

Access Denied

The Practice and Policy of Global Internet Filtering

edited by Ronald Deibert, John Palfrey, Rafal Rohozinski, and
Jonathan Zittrain

© 2008 The President and Fellows of Harvard College

All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher.

For information about special quantity discounts, please e-mail special_sales@mitpress.mit.edu.

This book was set in Swis721 on 3B2 by Asco Typesetters, Hong Kong.
Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Access denied : the practice and policy of global Internet filtering / edited by Ronald Deibert . . . [et al.].

p. cm. — (The information revolution & global politics series)

Includes bibliographical references and index.

ISBN 978-0-262-54196-1 (pbk. : alk. paper) — ISBN 978-0-262-04245-1 (hardcover : alk. paper)

1. Computers—Access control. 2. Internet—Censorship. 3. Internet—Government policy. I. Deibert, Ronald.

QA76.9.A25.A275 2008

005.8—dc22

2007010334

10 9 8 7 6 5 4 3 2 1

Preface

This book is a testament to collaboration. About five years ago, it became clear to several of us—at the University of Cambridge, Harvard Law School, and the University of Toronto—that we might accomplish more by working together, across institutions and continents, than we could by going it alone. Since that time, the Oxford Internet Institute has joined our team, along with more than fifty researchers around the globe. Collaboration is not easy; we have had our share of struggles along the way to keep our partnership functioning effectively. Neither the analytical chapters of this volume nor the new global data set that we have compiled, on which our analytical work relies, would be possible without the partnership that joins us.

The insight that brought us together as collaborators was the sense that the architecture of the Internet was changing rapidly—and that these changes would have far-reaching implications. One of the forces at work is that states are using technical means, in addition to other kinds of controls, to block access to sites on the Web that their citizens seemed to wish to access. We set out, together, to enumerate these technical restrictions as they emerged, to track them over time and across states and regions, and to set them into a broader context. Though we have published many of our findings to our Web site (<http://www.opennet.net>) and will continue to do so, this book is our first effort to tie the many strands of our shared work together into a single fabric.

Just as we shared a sense of the importance of this area of inquiry, we realized also that this phenomenon could not properly be understood without bringing to bear a series of academic disciplines to analyze it and to set it into a fulsome context. The way we have approached our work, which begins with technical enumeration, required technologists among us to develop a new methodology for testing for choke points in the Internet. Political scientists and international relations theorists hold another piece of the puzzle, as do those with expertise in regional studies. Those of us who study and practice international law and how it relates to information technologies understand another part of the whole. Our shared view is that interdisciplinary research is the only way truly to understand our field in all its complexity.

Most important of all, there are those people on the ground, in the places where the state is seeking to impose control over the Internet, who have shed particular light upon what is happening in the places we are studying. Many of these people take risks every day in the interest of promoting human rights, the rule of law, and other universally good causes. Many of these people have put themselves in harm's way, in one fashion or another, to help make this book

possible. It is to these heroes, scattered about the globe and about the Internet, that we dedicate this book.

Many good people deserve explicit acknowledgement for their contribution to this book. We each have been blessed by extraordinary teams at our respective institutions and our networks in the field. Some of these contributors are not listed here, at their request; they know who they are.

The Advanced Network Research Group at the Cambridge Security Programme could not have done its work without the support of some key individuals within the University. Rafal Rohozinski, the director of the research effort and ONI Principal Investigator, would like to thank Professors James Mayall and Christopher Hill at the Centre of International Studies, who made available the fellowship under which much of the ONI's work over the past three years took place. Professor Yezid Sayegh was key to paving the way for the project and has been a constant supporter of the work, providing intellectual insight and encouragement. Peter Cavanaugh, the executive director of the Cambridge Security Programme, and Leslie Fettes were patient and willing to provide support, even when we were forced, by necessity, to make payments to our partners in the Commonwealth of Independent States and Middle East via transfers to questionable financial institutions or, at times, in small currency stuffed into plain paper envelopes. Professor Ross Anderson, and the Security Group at the Cambridge Computer Laboratory, was extraordinarily supportive and brought to our project Dr. Steven Murdoch, who has gone on to become the ONI's chief technology officer. Steven's quiet and diligent manner has led to some of the ONI's more interesting findings, and he continues to spearhead the development of tools and methods that will keep our work ahead of the emerging trends.

