9

Foreign and International Government Organizations and Research Centers

Organizations dealing with space warfare and defense are located in numerous countries. These include national and international government organizations with policy-making responsibilities encompassing space science and national security. They can also include research institutions or think tanks taking public-policy positions engaging in civilian or military space science research, which can take advocacy positions on military activities in space and related national or international security issues. This chapter includes a representative sampling of these governmental and research organizations. It describes these organizations, features information about where they are located, lists their Web sites, and describes English-language information resources they produce regarding space warfare and defense. Entries are listed in alphabetical order by the organization's name.

Australia's Commonwealth Scientific and Industrial Research Organization

Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) was established in 1926 and is located in Clayton South, Victoria, Australia. Its primary missions as the Australian national science agency include executing scientific research, assisting Australian industry and furthering Australian national interests, and encouraging and facilitating the application and use of its research results or other scientific research.

Information on CSIRO activities can be found on its Web site, www.csiro.au/. Information resources accessible here include descriptions of CSIRO's space science research emphases in astronomy, space facilities, astrophysics, radio astronomy, and space engineering.

Freely available sample publications include the issues of *Ecos Online* magazine from 1984–present and CSIRO's most recent *Annual Report* to the Australian Parliament.

www.abc-clio.com ABC-CLIO 1-800-368-6868

Australian Air Force–Air Power Development Centre

The Royal Australian Air Force's (RAAF) Air Power Development Centre was established in 1989 at RAAF Air Base in New South Wales. Its multifaceted institutional missions include promoting RAAF strategic air power doctrine, educating military and other communities about aerospace power, encouraging and facilitating the professional development of air force personnel in aerospace power, applying historical experience to existing and emerging aerospace challenges, contributing to the development of present and future aerospace doctrinal concepts, and enhancing the ability of future Australian aerospace contributions to coalition military operations. The Air Power Development Centre's Web site (www.raaf.gov.au/airpower) contains a number of information resources on space warfare and defense including *Space Operations: An Australian Perspective* (2001), *AAP 1000 Fundamentals of Australian Aerospace Power (2002), Aerospace Issues from the Iraq War: Imponderables and Pointers* (2003), and *Putting Space Into RAAF Aerospace Power Doctrine* (2004).

Australian Defence College

The Australian Defence College (ADC) is part of the Australian Defence Department in Canberra. Its institutional mission is promoting the learning and growth of military and civilian leaders from Australia and overseas who have professional interests in national and international defense and security issues. ADC offered its first classes in January 1970, received a major reorganization in 1997, and consists of three component organizations: the Australian Defence Force Academy, Australian Command and Staff College, and Centre for Defence and Strategic Studies.

A variety of information resources are accessible through ADC's Web site (www.defence.gov.au/adc) including the college handbook, issues of *Australian Defence Force Journal* (1997–present), and reports such as *AEGIS TMD: Implications for Australia* (2002).

Canadian Space Agency

The Canadian Space Agency (CSA) was established in 1989 by the Canadian Space Act and its headquarters are in Longeuil, Quebec and locations in the Ottawa area. CSA is responsible for promoting the development and application of space knowledge for Canadians and humanity, and its leadership reports to Industry Canada, which is a Cabinet-level department within the Canadian Government.

CSA's Web site (www.space.gc.ca) features information about the agency's mission and activities. Information resources include descriptions of CSA earth observation and satellite technology programs, annual parliamentary budget estimates (2001/2002–present), *Annual Performance Report* (2002–present), *Canadian Space Strategy* (2003), and various other resources documenting its multifaceted research activities.

Canadian Astronaut Team, 2002. Back row, from left to right: Canadian astronauts Chris Hadfield, Dave Williams and Bjarni Tryggvason. Front row, from left to right: Bob Thirsk, Julie Payette and Steve MacLean. *(Canadian Space Agency 2002)*

China National Space Administration

The China National Space Administration (CNSA) is the civilian space agency within China responsible for national space policy and China's space program. It was created in 1993 when the Ministry of Aerospace Industry was split into CNSA and the China Aerospace Agency (CASC), and further organizational restructuring occurred in 1998 when CASC was split into several small state-owned enterprises to facilitate a system that would be more economically competitive. CNSA is now part of the Commission of Science, Technology, and Industry for National Defense. CNSA departmental components include general planning, system, engineering, science, technology, and quality control, and foreign affairs. CNSA's Web site (www.cnsa.gov.cn) provides access to some English language information about agency activities including news releases and the text of *China's Space Activities White Paper* (2000), which is China's official governmental space policy document.

Defence R&D Canada

Defence R&D Canada (DRDC) is part of the Canadian Department of National Defence and has been in operation since 1947. Its institutional purpose is ensuring that Canadian forces are scientifically and operationally relevant to their mission responsibilities. DRDC headquarters are in Ottawa with six research centers scattered across Canada. It employs 1,500 people, its annual budget is $306,000,000, and it engages in active and ongoing collaboration with industry, international allies, academe, other government departments, and the national security community.

Information on DRDC can be found at its Web site, www.drdc.gc.ca/. Examples of relevant technical reports produced under DRDC auspices include *Space-Based Radar Simulation Laboratory (SBRSL); Software Design Document-Volume II SBR ISIRS Model Library* (1993); *Design and Testing Considerations for Hardening a Frigate Against EMP Threat* (1994); *Debris From Ballistic Missile Defence: An Analysis Tools for Policy/Planning Studies* (1995); *Naval Force Missile Defence Calculator: A Rapid Prototype* (2002); *A Foray into Laser Projection and the Visual Perception of Aircraft Aspect* (2002); and *Integration of Space-Based Radar in the Coalition Assets Surveillance Architecture-Interoperability* (2003).

European Defence Agency

The European Defence Agency (EDA) was created on July 12, 2004 by a joint action of the European Union's Council of Ministers. Its institutional mission is "to support the Member States and the Council in their effort to improve European defence capabilities in the field of crisis management and to sustain the European Security and Defence Policy as it stands now and develops in the future." EDA asserts that it will reach its goals by encouraging European Union governments to dedicate defense expenditures to meeting emerging challenges instead of historical threats and identifying common security needs and promoting collaboration to achieve mutually beneficial solutions among member countries. Such activities, according to EDA, will produce better European military capabilities, stronger European defense industries, and enhanced value for European taxpayers. Further information about EDA activities can be derived from its Web site, www.eda.europa.eu/. Examples of information resources available here include descriptions of the activities of its directorates of capabilities development, armaments cooperation, industry and market, and research and technology; agency budget information; organizational charts; and publications such as EDA's semiannual reports to the European Union Council.

European Space Agency

The European Space Agency (ESA) is headquartered in Paris and is the European Union agency responsible for developing European space capabilities. Consisting of 17 member countries, ESA staff numbered 1,907 as of February 2005, its estimated 2006 budget is approximately 2,904,000,000 Euros, and the agency has been in existence since the late 1950s and received its present name in 1975. ESA's Web site (www.esa.int) features numerous resources describing its programs and services in areas such as earth observation, human spaceflight, launchers, spacecraft engineering, spacecraft operations, and telecommunications. Information resources on ESA's Web site include press releases, selected Web casts, issues of *ESA Bulletin* (1994–present), ESA's *Annual Report* (1994–present), selected scientific proceedings, ESA's official two-volume *A History of the European Space Agency, 1958–1987* (2000), and historical studies of space activities by ESA

European Space Agency astronaut Thomas Reiter during a space walk at the International Space Station, August 3, 2006. Reiter and National Aeronautics and Space Administration (NASA) astronaut Jeff Williams installed and replaced equipment and set up scientific experiments on the exterior of the space station during the five-hour, 54-minute walk. *(European Space Agency/NASA)*

member countries including *Finland and the Space Era* (2003) and *Austria's History in Space* (2004).

European Space Policy

The European Union's European Space Policy Web site, http://ec.europa.eu/enterprise/space/, launched in April 2001 to provide news and information about the European Union's space policy programs and policies. Examples of particularly important European space developments include Galileo satellite navigation, the Global Monitoring for the Environment and Security (GMES) initiative, and other pertinent projects and programs concerning space-based telecommunications, international cooperation, and European space programs.

Accessible information resources include news releases and a variety of reports and documents including *STAR 21: Strategic Aerospace Review for the 21st Century* (2002); *The Security Dimensions of GMES* (2003); *Global Monitoring for Environment and Security (GMES): Establishing a GMES Capacity by 2008 (Action Plan 2004–2008)*(2004); *Report*

of the Panel of Experts on Space and Security (2005); *European Space Policy: Preliminary Elements* (2005); and *GMES E-news* (June 2005–present).

European Telecommunications Satellite Organization

The European Telecommunications Satellite Organization (EUTELSAT) is based in Paris and was created in 1977 as an international government organization before being privatized in 2001. It serves as Europe's leading satellite operator for video and data services along with fixed satellite services. Its fleet of 22 satellites enables vendors to supply customers with radio and television broadcasting services, broadband Internet access, and professional data network solutions providing coverage for Europe, the Middle East, Africa, and significant portions of Asia and North and South America. Its Web site (www.eutelsat.com) provides further information about organizational activities including the newsletter *Via Eutelsat News* (February 2005–present), press releases (January 2003–present), a listing of Board of Directors members, and various financial reports and statistical data.

European Union Institute for Security Studies

The European Union Institute for Security Studies (EUISS) was established in its current institutional form by the European Council on July 20, 2001 and is part of the European Union's Common Foreign and Security Policy organizational architecture. Its organizational mission is seeking to create what it regards as a European security culture, enhancing strategic debate, promoting European Union interests, and engaging in transatlantic security dialog with European countries, Canada, and the United States.

Numerous resources are accessible through the EUISS Web site, www.iss-eu.org/. These include descriptions and transcripts from institute sponsored seminars; the text of the newsletter *Bulletin* (2002–present); institute sponsored books; and the text of the *Chaillot Papers and Occasional Papers* monographic series with *National Missile Defence and the Future of Nuclear Policy* (2000), *The Galileo Satellite System and Its Security Implications* (2003), and *Space and Security Policy in Europe* (2003) being representative samples of EUISS publications on space warfare and defense policy.

