

## FOREWORD

The 2006 conference “Building the Architecture for Sustainable Space Security” is the latest in a series of annual conferences held since 2002 by the United Nations Institute for Disarmament Research (UNIDIR) in cooperation with a wide range of Member States, research institutes and non-governmental organizations (NGOs). This conference series has drawn on a high level of interest on the part of diplomats in Geneva, both within and outside of the Conference on Disarmament (CD), as well as civil society and the research community.

The 2006 conference was made possible through the sponsorship and financial contribution of the Governments of Canada and of the People’s Republic of China and The Simons Foundation. The Governments of India and the Russian Federation contributed speakers to the conference.

Participants at the conference discussed the current threats posed to the peaceful uses of outer space, both in the context of technological developments and of political and military decisions. They explored the potential for developing a rules-based approach for ensuring space security, such as a code of conduct, space asset security and debris mitigation. The possible development of confidence-building measures (CBMs) in outer space through various means and the implications of such measures on a future ban on space weapons were also discussed. The conference concluded with a debate about the role of public awareness and advocacy in influencing governmental policy and decision makers.

Patricia Lewis  
Director  
UNIDIR



## ACKNOWLEDGEMENTS

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The opinions expressed in the papers are those of the authors and the authors alone.



## ABOUT THE SPEAKERS

### **Douglas G. ALDWORTH**

Douglas Aldworth is senior policy officer of Missiles and Space Security at the Global Security Bureau of the Canadian Department of Foreign Affairs and International Trade. He is head of the Canadian Delegation to the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS). In other diplomatic capacities, he has served as First Secretary to Bangladesh, Bhutan and India and as Canadian Consul to Nepal.

### **Phillip J. BAINES**

Phillip Baines is senior policy advisor (science and technology) in the Non-Proliferation and Disarmament (chemical, biological and conventional weapons) Division at Foreign Affairs Canada. Previously, he worked at EMS Technologies Canada on various verification models. He was also seconded to the Department of Foreign Affairs and International Trade of Canada as a verification research officer.

### **G rard BRACHET**

G rard Brachet is chair of the United Nations Committee for the Peaceful Uses of Outer Space (COPUOS) for the period 2006–2008. From October 2002 to April 2003, he advised the French minister for Research and New Technologies on the Galileo programme. Since May 2003, he has been a consultant for major aerospace companies and public organizations in Europe. Brachet was director general of CNES from July 1997 to September 2002. Brachet has been a member of the International Academy of Astronautics since 1992 and chairs its Commission V on Space Policy, Law and Economics. He is also vice-president of the Acad mie Nationale de l'Air et de l'Espace (National Air and Space Academy) and chairs its Space Committee.

### **Gerhard BRAUER**

As head of the Security Policy Office of the European Space Agency (ESA), Gerhard Brauer is responsible for supporting and advising the director general on all issues concerning dual use of space related technologies and systems. Prior to joining ESA, he was the German

representative of the technology programme of the Western European Armaments Group (WEAG). He is a recent graduate from the Senior Course at The NATO Defense College in Rome.

**Richard A. BRUNEAU**

Richard Bruneau is a researcher at the Canadian Centre for Treaty Compliance (CCTC) in Ottawa, Canada. Assisting Trevor Findlay, his current work at the centre focuses on non-governmental involvement in monitoring compliance with arms treaties. In space-related matters, he is completing research for the Space Security Index with Project Ploughshares and Foreign Affairs Canada. He is also a graduate student at the Norman Paterson School of International Affairs in Ottawa, studying issues of human security, arms control and humanitarian protection.

**Sarah ESTABROOKS**

Sarah Estabrooks is the project manager for the annual *Space Security Index*. In 2003 and 2004, she was a principal researcher and author for the publication. Prior to joining Project Ploughshares as a programme associate in 2001, she worked as a programme assistant for the Peacebuilding and Disarmament Programme of the World Council of Churches in Geneva, focusing on arms control and disarmament diplomacy, particularly small arms and light weapons.

**Joanne Irene GABRYNOWICZ**

Joanne Irene Gabrynowicz is the editor-in-chief of the *Journal of Space Law*. She is also a professor of space law and remote sensing law and the director of the National Remote Sensing and Space Law Center at the University of Mississippi School of Law. Professor Gabrynowicz has been teaching space law and policy since 1987. She is an official observer for the International Astronautical Federation to the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and the head of the International Institute of Space Law Delegation to the Group on Earth Observations. She was the recipient of the 2001 Women in Aerospace Outstanding International Award and is a member of the International Institute of Space Law and the American Bar Association Forum on Air and Space Law.

**Laura GREGO**

As a Union of Concerned Scientists' (UCS) staff scientist for the Global Security Program, Grego studies the implications of physics and technology for space security. She works extensively with scientists and other non-governmental organizations to analyse the technical issues of space weapons and develop relevant policy advisements to ensure the secure and equitable use of space. She also examines the security costs and benefits of space weapons, in respect to both United States and international security. She speaks frequently on security issues to scientists, policy makers and the public in the United States and abroad. Before joining UCS in September 2002, she was a postdoctoral researcher at the Harvard-Smithsonian Center for Astrophysics from 1999 to 2002, where she investigated outstanding issues in cosmology and large-scale structure formation using X-ray, radio and optical data and numerical simulation results.

