetown University, Washington, DC, 2000. Also available in *National Security Studies Quarterly*, Autumn. The author examines the potential for developing countries to embrace RMA and under what circumstances the revolution could be used by those countries. <http://www.georgetown.edu/sfs/programs/nssp/nssq/Demchak.pdf>

Hasim, Ahmed S. 1998. *The Revolution in Military Affairs Outside the West*. Project on Defense Alternatives. Also available in *Journal of International Affairs*, Winter, vol. 51, no. 2. A paper examining the impact of RMA around the world, and whether or not other states will be able to achieve similar revolutions. <http://www.comw.org/rma/fulltext/hasim.html>

Non-lethal weapons

Guyatt, David G. 1996. *Some Aspects of Anti-Personnel Electromagnetic Weapons*. A synopsis prepared for the International Committee of the Red Cross Symposium 'The Medical Profession and the Effects of Weapons' presenting a medical and humanitarian perspective on the use of EMP weapons. http://www.infowar.com/class_3/class3_100997c.html-ssi

Leech, John. 2000. 'War Without Death'. *Strategic Review*, Boston, United States Strategic Institute, Spring, pp. 19–27. An examination of the use of non-lethal weapons in civil disturbances and operations other than war.

Mampaey, Luc. 1999. *Les armes non létales : une nouvelle course aux armements*. Group for Research and Information on Peace and Security, Rapport du GRIP, no. 99/1, May. Detailed analysis of non-lethal weapons and their possible implications on military doctrines. http://www.grip.org/pub/rap/rg99-1_anl.pdf

Medicine, Conflict and Survival. 2001. London, vol. 17, no. 3. Edition focusing on non-lethal weapons and RMA. Abstracts available at http://www.frankcass.com/jnls/mcs_17-3.htm

Truesdell, Amy. 1998. 'Non-Lethal Weapons and Discriminate Warfare'. *Brassey's Defence Yearbook 1998*. Lancaster University, Centre for Defence and International Security Studies, pp. 325–41.

Turner, Andrew. 2000. *The Impact of RMA on Peacekeeping*. Paper presented at the Third Annual Graduate Student Symposium of the Conference of Defense Associations Institute, 3–4 November. Discusses the applications for RMA technology in peacekeeping and other non-war operations. <http://www.cda-cdai.ca/symposia/2000/turner.htm>

United States Army Training and Doctrine Command. 1996. *Concept for Non-lethal Capabilities in Army Operations*. TRADOC pamphlet no. 525–73, September. The United States Army and

the use of minimum force with zero casualties to achieve its objectives. <http://www.fas.org/irp/doddir/army/p525-73.htm>

United States. House Armed Services Committee. 1999. *Electromagnetic Pulse Threats to US Military and Civilian Infrastructure*. Transcript of a presentation before the Military Research and Development Subcommittee on the dangers of EMP. http://www.fas.org/spp/starwars/congress/1999_h/has280010_0.htm