European Union Satellite Centre

The European Union Satellite Centre (EUSC) is located in Torrejon, Spain, near Madrid. EUSC was established by the European Council on July 20, 2001 and became operational on January 1, 2002. Its institutional mandate involves seeking to exploit and produce information obtained from analyzing space observation imagery to support the European Union's Common Foreign and Security Policy and carrying out expert personnel training in digital geographic information systems and imagery analysis. Additional

missions covered by EUSC incorporate general security surveillance, treaty verification, arms and proliferation control, maritime surveillance, and environmental monitoring.

EUSC's Web site (www.eusc.org) provides information on the organization's mission, job openings, descriptions of training courses such as "Interpreting Nuclear Installations Using Commercial Satellite Imagery," and the text of selected documents including *Council Joint Action of July 20, 2001: On the Establishment of a European Union Satellite Centre* (2001) and *Staff Regulations of the European Union Satellite Centre* (2005).

French National Aerospace Research Establishment

The French National Aerospace Research Establishment (ONERA), headquartered in Chatillon, was established in 1946 and has satellite facilities in other French communities. Reporting to the French Ministry of Defense its multifaceted missions include assisting government agencies responsible for coordinating civil and military aerospace policy; directing and executing aerospace research; designing, producing, and operating the resources necessary for manufacturers research and testing; making available and commercializing research results and enhancing industry application of this research; and supporting French training policy for scientists and engineers.

ONERA's Web site, www.onera.fr/, contains descriptions of its research branch activities in areas such as fluid mechanics and energetics, materials and structures, physics, information processing and systems, information about its interactions with other European and international aerospace research and governmental organizations, information on training symposiums, and post-doctoral employment opportunities. Numerous general publications are also accessible including the current *Annual Report* along with multifaceted technical publications from 1990–present with representative titles including *Experimental Investigation of a Supersonic Rocket Engine Plume Using OH-Emission, OH-PLIF, and CARS Thermometry* (2003), *Flying Wing Aerodynamic Studies: ONERA and ONR* (2005), and *Progress in Solving Aerodynamic Issues Faced by Space Vehicles* (2005).

German Aerospace Centre

The German Aerospace Centre (DLR), headquartered in Cologne, was established in 1969 and serves as Germany's national space agency providing support for German space activities and representing Germany in international space science forums. DLR has nearly 5,000 employees, consists of 30 institutes, and administers an overall budget of nearly 760,000,000 Euros. DLR's Web site (www.dlr.de) contains some English language descriptions of organizational activities including coverage of ongoing research and programs in earth observation, navigation, communication, space transportation, the International Space Station, and manned space flight. An accessible English-language DLR document is *German Space Program* (2001).

Control room of the German Aerospace Center. *(German Aerospace Center (DLR))*

Global Network Against Weapons & Nuclear Power in Space

The Global Network Against Weapons & Nuclear Power in Space is an international leftist political activist organization formed in 1992 at various U.S. locations and consisting of an international board of directors. Group objectives include applying space technology to social and environmental needs on Earth, preventing confrontation and improving international cooperation in space, banning space weapons and military installations by national and international law, and banning nuclear power in space. Information resources on this organization's Web site, www.space4peace.org/, include information on conferences they have sponsored from 1998–present; links to U.S. military policy statements on space war and defense; documents from the United Nations Office for Outer Space Affairs; the text of a hypothetical World Space Preservation Treaty; and the text of congressional bill H.R. 2420—the Space Preservation Act of 2005 sponsored by Representative Dennis Kucinich (Democrat from Ohio), which would seek to keep space demilitarized.

Indian Space Research Organization

The Indian Space Research Organization (ISRO) is located in Bangalore and other locales. Its initial establishment dates back to the Indian Government's June 1972 creation

of the Space Commission and Department of Space. ISRO is responsible for developing Indian space programs with an emphasis on satellites, launch vehicles, sounding rockets, and related ground systems.

ISRO's Web site (www.isro.org) includes press releases from 1999–present, program budget information, issues of the newsletter *Space India* (2002–present), and the 2006–2007 *Annual Report.*

Institute for Cooperation in Space

The Institute for Cooperation in Space (ICIS) is located in Vancouver, Canada and Loja, Ecuador. It is an advocacy organization founded in 1983 seeking to promote efforts to ban weapons in space and promote greater international cooperation, with the goal of demilitarizing space exploration and industry and using it for civilian purposes.

ICIS's Web site (www.peaceinspace.com) features descriptions of institute educational initiatives, selected press releases, sample resolutions supporting ICIS objectives from various governmental entities, selected statements of support for space demilitarization from international leaders, an April 2002 *Toronto Star* article calling on Canada to prevent space weaponization, and the text of a proposed *International Space Preservation Treaty* (2005).

International Institute of Strategic Studies

The International Institute of Strategic Studies (IISS) is a London-based organization founded in 1958 consisting of over 2,500 members representing over 100 countries. IISS's mission is providing authoritative and objective information on international security issues for governmental, business, and academic audiences.

IISS's Web site (www.iiss.org) provides a variety of multifaceted information resources describing its activities and research on international security issues. Site contents include information on sponsored conferences, article abstracts from the scholarly journal *Survival,* information on the institute's annual *Strategic Survey* and its armed conflict database, a listing of IISS experts by subject, and information on IISS's Adelphi Papers monographic series found in many university libraries internationally. Titles from this series of interest to those studying space war and defense issues are *Ballistic Missile Defense and Strategic Stability* (2000) and *Protecting Critical Infrastructures Against Cyber-Attack* (2003).

International Maritime Satellite Organization (INMARSAT)

The International Maritime Satellite Organization (INMARSAT) was created in 1979 as an international governmental organization to utilize emerging satellite mobile communications technology to enhance maritime communications and the safety of lives at

sea. INMARSAT communications services began in February 1982, and on April 15, 1999 it became the first international government organization to privatize, although it still maintains crucial maritime safety public service commitments.

INMARSAT's Web site (www.inmarsat.com) features information about the services it provides for aeronautical, governmental, and maritime customers; descriptions of its satellite and data services; descriptions of how it has helped the American and British militaries fulfill their telecommunication requirements; and its homeland security activities in areas as diverse as airborne surveillance, customs and border protection, maritime domain awareness, and mobile command centers.

International Telecommunications Satellite Organization (INTELSAT)

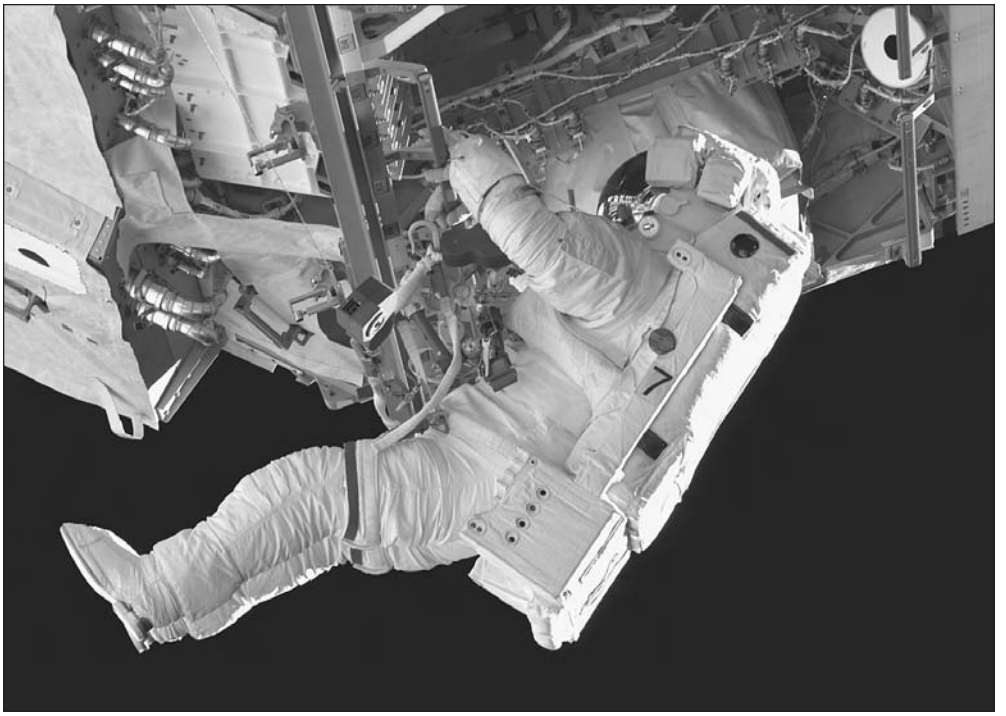
The International Telecommunications Satellite Organization (INTELSAT) was established in 1964 as the first global communications satellite network and has been responsible for broadcasting video signals of Neil Armstrong's first moon walk, the U.S.–Soviet "hot line" facilitating Cold War communication between the White House and Kremlin, and distributing broadcasts of every Olympics since 1968. INTELSAT was privatized on July 18, 2001 and is formally called Intelsat, Ltd.

INTELSAT's Web site (www.intelsat.com) provides information about its historical development and evolution, corporate networks, and relationships with governmental agencies. It also features the text of press releases from 2003–present, photos of satellites, earth stations, and corporate leadership personnel, a promotional video Web cast, fact sheets on individual satellite systems such as IS-901 and IS-905, a glossary of international satellite terms, maps of regional satellite coverage areas, and documents such as its 2002 and 2003 *Annual Report* along with other financial documents filed with the U.S. Securities and Exchange Commission.

Jane's Information Group

Jane's Information Group is located in Coulson, Surrey, England, and has affiliate offices in numerous international locales. Founded in 1898, it is a major compiler and provider of intelligence and analysis on international security issues garnering a reputation for accuracy, authoritativeness, and impartiality. Its products provide defense news and analysis, information on military systems and equipment, international geopolitical intelligence and news analysis, terrorism intelligence and assessment, and risk assessments for businesses and industries exploring prospective markets and nations.

