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IGCC 2014 Annual Report

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Institute on Global Conflict and Cooperation

Publication Date

2014



IGCC



2014

YEAR IN REVIEW

FOUNDED IN 1983 BY HERB YORK

IGCC ADDRESSES GLOBAL CHALLENGES TO PEACE AND PROSPERITY THROUGH ACADEMICALLY RIGOROUS, POLICY-RELEVANT RESEARCH, TRAINING, AND OUTREACH ON INTERNATIONAL SECURITY, ECONOMIC DEVELOPMENT, AND THE ENVIRONMENT.

IGCC BRINGS SCHOLARS TOGETHER ACROSS SOCIAL SCIENCE AND LAB SCIENCE DISCIPLINES TO WORK ON TOPICS SUCH AS REGIONAL SECURITY, NUCLEAR PROLIFERATION, INNOVATION AND NATIONAL SECURITY, DEVELOPMENT AND POLITICAL VIOLENCE, AND CLIMATE CHANGE.





2014 was another busy and productive year for IGCC. We have looked at our current mission, messaging, and programs to make sure they align with emerging research areas, the priorities of the University of California, UC San Diego, and funders' interests. This has led to an even more successful and lean organization, funded almost entirely by extramural contracts and grants.

The three main research branches of IGCC—security, development and conflict, and environment and health—continue to be complemented by training and outreach activities. In 2014 we covered topics such as international science and technology policy, defense innovation, development in conflict zones, resilience and disaster preparedness, high-performance computing, and climate change, in 18 conferences, dialogues, and workshops, two multi-week summer training programs, and a number of lectures and briefings, serving more than a thousand participants.

In July, we held our tenth Public Policy and Nuclear Threats (PPNT) summer boot camp at UC San Diego. There are now nearly 220 alumni from this program who form a network of experts that spans the globe. We also held our fifth summer training course on Chinese security and technology, one of the many activities of IGCC's Project on the Study of Innovation and Technology in China (SITC).

In September, we held our 24th Northeast Asia Cooperation Dialogue, one of the most highly-regarded Track II forums for discussion on regional security issues among government officials and academic specialists.

IGCC hosted two conferences in May 2014 on the influences of environmental quality and climate on human capital, which is widely viewed as playing an essential role in the creation of wealth and economic growth. The first, Climate Change, Disease Ecology, and Social Impacts, brought together scholars with expertise on weather-sensitive disease vectors, social scientists who study public health and climate impacts, and atmospheric scientists with expertise on regional and global climate change, to explore the biological dynamics of diseases such as malaria. The second meeting of the UC-wide Working Group on Environment and Human Capital focused on similar issues but with an emphasis on Latin America.

In December, IGCC hosted Dr. Irwin Jacobs, co-founder and former CEO of Qualcomm, who gave the fourth Herb York Memorial Lecture. This signature event helps IGCC commemorate its history and the many roles played by our first director, Dr. Herbert F. York: renowned physicist and Manhattan Project participant; first director of Lawrence Livermore National Laboratory; first chief scientist of the Advanced Research Projects Agency (later DARPA); and first chancellor of UC San Diego.

IGCC continues to be highly successful at capturing federal research dollars. Significant recent awards include another grant from the Minerva Research Initiative for the Deterrence with Proxies project led by Research Director Eli Berman. To date, IGCC has won five Minerva awards worth more than \$20 million, more than any other university in the United States and abroad.

In the 2013 Minerva cycle, IGCC received an award for Deterring Complex Threats: The Effects of Asymmetry, Interdependence, and Multi-polarity on International Strategy, led by Erik Gartzke and IGCC researcher Jon Lindsay.

Our 2009 Minerva projects (SITC and Terrorism, Governance, and Development), which come to a close in 2015, have been major successes, especially in their research and policy impact within the Department of Defense and other parts of the federal government. Our 2011 Minerva project Quantifying Structural Transformation in China, led by David Meyer, will wrap up with a conference in February 2015.

Our research output has significantly expanded since 2009, when we won the first of our Minerva Research Initiative awards. The number of research publications has more than doubled, and we continue to find outlets for IGCC research in leading peer-reviewed journals and at university presses.

This year marked publication of the first of a series of edited volumes planned as output from the SITC project: *Forging China's Military Might: A New Framework for Assessing Science, Technology, and the Role of Innovation* (Johns Hopkins University Press, 2014). This book came out of workshops funded by SITC.