The work done by Cambridge in mapping and contextualizing emerging information controls in the Commonwealth of Independent States could not have happened without special partnership with the Eurasia I-Policy Network (EIPN), in particular its dynamic regional coordinator Tattu Mambetalieva (Kyrgyzstan). Under Tattu's leadership, EIPN members, who represent NGOs from nine CIS countries, went well beyond the requirements of the yearbook and engaged policymakers, security actors, academia, and businessmen in examining the emerging governance and policy of the Internet in their countries. Their commitment not only led to great research but also helped reverse policies in some countries. Some unfortunately paid the price for speaking too loudly; during the course of our work over the past three years, members of our team have been harassed, arrested, and in one case died under questionable circumstances. Special mention goes out to our country coordinators, only some of whom we can name: Emin Akhndov (Azerbaijan), Vadim Dryganov (Belarus), Alexsei Marcuic and Vladislav Spirlenko (Institute for Information Policy, Moldova), Dr. Alexandra Belyaeva (Russian Federation), and Andriy Paziuk (Privacy Ukraine). For those whom we cannot, thanks

goes out to the Civil Initiative for Internet Policy in Kazakhstan and the public foundation “GIPI” in Tajikistan. Extraspecial mention goes out to our team in Uzbekistan, who toil under great personal risk and in total anonymity. Cambridge and EIPN also are supported by a fantastic in-field administration and technology team from the Civil Initiative for Internet Policy in Kyrgyzstan, who make working in the CIS seem easy: Alexsei Bebinov, Lira Samykbayeva, and Zlata Shramko.

Cambridge also would like to recognize the engagement of the Institute of Information Security Problems, Moscow State University, for its willingness to engage with the Advanced Network Research Group around two NATO-sponsored roundtables examining Internet controls, and to bring to the table representatives from the Russian National Security Council as well as major security organizations and businesses. This engagement has started an important public-policy process around these critical issues between representatives of Russian state institutions, business, and civil society.

In the Middle East, Cambridge partnered with Palestinians and Israelis to conduct testing in what can be termed “a highly complex political and security environment.” Special thanks go out to Dr. Michael Dahan (Hebrew University) for his insights on Israeli information society. Especial thanks to our Palestinian partners, Engineer Wassim Abdullah, Dr. Mashour Abudaka, His Excellency Dr. Sabri Saidam, and Sam Bahour and the technical staff at the Centre for Continuing Education, Bir Zeit University, without whom the work in the West Bank and Gaza would not have been possible.

Finally, the Cambridge team benefited from some excellent past and present researchers: Dr. David Mikosz, Deirdre Collings, and Joanna Michalska, all of whom undertook much of the grounded foundational research upon which our present work in the CIS and Middle East depends.

Dr. Robert Faris at the Berkman Center for Internet & Society at Harvard Law School has led the research staff, at Harvard Law School and also across all institutions, with grace and poise. Rob deserves as much credit as anyone for the quality and integrity of the research that underlies this work, as well as for a great deal of the text in this book.

Rob Faris has been joined and supported by an unusually strong group of research fellows on the Berkman Center’s team. Among these Berkman fellows, Derek Bambauer, now a law professor, stands out. Derek spent more than two years, as a student and as a research fellow, developing the methodology, gathering earlier versions of these data, and drafting reports that form the core of much of what we conclude in this book. Jeffrey Engerman, now a lawyer in private practice, contributed a great deal of wisdom as to our methods and the way we handle and analyze our data. Derek and Jeff also coordinated a generation of research assistants who helped us to produce the first versions of many of the state-specific reports on which our work is grounded. Stephanie Wang, a terrific lawyer and researcher, brought exceptional regional understanding to our work in East Asia. Vesselina Haralampieva

lent similar expertise to our work in the region encompassing the Commonwealth of Independent States. Helmi Noman and Elijah Zarwan ably led our work in the Gulf and North Africa regions, respectively. Our partners in the Cyberlaw and International Human Rights Clinics at Harvard Law School—fellows Phil Malone, Matt Lovell, and Bonnie Docherty, and Professor Jim Cavallaro—have co-led missions with exceptional students from our respective clinics to Southeast Asia and Russia as we gathered data for this project.

An extraordinary cadre of student researchers from Harvard Law School and the surrounding academic community has been responsible for pulling together much of the detail that has gone into this project. Kevin O'Keefe, a graduate student in East Asian studies, is first among equals. The first student to work on Internet filtering at the Berkman Center, Benjamin Edelman, now a professor at Harvard Business School, deserves thanks for his important role in the early days of this research.