Jane's Web site (www.janes.com) provides additional information about company products and services. Relevant space war and defense resources described here include *Jane's Defence Weekly, Jane's International Defence Review, Jane's World Air Forces, Jane's Space Directory,* and *Jane's International ABC Aerospace Directory.*



Astronaut Soichi Noguchi, STS-114 mission specialist representing Japan Aerospace Exploration Agency (JAXA), participates in the mission's third session of extravehicular activity. *(NASA)*

Japan Aerospace Exploration Agency

The Japan Aerospace Exploration Agency (JAXA) was established on October 1, 2003 to centralize Japanese space science efforts and is located in Tokyo and other locations in Japan along with having various international liaison offices. JAXA is a consolidation of three preexisting agencies: The Institute of Space and Astronautical Science (ISAS), the National Aerospace Laboratory of Japan (NAL), and the National Space Development Agency of Japan (NASDA). ISAS's institutional mandate had been space and planetary research, NAL emphasized next-generation aviation research and development, and NASDA was responsible for developing large launch vehicles such as satellites and Japanese components of the International Space Station.

JAXA's Web site (www.jaxa.jp) features descriptions of individual agency site facilities, information about its programs involving launch vehicles, space transportation systems, satellites, and space science research, photo archives, and news releases. The agency's Digital Archives section includes issues of the periodical *NASDA Report* (May 1998–September 2003), a space law database, and detailed brochures describing JAXA programs and projects.

Lancaster University–Centre for Defence and International Security Studies

Lancaster University's Centre for Defence and International Security Studies (CDISS) was established in 1990 in Lancaster University's Department of Politics and International Relations and served as an independent institution since January 2004 at Henley-on-Thames, Oxfordshire. Its institutional objectives are conducting international defense and security research and fostering cooperation between academic, government, and industry on these issues.

The center's Web site (www.cdiss.org) features press comments on international security issues by CDISS personnel, information on forthcoming CDISS-sponsored events, and descriptions of center research activities in areas such as space security, missile threats and responses, and emerging international security threats. Resources of particular relevance to those studying space war and defense include publications such as *Britain's BMD/WMD Priorities* (1998), *Missile Defence: From Cold War to Hot Peace* (2004), *Consistency and Change in British Approaches to Missile Defence* (2004), and *Future Conditional: War & Conflict After Next* (2005).

Royal United Services Institute

The Royal United Services Institute (RUSI) is located in London. Founded in 1831 by the Duke of Wellington, RUSI strives to report, debate, and provide information on defense and international security issues to government, military, political, academic, commercial, and media organizations.

RUSI's Web site (www.rusi.org) features information about organizational programs and activities. Descriptions are provide of RUSI organizational components focusing on military sciences, international studies, homeland security and resilience, and command, control, communications, computers, information/intelligence, surveillance, and targeting acquisition and reconnaissance (C4ISTAR). Examples of space war and defense information publications from RUSI include *Acquisition of Networked Enabled Capability* (2004) and listings of relevant papers in RUSI's Whitehall Papers monographic series such as *International Missile Defence?: Opportunities, Challenges and Implications for Europe* (2002) and *Missile Defence in a New Strategic Environment* (2003).

Russian Space Science Internet

The Russian Space Science Internet (RSSI) is a consortium of Russian commercial and academic institutions engaging in space science–related research. RSSI was established in April 1993 as a result of a joint decision between Russian and U.S. space agencies to increase cooperation on space science issues between these two countries.

RSSI's Web site (www.rssi.ru) features information about organizational activities and links to the Web sites of participating institutions including the Russian World Geophysical Data Center, the Russian Academy of Sciences Institute of Astronomy, and the Space Research Institute.

The Russian Federation and the former Soviet Union have played a significant role in space exploration and in military astronautics. Additional Web sites providing information about Russian civilian and military space activities include the Russian Space Agency, www.federalspace.ru/, which has some English language content; Ministry of Defense, www.mil.ru/, whose contents are primarily in Russian; Russian Space Web, www.russianspaceweb.com/, which features current and historical information on Russian space activities; NASA's Marshall Space Flight Center's archivally maintained Russian Space Agency site, http://liftoff.msfc.nasa.gov/rsa/rsa.html; and the Federation of American Scientists Russia and Military Space Projects site, www.fas.org/spp/guide/russia/military/, which features information on Russian imagery intelligence, antisatellite weaponry, signals intelligence, early warning systems, and national security support systems providing additional information on Russian military and civilian space activities.

Swedish National Space Board

The Swedish National Space Board (SNSB) is located in Solna, Sweden. Its institutional missions include distributing government grants for space research, technology

Swedish Space Corporation satellite, Freja. *(Swedish Space Corporation)*

development and remote-sensing activities, initiating space and remote-sensing development and research, and acting as Sweden's contact for international cooperation in space science activities.

SNSB's Web site (www.snsb.se) features organizational and staff information; links to Swedish space industry companies and their Web sites; links to the Swedish Defence Research Agency Web site, www.foi.se/; information on Swedish earth observation satellite activities; and descriptions of board research in astronomy, human space flight, material sciences in microgravity, and space sciences. Additional resources include information about historical and ongoing Swedish satellite programs and publications such as *Space Research in Sweden 2000–2001* (2002), *Space Research in Sweden 2002–2003* (2004), and *The ODIN Satellite's Sharp Eyes in Space* (n.d.).

United Kingdom–British National Space Centre

The British National Space Centre (BNSC), headquartered in London, was established in 1985 and is a collaborative venture of 11 British government departments and research councils to coordinate British civil space activity on national and international levels.

BNSC's Web site, www.bnsc.gov.uk/, features information about its partnering organizations such as the Ministry of Defence (www.mod.uk/) and Office of Science and Technology (www.osti.gov.uk/) and links to their Web sites; descriptions of center activities in areas such as earth observation, exploiting space, industry collaboration, space exploration; and the educational benefits of space science. Accessible publications include *UK Space Strategy 2003–2006 and Beyond* (2003), *BNSC Export Assistance Strategy* (2005), and links to other British Government documents on space policy from organizations such as the National Audit Office and the House of Commons Committee on Public Accounts.

United Kingdom–Ministry of Defence–Defence Equipment & Support

Defence Equipment & Support (DE&S) is a British Ministry of Defence entity responsible for delivering ministry information and communication services to meet ministry and military requirements. It was created on April 1, 2007 consolidating preexisting agencies. Its workforce of 29,000 military and civilian employees provides services ranging from fixed and mobile telephones to satellite communication links while also encompassing computer networks and infrastructures.

DE&S's Web site (www.mod.uk/DefenceInternet/MicroSite/DES) provides a variety of information resources describing agency activities. These include descriptions of its satellite communications team and the responsibilities of its Directorate Chief Technology Officer. Accessible organizational publications include *DES in Brief* (2007) and *DE&S News* (April 2007–present).

United Kingdom–Ministry of Defence–Defence Science and Technology Laboratory

The Defence Science and Technology Laboratory (DSTL) was established on July 2, 2001 and serves as the Ministry of Defence's key advisor and laboratory for scientific and technology issues facing the British military. Its workforce consists of approximately 3,000 personnel.

DSTL's Web site, www.dstl.gov.uk/, provides overviews of laboratory capabilities in areas such as policy and capability studies, air systems, missiles and countermeasures, electronics, sensors, and weapons detection. Additional information resources include details on career opportunities with DSTL, the text of press releases (2001–present), information on DSTL support for British military forces in Iraq, and descriptions of publications such as *Defence Reports Abstracts* and *Defence Technology Alerts.*

United Nations Conference on Disarmament

The United Nations Conference on Disarmament (CD) is located in Geneva, and its current institutional incarnation dates from 1979 succeeding its predecessor the United Nations disarmament forum. Consisting of 66 members, CD seeks to address most multilateral arms control and disarmament problems. Its areas of interest include preventing what it sees as an arms race in outer space, nuclear war prevention, promoting nuclear disarmament, preventing the use of weapons of mass destruction, and promoting comprehensive global disarmament programs and transparency in armaments.

CD's Web site, http://disarmament2.un.org/cd/, features annual committee work agendas, press releases (2002–present), the conference's *Annual Report* (1993–present), conference documents (2000–present), listing of member countries, meeting minutes (2000–present), and links to other UN disarmament information resources and Web sites.

United Nations General Assembly Committee on Peaceful Uses of Outer Space

The United Nations General Assembly Committee on Peaceful Uses of Outer Space (COPUOS) was established in 1959 by General Assembly resolution 1472 XIV for reviewing international cooperation in peaceful uses of space, planning programs in this area to be carried out under UN sponsorship, encouraging research and information dissemination on space issues, and studying legal problems stemming from space exploration. COPUOS consists of 67 member countries, Scientific and Technical and Legal Subcommittees, and meets annually to answer questions submitted by the General Assembly and discuss issues raised and reports submitted by member states. COPUOS's Web site, www.oosa.unvienna.org/COPUOS/copuos.html, is hosted by the UN Office for Outer Space Affairs. Accessible materials on this Web site include listings of member countries and

General view of the United Nations (UN) Conference on Disarmament as Iranian foreign minister Manouchehr Mottaki gives a speech, March 30, 2006, in Geneva amid an international standoff over Tehran's nuclear program. *(AFP/Getty Images)*

when they joined, a historical overview of COPUOS, and a collection of committee proceedings and reports in the UN's six official languages: Arabic, Chinese, English, French, Russian, and Spanish. Examples of these documents include *Report of the Committee on the Peaceful Uses of Outer Space General Assembly Official Records* (1993–present), unedited transcripts of 2003 COPUOS meeting minutes, *Report of The Scientific and Technical Subcommittee* (1998–present), *Report of the Legal Subcommittee* (1993–present), and transcripts of Legal Subcommittee meetings (2000–present).

United Nations Office for Outer Space Affairs

The United Nations Office for Outer Space Affairs (UNOOSA) is located in Vienna, and its original establishment was 1958. It is responsible for facilitating international cooperation in the peaceful uses of space and serves as a secretariat for COPUOS. UNOOSA is responsible for administering the UN Programme on Space Applications, which seeks to improve space science and technology for international economic and social development with particular emphasis on developing countries. This program also sees UNOOSA conduct training courses and other activities in areas such as remote sensing, communica-

tions, satellite meteorology, search and rescue, introductory space science, satellite navigation, and space law.

Additional UNOOSA activities include preparing and maintaining the *Register of Objects Launched Into Outer Space* for the UN Secretary General and preparing reports and studies on various aspects of space science, technology, and international space law.