We also supported the research behind a special issue of the *Journal of Conflict Resolution* (vol. 58, no. 3, April 2014) titled "Nuclear Posture, Nonproliferation Policy, and the Spread of Nuclear Weapons," edited by Erik Gartzke and Matthew Kroenig. The issue featured contributions by seven alumni of our PPNT program: Phillip Bleek, Robert Brown, Jeff Kaplow, Matthew Kroenig, Rupal Mehta, and Neil Narang.

The volume *China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain*, edited by Jon Lindsay, Tai Ming Cheung, and Derek Reveron, will be published by Oxford in March 2015.

Finally, IGCC awarded more than \$760,000 in system-wide graduate student fellowships and faculty grants in 2013-14 and 2014-15.

- 2013-14 cohort: Fourteen York Global Security Dissertation Fellows and three NSSC Fellows joined a group of more than 500 past awardees. We also funded faculty projects at UC Berkeley, UC Santa Barbara, and UC Merced.
- 2014-15 cohort: IGCC awarded 10 IGCC dissertation fellowships, 10 York Global Security dissertation fellowships, and 1 NSSC fellowship.

As part of their fellowships, the York Global Security Fellows present at a symposium at one of the national laboratories. The first of these was held at Lawrence Livermore National Laboratory and featured panels on nontraditional security issues; laws of war and twenty-first century security threats; democracy, trade, and major power relations; and emerging security threats and the environment. Fellows presented their dissertation topics, and in some cases, their preliminary research, to an audience of UC faculty, lab researchers, and their peers, and they received valuable feedback that will inform how they approach their projects as they go forward. The 2015 symposium will be hosted by Los Alamos National Laboratory.

The partnership between IGCC and the Livermore and Los Alamos National Laboratories cultivates young experts on global security, leading to a new generation of national and international security researchers and policy leaders. Such partnerships are a stellar example of how IGCC bridges the divides between the academic, technical, and policy worlds through its research-based work and insights.

Tai Ming Cheung
Director, IGCC

DIRECTOR'S REPORT

CORE RESEARCH TEAM



TAI MING CHEUNG

IGCC DIRECTOR

Tai Ming Cheung is the director of IGCC and leader of IGCC's Minerva project "The Evolving Relationship Between Technology and National Security in China: Innovation, Defense Transformation, and China's Place in the Global Technology Order." Cheung is a long-time analyst of Chinese and East Asian defense and national security affairs. He was based in Asia from the mid-1980s to 2002 covering political, economic, and strategic developments in greater China. He received his PhD from the War Studies Department at King's College, London University in 2006. His latest book, *Fortifying China: The Struggle to Build a Modern Defense Economy*, was published by Cornell University Press in 2009. Cheung is an associate professor in residence at the School of International Relations and Pacific Studies at UC San Diego, where he teaches courses on Asian security and Chinese security and technology.

ELI BERMAN

RESEARCH DIRECTOR FOR INTERNATIONAL SECURITY STUDIES

Eli Berman is a professor of economics at UC San Diego and a research associate at the National Bureau of Economic Research. His research interests include economic development and conflict, the economics of religion, labor economics, technological change, and economic demography. His latest publications are "Modest, Secure and Informed: Successful Development in Conflict Zones," (with Joseph Felter, Jacob Shapiro and Erin Troland in the *American Economic Review Papers and Proceedings*, 2013) and "Can Hearts and Minds be Bought? The Economics of Counterinsurgency in Iraq" (with Jacob Shapiro and Joseph Felter, *Journal of Political Economy*, 2011). Recent grants supporting his research have come from the Department of Defense, Department of Homeland Security, and the National Science Foundation. His book *Radical, Religious, and Violent: The New Economics of Terrorism* was published in 2009 by the MIT Press. Berman received his PhD in economics from Harvard University.

JOSHUA GRAFF ZIVIN

RESEARCH DIRECTOR FOR INTERNATIONAL ENVIRONMENTAL AND HEALTH POLICY

Joshua Graff Zivin is professor of economics at UC San Diego, where he holds faculty positions in the School of International Relations and Pacific Studies and the Department of Economics. He is also a research associate at the National Bureau of Economic Research. In 2004–2005, he served as senior economist for health and the environment on the White House Council of Economic Advisers. Prior to joining UC San Diego in 2008, he was an associate professor of economics at Columbia University, where he directed the PhD program in a sustainable development. Graff Zivin has published numerous articles on a wide range of topics in top economic, policy, and medical journals. His research focuses on health, environment, and development economics, frequently at their areas of intersection. He received his PhD in agricultural and resource economics from UC Berkeley.