The country profiles were produced under the guidance and authorship of principal investigator Rafal Rohozinski and Vesselina Haralampieva for the Commonwealth of Independent States, Helmi Noman and Elijah Zarwan for the North Africa and Middle East region, and Stephanie Wang and Kevin O'Keefe for Asia. Many people contributed to the research, writing, and editing of these profiles, including: James Ahlers, Aisha Ahmad, Anna Brook, Chris Conley, Evan Croen, Matthieu Desruisseaux, Charles Frentz, Anthony Haddad, Christina Hayes, Joanna Huey, Samuel Hwang, Sajjad Khoshroo, Jehae Kim, Saloni Malhotra, Katie Mapes, Miriam Simun, Tobias Snyder, Elisabeth Theodore, and Christina Xu. The following individuals made important contributions to the research in the field: Shahzad Ahmad, Shanti Alexander, Tatyana Bezuglova, Srijana Bhattarai, Alexander Blank, Matt Boulos, Xiao Wei Chen, Yee Yeong Chong, Lino Clemente, Kathleen Connors, Peter Daignault, Shubhankar Dam, Elliott Davis, Siddharth Dawara, Charles Duan, Bipin Gautam, Nah Soo Hoe, Tina Hu, Ang Peng Hwa, Mary Joyce, Randy Kluver, David Levenson, Eitan Levisohn, Saloni Malhotra, Efrat Minivitski, Ron Morris, Caroline Nellemann, Jeff Ooi, Sai Rao, David Rizk, Sajan Sangraula, Katie Smith, Amine Taha, Lokman Tsui, Allison Turbiville, Neha Viswanathan, Dinesh Wagle, Sally Walkerman, Naaman Weiss, Aaron Williamson, K. H. Yap, and Jeffrey Yip. We are grateful to those who took the time to read and comment on our work, including: Markus Breen, Silke Ernst, Peyman Faratin, Daniel Haeusermann, Nancy Hafkin, Luis Muñoz, Eric Osiakwan, Russel Southwood, and James Thurman. We also would like to offer our thanks to the following individuals for their valuable guidance and help with our research: Ananta Agrawal, Roby Alampay, Cherian George, Tyler Giannini, Chandrachoodan Gopalakrishnan, Rishikesh Karra, Sudhir Krishnaswamy, Arun Mehta, Parishi Sanjanwala, Xiao Qiang, and Zaw Zaw.

Hope Steele expertly edited each of the country profiles and regional overviews for this book with great care, grace, and patience. Ha Nguyen designed the country profiles and regional overviews, performing multiple miracles on short notice with true poise and artistic skill.

A number of people participated in the writing, editing, research, and testing anonymously. We undoubtedly have not included others who deserve our thanks.

The Berkman Center's work on this project drew upon many within the Berkman Center's community for whom the OpenNet Initiative is not their sole obsession. Colin Maclay, the Center's managing director, contributed both substantive insights and a steady hand. Catherine Bracy and Seth Young, with the backing of the Center's wonderful administrative staff, kept the relevant trains running on time, despite plenty of events that could have thrown off the rails. Andrew Heyward, Peter Emerson, Evan Croen, Amanda Michel, Andrew Solomon, and Patrick McKiernan—along with a group of volunteer advisors—have assisted us in shaping the way that we communicate the findings of our study. Wendy Seltzer and Urs Gasser, fellows of the Center and also professors of law, each challenged our thinking at many stages of this research and offered helpful feedback on various drafts that became parts of this book. Research fellows Ethan Zuckerman, Michael Best, David Weinberger, and Rebecca MacKinnon (now a professor of journalism) went out of their way, as did many other Berkman fellows, to lend hands and contacts, along with welcome critiques of our methods and our conclusions. A group of our colleagues from around Harvard (Joseph Nye) and at neighboring MIT (Eric von Hippel) also reviewed drafts and participated in an informal peer review session. We also have learned much from the participants in the global process to develop a set of ethical guidelines for corporations operating in regimes that practice censorship and surveillance. Dunstan Hope and Aron Cramer of Business for Social Responsibility; Leslie Harris of CDT; Andrew McLaughlin and Bob Boorstin of Google; Michael Samway of Yahoo!; Ira Rubinstein of Microsoft; Orville Schell, Xiao Qiang, Deirdre Mulligan, and Roxanna Altholz at the University of California-Berkeley; and others have offered valuable commentary and guidance.

Jonathan Zittrain and I thank especially our faculty colleagues associated with the Berkman Center and Harvard Law School, who in many respects are the reasons we do what we do for a living. We are grateful to Charlie Nesson, the founder of the Berkman Center; Terry Fisher, the Center's faculty director; Jack Goldsmith, one of the most insightful contributors to our field; Larry Lessig, whose ideas about the regulation of cyberspace through code infuse all our work; and Yochai Benkler, who keeps reminding us why this all matters.