An impressive array of information resources is provided on the UNOOSA Web site, www.oosa.unvienna.org/. These include listings of and links to new Web site content, detailed descriptions of the Programme on Space Applications, the online *Register of Objects Launched Into Outer Space* featuring annual entries from 1976–present, links to national space agency Web sites, links to international space law Web sites, and a compilation of various space law resources compiled by UNOOSA.

Numerous publications are also accessible through this Web site. These include the full text of various bilateral and multilateral international space cooperation agreements produced by the UN and other international government organizations, the full text of General Assembly resolutions on outer space (1958–present), and an index of national research on space debris and nuclear power in space.

Examples of specific publications provided by UNOOSA include *National Research on Space Debris, Safety of Space Objects With Nuclear Power Sources on Board and Problems Relating to Their Collision With Space Debris* (1995–present); *The Space Millenium: Vienna Declaration on Space and Human Development* (1999); *International Cooperation in the Peaceful Uses of Outer Space: Activities of Member States* (1999–present); *United Nations Treaties and Principles on Outer Space* (2002); *Status of International Agreements Relating to Activities in Outer Space as of . . .* (2004–present); the newsletter *Space Law Update* (2004–present); *Proceedings United Nations/Brazil Workshop on Space Law: Disseminating and Developing International Space Law: The Latin America and Caribbean Perspective* (2005); and the Web site *National Space Law Database* www.unoosa.org/oosa/en/SpaceLaw/national/index.html.

10

Research Assistance: Periodical Indexes, Scholarly and Trade Journals, Scholarly Books, Documentary Collections, and Library of Congress Subject Headings

Periodical Indexes

Numerous trade and scholarly journals produce articles covering space warfare and defense. Information on these publications is provided later in this chapter. Truly effective scholarly, research, however, requires the use of indexes to retrieve citations to individual articles. Numerous print and electronic periodical indexes can be used to find articles on space warfare and defense in such journals and do so in a more efficacious manner than conducting an Internet search.

Some of these indexes are freely available on the Internet, and their Web site URLs are listed below. Other indexes are produced by commercial companies and may be available in selected academic or public libraries. An example of one of these periodical indexes is the Air University Library Index to Military Periodicals produced by Air University Library at Maxwell Air Force Base in Alabama, which is a long-standing index of military science literature. It covers from 1988–present and is freely accessible to the public at http://purl.access.gpo.gov/GPO/LPS3260 and features detailed citations and links to subject headings for additional research. Users should check local libraries to determine if they have paper or electronic copies of the articles cited in this resource.

America: History and Life

This ABC-CLIO–produced resource indexes articles, book chapters, dissertations, and books on American and Canadian history from 1450 to the present. A standard feature in

www.abc-clio.com ABC-CLIO 1-800-368-6868

medium and large academic research libraries, it is particularly valuable for those conducting historical research on space warfare and defense.

EBSCO's Military and Government Collections

Produced by a prominent serials vendor to libraries, this resource provides full text access to articles from nearly 300 journals and periodicals as well as to numerous pamphlet resources with retrospective coverage dating back to the mid-1980s. General information is accessible on the vendor's Web site, www.ebsco.com/.

Historical Abstracts

This ABC-CLIO–produced resource indexes articles, dissertations, book chapters, and books on national and international history outside North America from 1450 to the present. It is available in many medium and large academic libraries.

LexisNexis Government Periodicals Index

Published by LexisNexis Inc., this resource provides access to 170 U.S. Government agency periodicals from 1988 to the present. Availability is primarily in medium or large academic libraries. General information is accessible at www.lexisnexis.com/academic/1univ/govper/.

Public Affairs Information Service International (PAIS)

This resource is produced by the Online Computer Library Consortium (OCLC) in Dublin, Ohio. It provides access to scholarly public policy literature from journal articles, books, book chapters, and selected U.S. Government documents. Information on PAIS can be found at www.pais.org/, and many academic libraries subscribe to its print or online services.

Staff College Automated Periodicals Index (SCAMPI)

SCAMPI is produced collaboratively by the Joint Forces Staff College Library, National Defense University Library, and Defense Technical Information Center. It provides bibliographic access to a variety of popular and scholarly military publications and selected public policy research institution reports from 1997–present. SCAMPI is freely accessible at http://www.dtic.mil/dtic/scampi/.

Worldwide Political Science Abstracts

Worldwide Political Science Abstracts (WPSA) is published by Cambridge Scientific Abstracts. It indexes articles from political science journals from 1975–present and also provides

some retrospective coverage from 1960–1974. General information on this database is accessible at www.csa.com/factsheets/polsci-set-c.php.

Scholarly and Trade Journals

A number of scholarly and trade journals produce articles and information on space warfare and defense. Scholarly journals publish articles that have gone through the peer review process in which the journal's editorial board, consisting of experts and scholars in that field, reviews proposed articles to determine their suitability for publication. Trade journals focus on trends and developments in particular industries or services, with aerospace and defense trade journals being publications that produce significant publications on space warfare and defense. Scholarly journals are distributed in print and electronic formats and have varying degrees of availability at U.S. and foreign academic libraries.

A small number of these journals published by government agencies and nonprofit organizations may be freely available on the Internet. However, most of these journals and trade publications are published by commercial for-profit publishers and are not freely available in print or electronic format. College and university libraries that have print and electronic access to these journals have paid for this access by negotiating contractual agreements with the publishers of these periodicals. Such agreements may restrict electronic access to these journals to users who are part of a university community such as faculty and students with university identification numbers. These agreements also may stipulate that only computers in the university library or the university's IP range may be used to access electronic journal contents.

A useful directory of scholarly and trade periodicals is *Ulrich's International Periodicals Directory.* This annual multivolume set, published by R.R. Bowker, is a key source in many academic library reference collections for locating periodical information.

Two subscription based projects provide subscribing academic libraries with access to numerous electronic journals on various subjects: JSTOR and TDNet. JSTOR provides access to recent and historical issues of scholarly journals in several social science disciplines. Information about JSTOR is accessible at www.jstor.org/. TDNet is an Israeli-based company providing access to electronic journal articles in multiple subjects at many academic and research institutions. Information on this service is accessible at www.tdnet.com/.

An additional aspect of scholarly journal publishing to be highlighted is the growth of the Open Access Movement, which seeks to provide a counterpoint to the occasionally restrictive access policies commercial publishers place on gaining access to their works. This movement advocates that scholars publish their research in journals that do not have restrictive public access policies or that do not charge high and continually rising institutional subscription prices for their journals. Information on this increasingly influential movement in scholarly publishing can be found at www.publicknowledge.org/issues/openaccess/.

The following is a representative sampling of important scholarly and trade journals producing articles on space warfare and defense. Information provided will include the journal's name, publisher, paper and electronic International Standard Serial Numbers (ISSN), publication frequency and history, and general information about its accessibility including a URL if it is available freely to the general public.

Aerospace America

Aerospace America has been published monthly by the American Institute of Aeronautics and Astronautics since 1932. Its ISSN is 0740–722X and general information about the journal is accessible at www.aiaa.org/aerospace/. Samples of recent articles published in *Aerospace America* include "Military Satellite Market: Assessing the U.S. Share" (November 2004) and "Examining the U.S. Aerospace Workforce" (August 2005).

Aerospace and Defense Industry Profile

Aerospace and Defense Industry Profile is produced by Datamonitor in London and available annually. This resource is also distributed through the library periodicals vendor EbscoHost and provides information on aerospace and defense industries in various international regions. Information on Datamonitor and its industry analyses is available at www.datamonitor.com/. Sample reports produced by *Aerospace and Defense Industry Profile* for 2005 include profiles for Asia–Pacific, Europe, Germany, Japan, the United Kingdom, and United States.

Aerospace Science and Technology

Aerospace Science and Technology is published by Elsevier Science and appears in eight issues annually. Its ISSNs are 1270–9638 and 1626-3219, its current version dates from 1997, and general information on it can be found at www.elsevier.com/locate/aescte. Representative articles in recent issues include "Tightly Controlled GPS/INS Integration for Missile Applications" (October 2004) and "A New Approach to On-Board Station Keeping of GEO Satellites" (November 2005).

Air & Space Power Journal

Air & Space Power Journal or *Aerospace Power Journal* is the U.S. Air Force's premier professional military journal and is produced quarterly by Air University at Maxwell Air Force Base, Alabama. Its ISSNs are 0897–0823 and 1555-385X and current and many historical issues are freely accessible to the general public at http://purl.access.gpo.gov/GPO/LPS25494. Sample articles from recent issues include "Space War in Joint Operations: Evolving Concepts" (Summer 2004); "The Space Campaign: Space-Power Theory Applied

to Counterspace Operations" (Summer 2004); "Mahan on Space Education: A Historical Rebuke of a Modern Error" (Winter 2005); and "Space Power: An Ill-Suited Space Strategy" (Fall 2006). This journal is essential reading for those studying cutting-edge space war and defense thought.

Air Power History

Air Power History is published quarterly by the Air Force Historical Foundation. It has been published since 1954, its ISSN is 1044–016X, and general information on it can be found at www.afhistoricalfoundation.com/. Sample articles include "Hypersonic Technology and Aerospace Doctrine" (Fall 1999), "General Bernard A. Schriever: A Technological Visionary" (Spring 2004), "Open Skies Policy and the Origin of the U.S. Space Program" (Summer 2004), and "Eisenhower and Ballistic Missile Defense: The Formative Years, 1944–1961" (Winter 2004).

Annals of Air and Space Law

Annals of Air and Space Law is published annually by the McGill University Institute of Air and Space Law. Its ISSN is 0701–158X, it has been published since 1976, and general information is accessible at www.mcgill.ca/iasl/. Sample articles include "Legal Regime for Keeping Outer Space Free of Armaments: Prospects?" (2002); "Space Law, the U.S. National Missile Defense Initiative and the Common Concern for Global Security" (2002); and "Policy and Legal Options Regarding Possible Deployment of Further Military Capabilities in Outer Space" (2005).