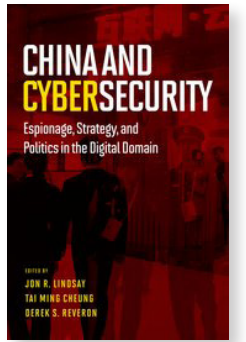


PUBLICATION HIGHLIGHTS

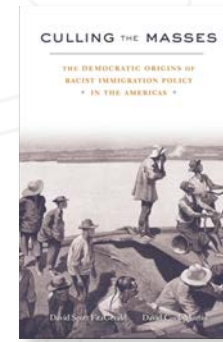


Forging China's Military Might: A New Framework for Assessing Science, Technology, and the Role of Innovation
Tai Ming Cheung
Johns Hopkins University Press, 2014

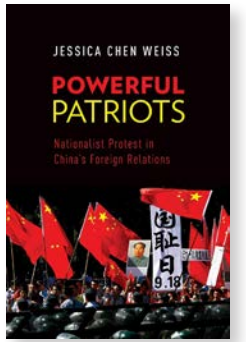
China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain
Jon Lindsay, Tai Ming Cheung, and Derek Reveron, editors
Oxford University Press, 2015



Culling the Masses: The Democratic Origins of Racist Immigration Policy in the Americas
David Scott FitzGerald*
Harvard University Press, 2014



Powerful Patriots: Nationalist Protest in China's Foreign Relations
Jessica Chen Weiss**
Oxford University Press, 2014



CHAPTERS

Tai Ming Cheung, "Strategic Latency with Chinese Characteristics: The Quest to Realize Its Strategic Potential in the 21st Century," in *Strategic Latency and World Power: How Technology Is Changing Our Concepts of Security*, edited by Zachary Davis, Michael Nacht, and Ronald Lehman (Livermore, CA: Lawrence Livermore National Laboratory, 2014)

Robert L. Brown+, and Jeffrey M. Kaplow+. "Talking Peace, Making Weapons: IAEA Technical Cooperation and Nuclear Proliferation." *Journal of Conflict Resolution* 58 (3): 402–28.

JOURNAL ARTICLES

Michael Callen, Mohammad Isaqzadeh, James D. Long,** and Charles Sprenger. "Violent Trauma and Risk Preference: Artefactual and Experimental Evidence from Afghanistan." *American Economic Review* 104, No. 1 (2014): 123–48.

Philipp C. Bleek+ and Eric B. Lorber. "Security Guarantees and Allied Nuclear Proliferation." *Journal of Conflict Resolution* 58 (3): 429–54.

Jesse Driscoll and Nicholai Lidow. "Representative Surveys in Insecure Environments: A Case Study of Mogadishu, Somalia." *Journal of Survey Statistics and Methodology* 2, No. 1 (2014): 78–95.

Matthew Fuhrmann and Todd S. Sechser. "Nuclear Strategy, Nonproliferation, and the Causes of Foreign Nuclear Deployments." *Journal of Conflict Resolution* 58 (3): 455–80.

Josh Graff Zivin and Matthew Neidell. "Temperature and the Allocation of Time: Implications for Climate Change," *Journal of Labor Economics* 32 (2014): 1–26.

Erik Gartzke, Jeffrey M. Kaplow+, and Rupal N. Mehta+. "The Determinants of Nuclear Force Structure" *Journal of Conflict Resolution* 58 (3): 481–508.

Jon R. Lindsay. "The Impact of China on Cybersecurity: Fiction and Friction." *International Security* 39, No. 3 (2014/15).

Michael C. Horowitz and Neil Narang+. "Poor Man's Atomic Bomb? Exploring the Relationship between "Weapons of Mass Destruction." *Journal of Conflict Resolution* 58 (3): 509–35.

Jon R. Lindsay and Lucas Kello. "Correspondence: A Cyber Disagreement." *International Security* 39, No. 2 (2014): 181–92.

WORKING PAPERS

Eli Berman, Joseph H. Felter, Ethan Kapstein, and Erin Troland**. "Predation, Taxation, Investment, and Violence: Evidence from the Philippines." Working paper, October 2014.

JOURNAL SPECIAL ISSUE

Erik Gartzke and Matthew Kroenig+, eds. "Nuclear Posture, Nonproliferation Policy, and the Spread of Nuclear Weapons." *Journal of Conflict Resolution* 58 (3), April 2014.