At the Oxford Internet Institute at the University of Oxford, Sangamitra Ramachander contributed helpful research assistance, and Bill Dutton and the Institute's research staff participated in a number of workshop sessions that helped us test and refine our hypotheses. The Institute generously has hosted two ONI-related conferences, and its investment of intellectual capital in the project is much appreciated.

At the Citizen Lab at the Munk Centre at the University of Toronto, a dynamic team of extraordinary "hacktivists" has contributed immensely to the technical and other research work of the ONI. Nart Villeneuve's pioneering methods of remote network interrogation laid the basis for the ONI's technical methodology. His dogged pursuit of network anomalies, questionable practices, and seemingly intractable problems helps drive the engine of the ONI on a daily basis. Michelle Levesque worked alongside Nart in the early years of the ONI to develop and refine the ONI's suite of testing tools. Both of them have approached their responsibilities

with great enthusiasm and spirit to hunt down and document patterns of Internet content filtering and surveillance worldwide. They are truly Net Ninjas.

As a Citizen Lab senior research fellow responsible for the ONI's "deep dives" into Asia, Dr. Francois Fortier has helped convene and lead a dynamic group of researchers in the region. Although relatively new to the project, his tremendous organizational and intellectual skills already have contributed invaluable, and we look forward to his ongoing and expanding role in the project in the years to come.

Over the years, numerous programmers and researchers have worked at the Citizen Lab, bringing ingenuity and dogged determination to the ONI's forensic investigations. These include, in no particular order, Graeme Bunton, Sarah Boland, James Nicholas Tay, Eugene Fryntov, Anton Fillipenko, Michael Hull, Pat Smith, Tim Smith, Oliver Day, Julian Wolfson, Stian Haklev, Konstantin Kilibarda, David Wade-Farley, Peter Wong, and Liisa Hyyrylainen.

Jane Gowan, of Agent5 design, has brought her remarkable creativity and artistic sensibilities to help enrich and enliven the ONI's presentation of its work, including our 2006 poster of Internet censorship, many of the graphics and other visualizations included herein, and the striking cover art that frames this volume. Her professionalism, enthusiasm and creativity are much appreciated.

As Director of the Citizen Lab, Ron Deibert would like to thank the staff at the Munk Centre for International Studies for providing such a supportive environment for the Lab and the ONI's research activities, in particular its director, Janice Stein, and Marketa Evans, Wilhelmina Peters, and Penny Alford, as well as the Munk Centre's technical support staff. Thanks also to the University of Toronto's Computing and Network Services, in particular Eugene Sicunius, for tolerating and supporting our (at times) unconventional methods.

As the list of the contributors makes plain, the OpenNet Initiative is an expensive project to operate. There would be no global data set and no book were it not for the vision of our program officers and the willingness to take risks of the boards of their foundations. We owe deep thanks to all at the John D. and Catherine T. MacArthur Foundation for a multiyear, \$3 million grant that has provided the bulk of the funding for this book project. In particular, the foundation's president, Jonathan Fanton, its vice president Elspeth Revere, and program officer John Bracken have provided invaluable counsel and, of course, financial support. The Open Society Institute of the Soros Foundation provided the ONI its first grant; it was Jonathan Peizer, then the OSI's chief technology officer, who connected us—fittingly enough, by e-mail—in the first place. Darius Cuplinskas and Vera Franz of the OSI's Information Program have earned our unending thanks for their loyal support of the ONI and its work. Ron Deibert and Rafal Rohozinski owe an enormous debt of gratitude to Anthony Romero and the Ford Foundation for seed funding that helped contribute to the realization of the Citizen Lab and the Advanced Network Research Group. We are very grateful to the International Development Research Centre (IDRC) of Canada for providing funding for ONI's continuing engagement in

the Asia, Africa, and Middle East regions, and support for the ONI's mapping and other visualization projects.

Most of all, we each thank our families and friends who have supported us as we have traveled the world to compile these data and spent long hours away in writing them up.

John G. Palfrey

on behalf of the OpenNet Initiative Principal Investigators

OpenNet Initiative

opennet.net

Citizen Lab, Munk Centre for International Studies, University of Toronto

Berkman Centre for Internet & Society, Harvard Law School

Advanced Network Research Group, Cambridge Security Programme, University of Cambridge

Oxford Internet Institute, Oxford University