Astropolitics: The International Journal of Space Power and Policy

Astropolitics: The International Journal of Space Power and Policy is published by the British-based Frank Cass publishers. It began production in 2003 and is published three times a year, its ISSNs are 1477–7622 and 1557-2943, and general information on it is available at www.astropolitics.org/. Sample articles include "China: A Growing Military Space Power" (Spring 2005); "Was It Really 'Space Junk'?: U.S. Intelligence Interest in Space Debris That Returns to Earth" (Spring 2005); "An Assessment of Anti-Satellite Capabilities and Their Strategic Limitations" (Summer 2005); and "U.S.-India Space Partnership: The Jewel in the Crown" (August 2006). This journal is essential reading for those interested in geopolitical and strategic aspects of space.

Aviation Week and Space Technology

Aviation Week and Space Technology is arguably the single most influential trade periodical profiling space warfare and defense trends and developments. It has been published

weekly since 1916 by McGraw-Hill, and its ISSN is 0005–2175. General information about this periodical is accessible at www.aviationnow.com/avnow/. Sample articles include "Indispensable Intel" (October 24, 2005); "Satellite Tradeoffs" (November 21, 2005); and "The National Security Nexus" (March 19, 2007), along with the weekly "Washington Week" and "Industry Outlook" columns.

Aviation Week Homeland Security and Defense

Aviation Week Homeland Security and Defense is a subset of *Aviation Week and Space Technology* that has been published weekly since February 2002. Its ISSN is 1545–486X and general information can be found at www.aviationnow.com/avnow/spSec/hs.jsp. Sample articles include "Government, Industry Tighten Security at 'Vulnerable' Satellite Ground Stations" (May 8, 2002) and "ASI Offers Abundant Opportunities for Sensor Technologies 'Report Finds'" (November 2, 2005).

CQ Weekly Report

CQ Weekly Report, called *Congressional Quarterly Weekly Report* until April 1998, is published by Congressional Quarterly, Inc. It has been published since 1945, its ISSNs are 0010–5910 and 1521-5997, and it specializes in chronicling congressional legislative activities. Examples of recent articles dealing with space warfare and defense include "Missile Defense: A Multilayered Program" (October 26, 2002) and "Red Moon Rising: The New Space Race" (October 17, 1999).

Defense Daily

Defense Daily is a trade newsletter published by Access Intelligence, LLC and has been published daily since 1959. Its ISSNs are 0889–0404 and 1930-644X, and general information on it can be found at www.pbimedia.com/cgi/catalog/info?DD. Recent representative sample articles include "AFRL Moves Aerospace Relay Mirror System Demonstration to 2006" (October 20, 2005) and "Raytheon to Produce Global Hawk Ground Control Segments" (December 1, 2005).

Defense Daily International

Defense Daily International is a supplement to *Defense Daily* covering international defense developments and has been published since 2000. Representative articles include "BMDO Plans for First GBI Capability, Space Weapon Test By 2005" (July 20, 2001), "Myers Pushes for Space Based Radar Demonstration" (February 8, 2002), and "Innovative Concepts to Enable Australian MRH90 Network Centric Capabilities" (November 18, 2005).

Defense Monitor

Defense Monitor is published 10 times a year by the Washington, D.C. think tank the Center for Defense Information. It has been published since 1972, its ISSN is 0195–6450, and it is freely available from 1997–present at www.cdi.org/. Its articles, reflecting a leftist ideological perspective, include "Highlighting Missile Weaknesses and Unacceptable U.S. Policy on Space" (November/December 2004), "China-U.S. Dialog on Space" (March/April 2005), and "Bush Policy Would Start Arms Race in Space" (May/June 2005).

Defense News

Defense News is a weekly newsletter covering defense industry developments. It is published by Defense News Media Group since 1986, its ISSN is 0884–139X, and general information and some articles can be found at www.defensenews.com/. Examples of recent articles include "Israel Successfully Tests Anti-Missile System" (December 2, 2005) and "Russia Defends Iran Missile Sale" (December 5, 2005).

International Security

International Security is produced quarterly by the Belfer Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government and published by Massachusetts Institute of Technology Press. It has been published since 1976, its

Despite its youth as a nation, Israel has boasted a strong military since its inception in 1948. Israel's technical superiority over its opponents has been aided by a close relationship with America. Here a joint test between Israel and the United States launches an Arrow-2 anti-ballistic missile into the skies above California in 2004. The missile is specifically designed to defend against potential threats to Israel. *(U.S. Department of Defense)*

ISSNs are 0162–2889 and 1531-4804, and general information on this journal can be accessed through the Belfer Center Web site http://bcsia.ksg.harvard.edu/ and the publisher's Web site http://mitpress.mit.edu/. Recent *International Security* articles dealing with space warfare and defense include "Nuclear Deterrence, Nuclear Proliferation, and National Missile Defense" (March 2003) and "Space Weapons: Crossing the U.S. Rubicon" (Fall 2004).

Journal of Electronic Defense

Journal of Electronic Defense is published monthly by the Association of Old Crows, an international aerospace and electronic warfare professional association. It has been published since 1978, its ISSN is 0192–429X, and it is oriented to covering electronic technology and applications affecting the military and defense industry. General information about this organization is accessible at www.crows.org/. Sample articles include "Lost in Space: Could Space-Based Weapons Help Protect Military Capability?" (January 2005); "U.S. Congress Questions Skyrocketing Space Costs" (September 2005); "Testing Continues on USAF Airborne Laser" (November 2005); and "NATO to Launch BMD Program" (May 2006).

Journal of Space Law

Journal of Space Law is published by the National Remote Sensing Center at the University of Mississippi. This journal is published semiannually, its ISSN is 0095–7577, and it has been published since 1977. General information on it is available at www.spacelaw.olemiss.edu/journal/. Sample articles include "Liability for Global Navigation Satellite Services: A Comparative Analysis of GPS and Galileo" (Spring 2004) and "No Space Colonies: Creating a Space Civilization and a Need for a Defining Constitution" (Spring 2004).

Military and Aerospace Electronics

Military and Aerospace Electronics has been published monthly by PennWell Corporation in Tulsa, Oklahoma since 1990. Its ISSN is 1046–9079, and general information and articles from the newest issue are accessible at http://mae.pennnet.com/. Sample articles include "ViaSat Demonstrates Mobile Broadband Technology for Command and Control" (March 2005); "Silicon-Based Shielding May Protect Military Electronics from EMP" (May 2005); and "Air Force Eyes Data-Security Architecture for Satellite Telemetry" (September 2005).

Military Technology

Military Technology is published monthly by the German publisher Monch Publishing Group in Bonn. Its ISSN is 0722–3226, it has been published been published monthly

since 1977, and general information is accessible at www.monch.com/html/magazines/miltech.htm. Recent sample articles include "Expeditionary Communications: What It Takes" (May 2005), "Taiwan ABM System Takes Shape" (July 2005), and "Russia's Military Aerospace Industry: An Assessment" (August 2005).

National Journal

National Journal is published weekly by the National Journal Group and covers federal government policy and political developments. It has been published since 1969, its ISSNs are 0360–4217 and 0898-6916, and general information is accessible at www.nationaljournal.com/. Pertinent sample articles include "The Future is Here" (May 11, 2002) and "Weapons in the High Heavens" (September 17, 2005).

Quest: The History of Spaceflight Quarterly

Quest: The History of Spaceflight Quarterly is published by the University of North Dakota's Space Studies Department and provides historical perspectives on international achievements in manned and unmanned spaceflight. *Quest* has been published since 1992, its ISSN is 1065–7738, and general information on it can be found at www.spacebusiness.com/quest/. Representative articles include "The NRO in the 21st Century: Ensuring Global Information Superiority" 11 (3)(2004); "A History of the United States Anti-Satellite Program and the Evolution to Space Control and Offensive and Defensive Counterspace" 11 (3)(2004); "Safeguard: North Dakota's Front Line in the Cold War" 12 (1)(2005); and "Secret Boost Glider Projects of the Cold War: America's Winged Space Plane Studies of the 1950's" 13 (2)(2006).

Space Fax Daily

Space Fax Daily has been published daily since 1984 by Space Age Publishing and reports on space industry technology developments. Its ISSN is 1048–2652 and general information is accessible at www.spaceagepub.com/. Representative articles from recent issues include "BAE Systems 70mm Laser-Guided Rocket Achieves Two Direct Hits" (October 4, 2005), "Giant China Space-Tracking Ship Makes Rare Visit" (October 27, 2005), and "ISRO to Launch Israel's Spy Satellite" (November 15, 2005).

Space Policy

Space Policy is a quarterly scholarly journal published by Elsevier since 1985. Its ISSN is 0265–9646, and general information on it is accessible at www.elsevier.com/locate/spacepol. Recent articles include "Keeping the Peace in Outer Space: A Legal Framework for the

Prohibition of the Use of Force" (November 2004), "Leadership for New U.S. Strategic Directions" (February 2005), and "Will China Become a Military Space Superpower?" (August 2005).

Scholarly Books

A significant and growing array of scholarly literature on space warfare and defense, along with relevant international political issues, has been produced since the earliest years of the space age. Works produced on these topics by government agencies and think tanks have been covered elsewhere; presented below are works produced by university professors and other interested scholars in the United States and worldwide. This section examines primarily works that have been produced from the 1980s to the present. The works covered here represent a diverse spectrum of viewpoints and are of varying quality. Nevertheless, it is hoped that this listing provides readers the opportunity to explore the variety of work that has been produced to date examining the importance and implications of space warfare and defense in U.S. and international political, diplomatic, and military discussion and analysis.

Many of these works are available in U.S. and foreign academic libraries and some public libraries. It is also possible to purchase these books through their publishers' Web sites or through major new and used book retail Web sites such as amazon.com or abebooks.com. Book International Standard Bibliographic Numbers (ISBNs) are included to facilitate ordering and access, and information in parentheses indicates if the book is part of a monographic series produced by its publisher. Readers should be aware that cloth and paperback editions of the same book have different ISBNs.

David Christopher Arnold. 2005. *Spying From Space: Constructing America's Satellite Command and Control Systems.* (Centennial of Flight Series). College Station, TX: Texas A&M University Press. ISBN 1–585–44385–9.

This work covers developments in American satellite reconnaissance beginning with an Air Force plane capturing film dropped from a satellite on August 14, 1960. It details the development of command and control systems that made intelligence gathered from rockets and satellites useful.