Erik Gartzke and Jon Lindsay. "Weaving Tangled Webs: Offense, Defense, and Deception in Cyberspace." Working paper, May 2014. Forthcoming in *Security Studies*.

ARTICLES

Erik Gartzke and Matthew Kroenig+. "Nuclear Posture, Nonproliferation Policy, and the Spread of Nuclear Weapons." *Journal of Conflict Resolution* 58 (3): 395–401.

IGCC PUBLICATIONS

Kevin Pollpeter, ed. *Getting to Innovation: Assessing China's Defense Research, Development, and Acquisitions System* (IGCC, January 2014). This annual publication from the SITC project contains 12 research briefs.

*IGCC faculty grant recipient.
**IGCC dissertation fellow.
+PPNT alumni.

FELLOWSHIPS

2014–15 DISSERTATION FELLOWS

Since 1984, IGCC has provided more than 550 fellowships to University of California graduate students. We are proud to support:

HERB YORK GLOBAL SECURITY FELLOWS

Ingrid Behrsin, Geography Graduate Group, UC Davis
Cecilia Farfan-Mendez, Political Science, UC Santa Barbara
Hernan Flom, Political Science, UC Berkeley
Galen Jackson, Political Science, UCLA
Jason Klocek, Political Science, UC Berkeley
R. Blake McMahon, Political Science, UC San Diego
Michael Prather, Political Science, UC Riverside
Zachary Steinert-Threlkeld, Political Science, UC San Diego
Erin Troland, Economics, UC San Diego

IGCC DISSERTATION FELLOWS

Elaine Denny, Political Science, UC San Diego
Ryan Donaghy, Education, UCLA
Tarek Ghani, Haas School of Business, UC Berkeley
Ming-chieh Kuo, Political Science, UC San Diego
Henry Maar, History, UC Santa Barbara
Sergio Montero, City and Regional Planning, UC Berkeley
Eduardo Montoya, Agricultural and Resource Economics, UCB
Lauren Peritz, Political Science, UCLA
Amy Rothschild, Anthropology, UC San Diego
Johanna Solomon, Political Science, UC Irvine

NUCLEAR SCIENCE AND SECURITY CONSORTIUM FELLOW

Kalee Hammerton, Chemistry, Michigan State

HONORING OUR FOUNDER THROUGH THE HERB YORK MEMORIAL LECTURE AND FELLOWSHIP

This signature IGCC event honors the memory of Dr. Herbert Frank York (1921–2009) and his many contributions to UC San Diego and the nation.

Dr. Irwin Jacobs, former CEO of Qualcomm, spoke to a packed house in early December at the Herb York Memorial Lecture. His talk on “Research Universities, Industry, and Innovation” was the fourth in an annual series honoring IGCC’s founder.

The public lecture, generously supported by the York family, brings the insights of experts in science, technology, and innovation to a San Diego audience. The first such event featured Zachary Lemnios, Assistant Secretary of Defense for Research and Engineering, who spoke on U.S. defense research and development from the 1950s to the present. The featured speaker at the second lecture was Penrose Albright, then director of Lawrence Livermore National Laboratory. Arati Prabhakar, the director of the Defense Advanced Research Projects Agency (DARPA) gave the third lecture, outlining DARPA’s mission in a changing technology environment.

The Herb York Fellowship was also announced at the 2014 lecture.

Events

Dec. 16, 2014

Fourth Herb York Memorial Lecture

Dr. Irwin Jacobs



Lecture Audience



Tai Ming Cheung



Rachel York



Chancellor Pradeep Khosla



Speaker, Dr. Irwin Jacobs

COLLABORATION

IGCC has a long history of collaboration with the Lawrence Livermore (LLNL) and Los Alamos (LANL) National Laboratories. Laboratory scientists and engineers draw on the expertise of UC social scientists to provide insight into the international, institutional, behavioral, and historical context for their own technical studies. IGCC benefits from the science and technical expertise of its lab partners, particularly in the areas of nuclear security, high-performance computing, and cybersecurity.

The connection with graduate training is especially strong. Many alumnae of IGCC's Public Policy and Nuclear Threats training program were interns at LLNL or LANL during their years of graduate study. In addition, IGCC, LLNL, and LANL were awarded a \$1.2 million UC Office of the President grant to provide graduate fellowships. The next cohort of Herb York Global Security Fellows will be selected in May 2015.

Also in May, LANL will host the second symposium for Herb York Global Security Fellows, building on the highly successful event hosted by LLNL. The symposium gives fellows an opportunity to present to an audience of peers, lab scientists, and UC faculty from outside of their institutions and to tour some of the labs' secure facilities.