**Theresa HITCHENS**

Theresa Hitchens is the director of the World Security Institute's Center for Defense Information (CDI), where she also leads its Space Security Project. The author of *Future Security In Space: Charting a Cooperative Course*, she writes on space and nuclear arms control issues for a number of outside publications. In addition to serving as editor of *Defense News* from 1998 to 2000, she has had a long career in journalism with a focus on military, defence industry and North Atlantic Treaty Organisation affairs. Her time at *Defense News* included five years as the newspaper's first Brussels bureau chief from 1989 to 1993.

**Rebecca JOHNSON**

Rebecca Johnson co-founded the Acronym Institute for Disarmament Diplomacy in 1995. Johnson is currently vice-chair of the board of the *Bulletin of the Atomic Scientists* and senior advisor to the Weapons of Mass Destruction Commission (WMDC), chaired by Hans Blix. While her present research priorities are weapons of mass destruction, space weaponization and international security, Johnson has authored numerous articles and reports on the UN system and multilateral disarmament and negotiations, notably the NPT and CTBT, civil society and British defence policy, and gives papers and lectures on these subjects to a wide range of UN and other international conferences, seminars and meetings.

**Michael KATZ-HYMAN**

Michael Katz-Hyman is research associate for the Space Security Project of the Henry L. Stimson Center.

**Alexander A. KLAPOVSKY**

Alexander Klapovsky is an official at the Ministry of Foreign Affairs of the Russian Federation.

**Michael KREPON**

Michael Krepon is co-founder of the Henry L. Stimson Center. He now divides his time between the University of Virginia and the centre, where he directs its programming on space security and South Asia. Previously, he directed defence policy and programme reviews at the US Arms Control and Disarmament Agency and was a senior congressional staffer on the Appropriations and Armed Services Committees. Krepon is the author and co-editor of 12 books and over 350 articles.

**Jeffrey LEWIS**

Jeffrey Lewis is executive director of the Managing the Atom Project at the Belfer Center for Science and International Affairs. Lewis is the author of the forthcoming *Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (MIT Press, 2006) and a member of the editorial advisory board of the *Bulletin of the Atomic Scientists*. He also founded and maintains the leading blog on nuclear arms control and non-proliferation at <[www.ArmsControlWonk.com](http://www.ArmsControlWonk.com)>.

**Scott G. LOFQUIST-MORGAN**

Scott Lofquist-Morgan is a researcher with the Canadian Centre for Treaty Compliance (CCTC) in Ottawa and is currently the centre's administrator. His work with Trevor Findlay focuses on a study of international compliance with the Chemical Weapons Convention. He also works as a researcher in space-related issues and is currently assisting Project Ploughshares and Foreign Affairs Canada with the development of the *Space Security Index*. Prior to joining the CCTC, he worked for the Centre for Security and Defence Studies at the Norman Paterson School of International Affairs.

**Laurence NARDON**

Laurence Nardon is a researcher at the French Center on the United States at IFRI (Institut français des relations internationales) and a teacher at the Institut d'études politiques de Paris. Her areas of expertise are US and European space policy, aeronautics industry and security issues. She has published a book and several articles and monographs on space policy. Prior to joining IFRI, she was a research analyst at Aérospatiale Espace et Défense and the Centre Interdisciplinaire de Recherches sur la Paix et d'Etudes Stratégiques (CIRPES) at the Ecole des Hautes Etudes en Sciences Sociales (EHESS). She was a senior visiting fellow at the Center for Strategic and International Studies (CSIS) in Washington, DC, from 2001 to 2003.

**PAN Jusheng**

Pan Jusheng is an official at the Defence Science and Technology Information Centre of China.

**Stephen STOTT**

Stephen Stott is chief technology officer at New Skies Satellites B.V., an independent, international satellite telecommunications company based in The Hague, The Netherlands, where he is responsible for satellite and launch service procurement, new technology development and both space segment and terrestrial network deployment and operations. Prior to joining New Skies, Stott served as director of satellite engineering at Intelsat.

**Anton V. VASILIEV**

Anton Vasiliev is deputy head of delegation and minister plenipotentiary at the Permanent Mission of the Russian Federation to the Conference on Disarmament.

**Balakrishnan VASUDEVAN**

Balakrishnan Vasudevan is the Indian Space Research Organisation (ISRO) technical liaison officer/counsellor (space) at Space Wing, Embassy of India, Paris. During his 22 years with ISRO, he has headed the Budget and Manpower Planning Division in the Vikram Sarabhai Space Centre, Trivandrum; been the project manager of the Geosynchronous Satellite Launch Vehicle (GSLV) Project; and worked in the area of Vehicle Integration and Launch Services Facilities.