Aspen Strategy Group. 1986. *Anti-Satellite Weapons and U.S. Military Space Policy.* Lanham, MD: Aspen Institute for Humanistic Studies and University Press of America, Inc. ISBN 0–8191–5477–6.

This panel report examined the increasingly contentious nature of antisatellite weapons (ASATs) in U.S. policy debates of the mid-1980s. Report contents cover evolving and expanding military uses of space, ASAT and U.S. security interests, the need for U.S. protection of its space systems, the role of strategic defenses in space security, and panel recommendations such as preventing "quick kill" threats to high altitude satellites.

Donald R. Baucom. 1992. *The Origins of SDI, 1944–1983.* (Modern War Studies) Lawrence: University Press of Kansas. ISBN 0–7006–0531–2.

Provides detailed coverage of U.S. efforts to develop defenses against ballistic missiles from World War I until 1992. It demonstrates how the Reagan administration's Strategic Defense Initiative evolved from the technological and military legacies of strategic nuclear weapons programs and the declining popularity of offensive nuclear deterrence policies.

Doug Beason. 2005. *The E-Bomb: How America's New Directed Energy Weapons Will Change the Way Future Wars Will Be Fought.* Cambridge, MA: Da Capo Press. ISBN 0–3068–1402–1.

Beason discusses how directed energy weapons such as lasers, high-powered microwaves, and particle beams are increasingly becoming the focal point of U.S. military operations, and how these weapons will grow in importance during the 21st century. *E-Bomb* describes the factors constituting these weapons and gives examples of how they have been effective in battle and of problems directed energy can cause in military environments. Subsequent sections of this work examine differences between lasers and high-power microwaves, the individuals behind the development of high-energy lasers and microwaves, how the Defense Department has come to place increased reliance on these weapons, the origins and development of the airborne laser program, how high-energy lasers have become global weapons, and possible future trends and developments in directed energy weapons technology.

Matt Bille and Erika Lashock. 2004. *The First Space Race: Launching the World's First Satellites.* (Centennial of Flight Series). College Station, TX: Texas A&M University Press. ISBN 1–585–44356–5.

Portrays efforts by the United States and Soviet Union to launch the world's first space satellites between 1955–1958. Topics addressed include the efforts of the U.S. Army and Navy, Soviet programs, and the perceived military, political propaganda, scientific, and technological advantages of being the first nation in space.

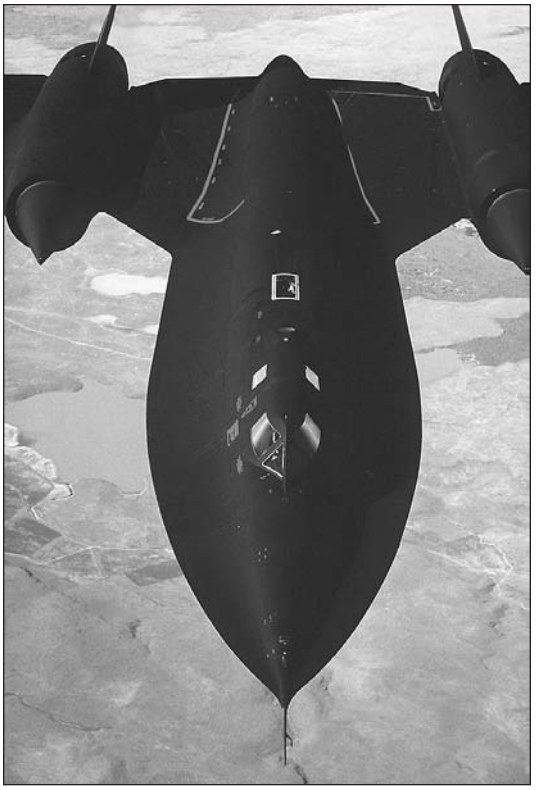
Neville Brown. 1990. *New Strategy Through Space.* Leicester, UK: Leicester University Press. ISBN 0–7185–1279–0.

This quirky philosophical review of military space policy begins by examining how the Strategic Defense Initiative sought to render obsolete existing U.S.–Soviet strategies of nuclear deterrence. Later chapters examine how lasers, particle beam weapons, and kinetic energy weapons can influence military space policymaking. Additional subjects analyzed include geopolitical dimensions of military space, possible Soviet and Chinese military space responses, and the potential value of international arms control regimes in outer space.

William E. Burrows. 1986. *Deep Black: Space Espionage and National Security.* New York: Random House. ISBN 0–394–54124–3.

Examines the variety of U.S. air and space intelligence gathering capabilities from World War II to the time of publication. Covers various satellites and aircraft such as the RC-135, U-2, and SR-71.

Ivo H. Daalder. 1987. *The SDI Challenge to Europe.* Cambridge, MA: Ballinger. ISBN 0–8873–0197–5.



An air-to-air front close-up of an SR-71A strategic reconnaissance aircraft. The SR-71 is unofficially known as the "Blackbird." *(U.S. Department of Defense)*

Written in the aftermath of the failure of the 1986 Reagan–Gorbachev Reykjavik summit to reach an arms control agreement due to differences over the Strategic Defense Initiative (SDI), Daalder assesses how different European countries view SDI's political, technological, and military implications. British, French, and German perspectives are reviewed, and the text of a March 27, 1986 U.S.–West German SDI participation agreement is also included.

Dwayne A. Day, John M. Logsdon, and Brian Latell, eds. 1998. *Eye in the Sky: The Story of the Corona Spy Satellites.* (Smithsonian History of Aviation Series). Washington, D.C.: Smithsonian Institution Press, 1998. ISBN 1–56098–830–4.

This book examines the significance of recently declassified Project Corona satellite photographs taken between 1960–1972 by 145 spy satellite missions. The over 800,000 reconnaissance photographs provided the United States valuable intelligence on military installations and force movements in the former Soviet Union, China, and Middle East. Chapters in this book provide background on the technological and political factors creating Corona, the origins of the National Reconnaissance Office, and Soviet response to Corona through its Zenit program.

David H. DeVorkin. 1992. *Science With a Vengeance: How the Military Created the US Space Sciences after World War II.* New York: Springer-Verlag. ISBN 0–387–94137–1 (paperback).

Provides detailed historical coverage of how military research and development has sculpted U.S. space science research. DeVorkin begins by describing the early rocketry experiments of Robert Goddard and proceeds to analyze how German's V-2 program and scientists influenced early U.S. military astronautics. The work goes on to describe the roles played in U.S. military astronautic research by facilities such as the White Sands Proving Ground and by organizations such as the Naval Research Laboratory. Coverage is provided of various research accomplishments made by these military space programs including the development of ballistic missiles.

Everett C. Dolman. 2001. *Astropolitik: Classical Geopolitics in the Space Age.* (Cass Series: Strategy and History). London and Portland, OR: Frank Cass. ISBN 0–7146–8197–0 (paperback).

A treatise that uses geopolitics and applies it to current and future military space strategy. Chapter topics address issues such as space's geopolitical and military strategic relevance to national and international security, contending political visions of space between advocates of international control of space or individual nations controlling space, and the need for the United States to incorporate space into its national security policymaking.

Craig R. Eisendrath, Melvin A. Goodman, and Gerald E. Marsh. 2001. *The Phantom Defense: America's Pursuit of the Star Wars Illusion.* Westport, CT: Praeger. ISBN 0–275–97183-X.

This is a highly critical assessment of what the authors see as misguided and wasteful efforts by the United States to develop ballistic missile defenses. The authors contend that system-testing results offer little hope that effective deployment is possible, that such defenses will alienate key allies and heighten security threats from China and Russia, and claim that threats from rogue regimes such as Iran and North Korea are overstated.

Frances Fitzgerald. 2000. *Way Out There in the Blue: Reagan, Star Wars, and the End of the Cold War.* New York: Simon & Schuster. ISBN 0–6848–4416–8.

Fitzgerald presents an ideologically polemical account of the Reagan administration's Strategic Defense Initiative and goes beyond that administration to criticize what she sees as misguided U.S. attempts to construct ballistic missile defense systems.

George Friedman and Meredith Friedman. 1996. *The Future of War: Power, Technology, and American World Dominance in the Twenty-First Century.* New York: Crown Publishers. ISBN 0–5177–0403-X.

The authors believe that the United States will retain global military dominance because of the growth of precision-guided weapons and its technological leadership in producing such weapons. They describe why they believe many historical and contemporary military technologies such as gunboats and manned aircraft are of decreasing relevance and why they believe that controlling space is an integral factor if the United States is to retain global military supremacy.

Crockett L. Grabbe. 1991. *Space Weapons and the Strategic Defense Initiative.* Ames, IA: Iowa State University Press. ISBN 0–8138–1277–1.

This work describes various military, political, and technical issues involved with developing and deploying space weapons. Grabbe begins with an introduction to missile

defense systems describing the roles played by boost-phase intercept and midcourse and terminal intercept missile defense systems. Subsequent chapters address possible countermeasures to ballistic missile defense systems such as attacks on these systems, what the author sees as the impact on strategic defense and arms control treaties of the Strategic Defense Initiative, and his contention that the United States should invest its resources in stabilizing and reducing the nuclear threat. Appendices feature descriptions and graphs for technical matters such as how x-ray and free-electron lasers work.

Brian Harvey. 2000. *The Japanese and Indian Space Programmes: Two Roads into Space.* (Springer-Praxis Books in Astronomy and Space Sciences). London and New York and Chichester, UK: Springer in association with Praxis Publishing. ISBN 1–85233–199–2.

This work examines the space policies of these two emerging economic and military countries. It stresses that Japan will place increasing security emphasis on satellites following the 1998 North Korean ballistic missile launch signaling that country's intent to incorporate these weapons into its military arsenal. Historical coverage is provided of the institutional development and evolution of India and Japan's space programs. In the author's view, Indian military astronautics are focused on monitoring security concerns emanating from Pakistan and China.

Brian Harvey. 2001. *Russia in Space: The Failed Frontier?* (Springer-Praxis Books in Astronomy and Space Sciences). London and New York and Chichester, UK: Springer in association with Praxis Publishing. ISBN 1–85233–203–4 (paperback).

This book provides a historical account of the rise and decline of Russian civilian and military astronautics. Chapter titles cover developments in space science, rocket engine development, and commercial applications. A chapter on military space policy examines Russian military space programs from 1992 until the book's publication covering military photo-reconnaissance, electronic intelligence, communications, and early warning systems.

Brian Harvey. 2004. *China's Space Program: From Conception to Manned Spaceflight.* (Springer-Praxis Books in Astronomy and Space Sciences). London and New York and Chichester, UK: Springer in association with Praxis Publishing. ISBN 1–85233–566–1 (paperback).

Provides coverage of the historical and ongoing evolution of China's national space program. Detailed information is provided on Chinese rocket and satellite programs along with potential ways the Chinese may seek to establish military assets in space. China's emergence as a significant player in international space policy was confirmed by the successful October 2003 launching, orbiting, and return of astronaut Yang Liwei on a Chinese-built Shenzou 5 rocket.

Peter Hayes, ed. 1996. *Space Power Interests.* Boulder, CO: Westview Press. ISBN 0–8133–8879–1.

This collection of essays seeks to ask whether international security policymaking can avoid long-range missile proliferation in the near and intermediate future. Issues addressed in individual chapters include the challenges presented by space launch and missile proliferation; U.S., Russian, and Chinese space power and interests; European

UNSCOM expert checking a Chinese-made Silkworm missile in Iraq following the Persian Gulf War. *(UNSCOM/Corbis Sygma)*

space policy and missile control; prospects for international space cooperation and a nonproliferation regime; future trends in arms control and verification; and the experiences of the former United Nations Special Commission (UNSCOM) in trying to verify land-based ballistic missiles in Iraq.

Peter L. Hays, James M. Smith, Alan R. Van Tassel, and Kenneth J. Reynolds,. eds. 2000. *Spacepower for a New Millenium: Space and U.S. National Security.* New York: McGraw-Hill. ISBN 0–0724–0170–2.

This work examines how military space activities might enhance U.S. security by looking at current and future issues including missile defense and the most efficacious ways of organizing military space. Examples of essay topics include integrating national space policy and national defense, charting new directions for missile defense, organizing for space-based intelligence collection, future military space technologies, and the need for a "space navy" to defend the commercial basis of America's wealth.

Bhupendra Jasani, ed. 1987. *Space Weapons and International Security.* New York and Stockholm: Oxford University Press and Stockholm International Peace Research Institute (SIPRI). ISBN 0–19–829102–7.

This work is based on the proceedings of a July 1985 Stockholm conference on technical and political issues concerning space weapons sponsored by the Stockholm International Peace Research Institute (SIPRI). An international array of contributors produced

essays on various topics including technical characteristics of space weapons, whether such weapons can be controlled by international agreement, means of counteracting space strike weapons, the implications of U.S. and Soviet ballistic missile defense programs for the ABM Treaty, Soviet attitudes toward strategic defense systems, and how nonaligned nations viewed the Strategic Defense Initiative.

Thomas Karas. 1983. *The New High Ground: Systems and Weapons of Space Age War.* New York: Simon and Schuster. ISBN 0–671–47025–6.

This early 1980s work describes then present and possible future roles of U.S. military space technology and policy. Individual chapters examine the Air Force's organizational operations in space, the space shuttle's role in facilitating space transportation, infrastructure provided by the space industry including communications, reconnaissance, weather forecasting, and geodetics, the role of ASATs in space, and strengths and weaknesses of space-based weapons systems.

Stephen Lambakis. 2001. *On the Edge of Earth: The Future of American Space Power.* Lexington, KY: University Press of Kentucky. ISBN 0–8131–2198–1.

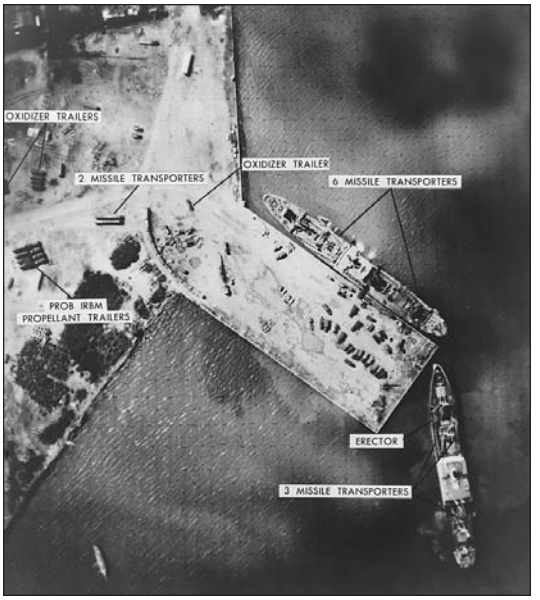
This work promotes an assertive U.S. military policy stance and presence in space. Contents examine how space impacts the U.S. and international relations, possible implications of space for U.S. military strategy, how space may be used to militarily attack the United States and how technologically inferior adversaries can use space to gain military advantage against the United States, the evolution of national defense space policy since the Eisenhower Administration, and why the United States is unprepared for a future military presence in space. It is essential reading for exponents of an expanded U.S. military presence in space.

David T. Lindgren. 2000. *Trust But Verify: Imagery Analysis in the Cold War.* Annapolis, MD: Naval Institute Press. ISBN 1–5575–051807.

Study of how the United States and the former Soviet Union used aerial imagery analysis during the Cold War to promote their respective national security objectives and interests. Topics examined included the role played by imagery analysis during the Cuban Missile Crisis, the importance of Project Corona, and how imagery analysis was used to verify compliance with arms control agreements.

Kevin Madders. 1997. *A New Force at a New Frontier: Europe's Development in the Space Field in the Light of its Main Actors, Policies, Law and Activities From its Beginnings up to the Present.* Cambridge, UK: Cambridge University Press. ISBN 0–521–57096–4.

This work covers the efforts of Western European countries and the European Union to develop national and continental space programs and policies through the mid-1990s. Topics addressed include the Cold War and Sputnik's civilian legacy, the beginning of European international satellite communications, increasing European cooperation in civilian and military space research and development, the rise, development, and evolution of the European Space Agency as a forum for European space policy programming, European–U.S. space cooperation, and possible future trends and developments characterizing European space policymaking.



View from U.S. reconnaissance aircraft of Mariel Bay, Cuba. In October 1962 Soviet missile equipment and transport ships were photographed by U.S. U-2 spy planes, leading to the Cuban Missile Crisis. *(Library of Congress)*

William C. Martel, ed. 2001. *The Technological Arsenal: Emerging Defense Capabilities.* Washington, D.C.: Smithsonian Institution Press. ISBN 1–56098–961–0.

Compilation of essays addressing how late twentieth-century technological trends are revolutionizing warfare. Examples of chapters with particular relevance to space warfare and defense cover the military technology options provided by space lasers, how lasers impact missile defense, commercial and military applications of space operations vehicles, and how airborne and space lasers may impact battlefield operations.

Walter A. McDougall. 1997. ". . . *The Heavens and the Earth: A Political History of the Space Age.* Baltimore: Johns Hopkins University Press. First published in 1985. ISBN 0–8018–5748–1.

This Pulitzer Prize–winning history provides exhaustive coverage and analysis of the political, diplomatic, and military policymaking prompting the development of the U.S. and Soviet space programs. Chapters cover topics such as the roles of nuclear deterrence and satellite surveillance in prompting U.S. and Soviet military interest in space; political and strategic factors prompting the U.S. decision to land on the moon; the growth of scientific and computer science research generated by the space programs in both countries; and the human and political foibles of the individuals, institutions, and government policymakers in the development and evolution of these national space programs—essential historical reading.

Alistair W.M. McLean and Fraser Lovie. 1997. *Europe's Final Frontier: The Search for Security Through Space.* Commack, NY: Nova Science Publishers. ISBN 1–5607–2462–5.

This work describes and analyzes the growth of space as a forum for military activity emphasizing the evolution of the Western European Union as a European security entity and the increasing importance of space for overall European military security.

Matthew Mowthorpe. 2003. *The Militarization and Weaponization of Space.* Lanham, MD: Lexington Books. ISBN 0–07391–0713–5.

This work is an analysis of space militarization and weaponization emphasizing the efforts of countries such as the United States, the Soviet Union/Russian Federation, and China. Chapter topics address the U.S. approach to military space during the Cold War, how the United States and Soviet Union addressed ballistic missile defense in the ABM Treaty, Soviet and Russian approaches to military space during and after the Cold War, China's military space program, how the United States dealt with Soviet ASAT programs, implications of the space-based laser for ballistic missile defense, how the revolution in military affairs affects space militarization, and the United States' post–Cold War military space policy.

Michael J. Neufeld. 1995. *The Rocket and the Reich: Peenemunde and the Coming of the Ballistic Missile Era.* Cambridge, MA: Harvard University Press. ISBN 0–674–77650-X.

Presents historical analysis of Nazi Germany's program to develop rocket weapons at Peenemunde in an effort to inflict last-ditch military vengeance on the soon to be victorious allied forces. Nazi rocket/missile programs can be seen as the beginning of the nuclear and space ages in modern warfare. Neufeld provides detailed coverage of the accomplishments and setbacks experienced by German efforts in this area as well as emphasizing the high human costs of these efforts. Following the war German scientists involved in this program such as Wernher von Braun were used by the United States and the former Soviet Union to launch their own military and civilian space programs.

Joseph S. Nye, Jr., and James A. Schear, eds. 1987. *Seeking Stability in Space: Anti-Satellite Weapons and the Evolving Space Regime.* Lanham, MD: Aspen Strategy Group and University Press of America. ISBN 0–8191–6422–4 (paperback).

This compilation of essays seeks to present a framework for assessing security consequences of ASAT weapons and military uses of space. Topics reviewed include U.S. military policy and ASAT weapons, protecting military space assets, the impact of potential negotiating restraints on ASAT weapons, and verifying limits on these weapons systems.

Keith B. Payne, ed. 1983. *Laser Weapons in Space: Policy and Doctrine.* Boulder, CO: Westview Press. ISBN 0–86531–937–5.

This compilation of essays examines policy issues associated with using space-based lasers for ballistic missile defense. Subjects examined and analyzed within these treatises include the role of the Antiballistic Missile (ABM) Treaty and other arms control agreements in developing missile defense systems, technical issues of space-based missile defense such as what type of program the United States should use, implications of then existing arms control agreements for space-based missile defense lasers, Soviet policy options for dealing with possible U.S. deployment of these lasers, how space-based lasers may impact U.S. military strategic doctrine, and how these lasers may be relevant to the Reagan administration's strategic nuclear weapons policy.

Uri Raanan and Robert L. Pfaltzgraf, Jr., eds. 1984. *International Security Dimensions of Space.* Hamden, CT: Archon Books. ISBN 0–208–02023–3.

This compilation of essays analyzes international security aspects of space from the political and technological perspectives of the early 1980s. Issues addressed in these essays include Soviet military space doctrine, U.S. and Soviet ballistic missile defense programs, whether space will become a sanctuary or military theater, possible defenses against offensive military satellites, and Soviet views of U.S. and Soviet space-based intelligence collecting tactics. Additional chapters address the strengths and weaknesses of U.S. space infrastructure, space activities of European countries and Japan, how current and future military technologies and space law may affect the 1967 Outer Space Treaty, and how arms control may have an impact on national and international military space policy.

Jeffrey T. Richelson. 1990. *America's Secret Eyes in Space: The U.S. Keyhole Spy Satellite Program.* New York: Harper & Row. ISBN 0–88730–285–8.

This book covers how the U.S. Keyhole satellite program supplied targeting information to U.S. military planners on potential military targets within the Soviet Union and how it also played a role in monitoring arms control agreements between these two countries and provided information on the deployment of Soviet nuclear forces. Richelson highlights information on this once secret program's development and evolution from the 1950s through the 1980s. It features analysis of Soviet attempts to steal the satellite's manual through the auspices of disgruntled CIA employee William Kampiles and descriptions of how these satellites were used to gather intelligence on the Soviet Union and other international areas of concern to U.S. intelligence policymakers.

Jeffrey T. Richelson. 1999. *America's Space Sentinels: DSP Satellites and National Security.* (Modern War Studies). Lawrence, KS: University Press of Kansas. ISBN 0–7006–1096–0 (paperback).

Richelson provides a historic overview and analysis of the U.S. military's defense support program (DSP) satellites whose primary responsibility has been providing the first warning of nuclear missile attacks against the United States. Contents describe diplomatic, political, scientific, and technical issues involved in creating and sustaining this program, including the need for satellite monitoring stations to be established at domestic and international locations such as Alamogordo, NM and Nurrungar, Australia, interrelationships between the Defense Department and system contractors such as Lockheed and McDonnell-Douglas, and possible future roles DSP satellites might play in developing U.S. ballistic missile defense systems.

Jeffrey T. Richelson. 2001. *The Wizards of Langley: Inside the CIA's Directorate of Science and Technology.* Boulder, CO: Westview Press. ISBN 0–8133–6699–2.

This book provides historical coverage of the multiple roles played by the CIA's Directorate of Science and Technology in promoting U.S. intelligence gathering and analysis while striving to enhance U.S. national security. A chapter on space reconnaissance describes the CIA's relationship with the National Reconnaissance Office (NRO) in satellite intelligence programs such as Project Corona, the bureaucratic contentiousness that could occur between the CIA, NRO, and Defense Department over satellite intelligence, and technological evolutions in U.S. satellite and aeronautic intelligence collection capabilities.

Michael Russell Rip and James M. Hasik. 2002. *The Precision Revolution: GPS and the Future of Aerial Warfare.* Annapolis, MD: Naval Institute Press. ISBN 1-5575-0973-5.

The authors stress how GPS technology is part of a revolution in military affairs that has placed greater emphasis on the role of highly sophisticated technologies such as precision-guided munitions in conducting military operations. Contents provide historical background on military air and space navigation, the United States' NAVSTAR GPS, and the Russian GLONASS global navigation satellite system. Subsequent sections of this work stress military requirements of GPS systems, how these systems influence electronic warfare, and how GPS influences and limits intelligence gathering and analysis, the role played by GPS in the 1999 war over Kosovo, and how the 9/11 terrorist attacks are an example of military operations using precision guided munitions.

William H. Schauer. 1976. *The Politics of Space: A Comparison of the Soviet and American Space Programs.* New York: Holmes & Meier, Publishers. ISBN 0–8419–0185–6.

This work is a comparative analysis of U.S. and Soviet space programs from Sputnik's launch in 1957 until this work's 1976 publication. Chapter contents include the pre-Sputnik provenance of Soviet rocketry and Soviet space program organization; early Soviet and American views of space military operations; international cooperation in outer space exploration and use; international law's outer space applications; and domestic and international aspects of space exploration such as communication, meteorological, navigational, and earth resource satellites.

Asif A. Siddiqi. 2003. *Sputnik and the Soviet Space Challenge.* Gainesville, FL: University Press of Florida. ISBN 0–8130–2626-X (paperback).

This first-volume history of the Soviet space program describes the historical development and evolution of the Soviet space program from just after World War II until the mid-1960s. Particular emphasis is placed on the role played by German scientists in this program's early years and how Stalin and other Soviet leaders viewed the program's progress and setbacks. Exhaustive coverage and documentation are provided of the individuals, institutions, and events shaping Soviet efforts in this area, and acute attention is paid to military issues and factors.

Asif A. Siddiqi. 2003. *The Soviet Space Race With Apollo.* Gainesville, FL: University Press of Florida. ISBN 0–8130–2628–8 (paperback).

The second and concluding volume of this history covers from roughly the mid-1960s until recent times the personalities, events, and institutions shaping Soviet civilian and military space policy from its zenith as a serious competitor to the United States to the decline Soviet space programs have experienced in recent years. Both of Siddiqi's works are essential reading for those desirous of understanding the historical development and evolution of the Soviet space program.

Robert M. Soofer. 1988. *Missile Defenses and Western European Security: NATO Strategy, Arms Control, and Deterrence.* (Contributions in Military Studies). Westport, CT: Greenwood Press. ISBN 0–313–26351–5.

This work sought to refute European skepticism about the Reagan administration's Strategic Defense Initiative. Soofer argues that missile defense will not have a negative impact on international arms control and asserts that theater and strategic missile defense can enhance nuclear deterrence by protecting the United States and its allies from Soviet attacks.

Paul B. Stares. 1985. *The Militarization of Space: U.S. Policy, 1945–1984.* (Cornell Studies in Security Affairs). Ithaca, NY: Cornell University Press. ISBN 0–8014–9471–0.

This work provides an analytical overview and appraisal of U.S. military space policy, beginning with coverage of U.S. military space programs from 1945–1957 with subsequent chapters examining the military space policies of the Eisenhower, Kennedy, Johnson, Nixon, Ford, and Carter administrations and the first term of the Reagan presidency. The concluding chapter stresses the author's concern with what he sees as Reagan administration attempts to militarize space. Appendices enumerate U.S. space program expenditures and U.S.–Soviet antisatellite tests and space launches.

Paul B. Stares. 1987. *Space and National Security.* Washington, D.C.: The Brookings Institution. ISBN 0–8157–8110–5.

This work examines whether the United States should develop antisatellite (ASAT) weapons as part of its national security strategy. Issues addressed in *Space and National Security* include overviews of how U.S. and Soviet military space programs use satellites, the military value of these satellites, existing threats to space systems, the usefulness of ASAT weapons, and relevant space arms control issues. Stares concludes that there is no need for the United States to develop ASAT weapons and that U.S. space defense policy should focus on enhancing satellite survivability and relying on international agreements to enhance satellite security.

Gerald M. Steinberg, ed. 1988. *Lost in Space: The Domestic Politics of the Strategic Defense Initiative.* Lexington, MA: Lexington Books. ISBN 0–669–14011–2.

Compilation of essays seeking to examine what the authors see as the domestic U.S. political implications of the Strategic Defense Initiative (SDI). Topics addressed in these essays include the roles of presidential and congressional activity in space policy initiation and oversight, the role of scientists in SDI policy and technological feasibility debates, bureaucracy's influence on research and development within the Strategic Defense Initiative Organization, the influence of defense contracting in SDI programs, and a concluding thematic chapter stressing the editor's assertion that SDI support was predicated on a faith-based belief in the ability of science and technology to solve national security dilemmas.

Matthew J. Von Bencke. 1997. *The Politics of Space: A History of U.S.-Soviet/Russian Competition and Cooperation in Space.* Boulder, CO: Westview Press. ISBN 0–8133–3192–7.

This work provides a historical overview of how space policy rivalry between the United States and the former Soviet Union evolved into a degree of relative cooperation between the United States and the Russian Federation by the middle 1990s. This cooperation has

been most pronounced in commercial space ventures such as space stations Freedom and Mir. An appended space age historical chronology is particularly useful for coverage of key space policy events involving both countries.

Documentary Collections

There are commercially produced documentary collections on various aspects of military space policy that may be available in academic research libraries in the United States and globally. One collection worth examining is *U.S. Military Uses of Space, 1945–1991.* Produced by the National Security Archive of Washington, D.C.'s George Washington University, this resource contains over 700 documents and nearly 15,000 pages of documents on U.S. military space organizations, operations, and policies. The collection features reports, memoranda, and cables on U.S. military space policy from organizations such as the National Security Council, the Defense Department's Advanced Research Projects Agency, and United States Space Command. Further information on this collection is accessible at www.gwu.edu/~nsarchiv/nsa/publications/mus/militaryus.html.

Library of Congress Subject Headings

Keyword searching is commonly used to look for books and articles in library online catalogs and databases. A more precise way of searching these catalogs is using Library of Congress Subject Headings (LCSH). Examples of LCSH searches to retrieve books on space warfare and defense include:

Artificial Satellites Astronautics and State
Astronautics, Military
Astronautics, Military United States Space Warfare
Space Warfare Periodicals
Space Surveillance
Space Weapons

Although it takes a little time to learn the geographic and disciplinary subdivisions of LCSH, the patience involved in learning this system helps produce more precise search results than doing vague keyword searches such as "space and war" and "space and weapons." Library Online Public Access Catalogs (OPACs) contain links to other LCSHs used to catalog a book once a book record has been retrieved from the OPAC search. By clicking on these LCSH links in a book's OPAC record, users can see other books on that subject in their libraries' OPAC that may not be locatable by a simple keyword search.