WITH THE NATIONAL LABORATORIES

IGCC provides a new generation of specialists with the science and policy background needed to handle nuclear issues inside and outside of government and the national laboratories



2014 PPNT Participants

Events

July 6–16, 2014
Public Policy and Nuclear Threats Boot Camp,
La Jolla, California

Established in 2004 with the support of the National Science Foundation, the Public Policy and Nuclear Threats (PPNT) program is innovative both in its structure and in the impressive combination of participating experts and fellows. The program contributes to the creation of a new generation of specialists with the science and policy background required for dealing with critical, evolving, nuclear policy issues confronting government and the national laboratories. Its foundation is the summer training "boot camp," where fellows learn from top policy and academic experts. PPNT provides a multidisciplinary policy classroom for both lab science and social science students and professionals, and boasts a network of nearly 220 alumni.

IGCC is also a member of the Nuclear Science and Security Consortium (NSSC), a network coordinating coursework and experience from student to scientist to identify and educate laboratory-integrated nuclear experts. NSSC support has provided training for 17 PPNT fellows, 9 nuclear security fellowships to support student research, and programming and research collaboration grants to support 3 faculty projects across the University of California.

The tenth summer boot camp at UC San Diego provided 23 social science and science participants with formal and informal discussions with senior nuclear policy mentors such as PPNT's expert-in-residence Ambassador Linton Brooks. Students attended talks given by distinguished researchers,

academics, policy officials, and specialists from the University of California system and other leading universities, the National Security Council, the International Atomic Energy Agency, and federal government agencies such as the Office of Global Strategic Affairs, Department of Defense. The national labs were represented by scientists from the Idaho, Lawrence Livermore, and Los Alamos National Laboratories. The student participants came from a range of departments, including nuclear physics, nuclear and radiation chemistry, nuclear engineering, radiochemistry, history, peace and conflict studies, political science, and government studies.

One of the highlights of the 2014 boot camp was a showing of a feature-length documentary about renowned physicist Dr. Richard Garwin, who has promoted ethics in science and diplomacy to prevent the misuse of nuclear weapons. Garwin, who has advised every U.S. president since Eisenhower, was present at the event, and students were able to interact with him during the Q&A and the reception.

The eleventh summer boot camp at UC San Diego will be held in June 2015.



**PUBLIC POLICY AND
NUCLEAR THREATS
AFFECT ALL OF US**

KEEPING AN EYE ON THE ENVIRONMENT AND HEALTH IN A GLOBAL CONTEXT

BECAUSE WE DON'T HAVE TO BE TOTALLY UNPREPARED

Over the years, the focus of IGCC's environmental policy program has expanded to include the health/environment nexus while acknowledging the importance of global health as a concern in its own right. Led by Research Director Joshua Graff Zivin, the program's current research covers transboundary fisheries management, pollution and environmental health, and a range of issues related to climate change.

The latest fisheries workshop took place in Barcelona and was focused on transferring fisheries capacity from developed to developing countries.

IGCC'S RESEARCH ON INTERNATIONAL ENVIRONMENTAL POLICY AND HEALTH ISSUES ACKNOWLEDGES THEIR INHERENTLY TRANSBOUNDARY NATURE

With support from the UC Office of the President, IGCC and the School of International Relations and Pacific Studies at UC San Diego hosted an interdisciplinary conference in May on the impacts of climate on disease vectors. The meeting brought together scholars with expertise on weather-sensitive disease vectors, social scientists who study public health and climate impacts, as well as atmospheric scientists with expertise on regional and global climate change to take stock of the state

of knowledge around models linking ecology and disease. They hope to articulate a research agenda that will address gaps in our understanding of the biological dynamics of various diseases.

Also in May, IGCC hosted the second meeting of the Climate, Environment, and Human Capital Working Group established in 2012. While the impacts of adverse environmental conditions on health are reasonably well understood, the evidence on other aspects of human capital as well as behavioral responses to mitigate these impacts is limited. The Working Group began a dialogue to help advance this emerging area of research. The 2014 meeting brought researchers from Latin America to join the dialogue.

Events

May 1-2, 2014
Climate Change, Disease Ecology, and Social Impacts Conference, La Jolla, California

May 16-17, 2014
Second Workshop on Environment and Human Capital, La Jolla, California

Health, Energy, and Extreme Events in a Changing Climate
December 6-9, 2014
Bad Honnef, Germany

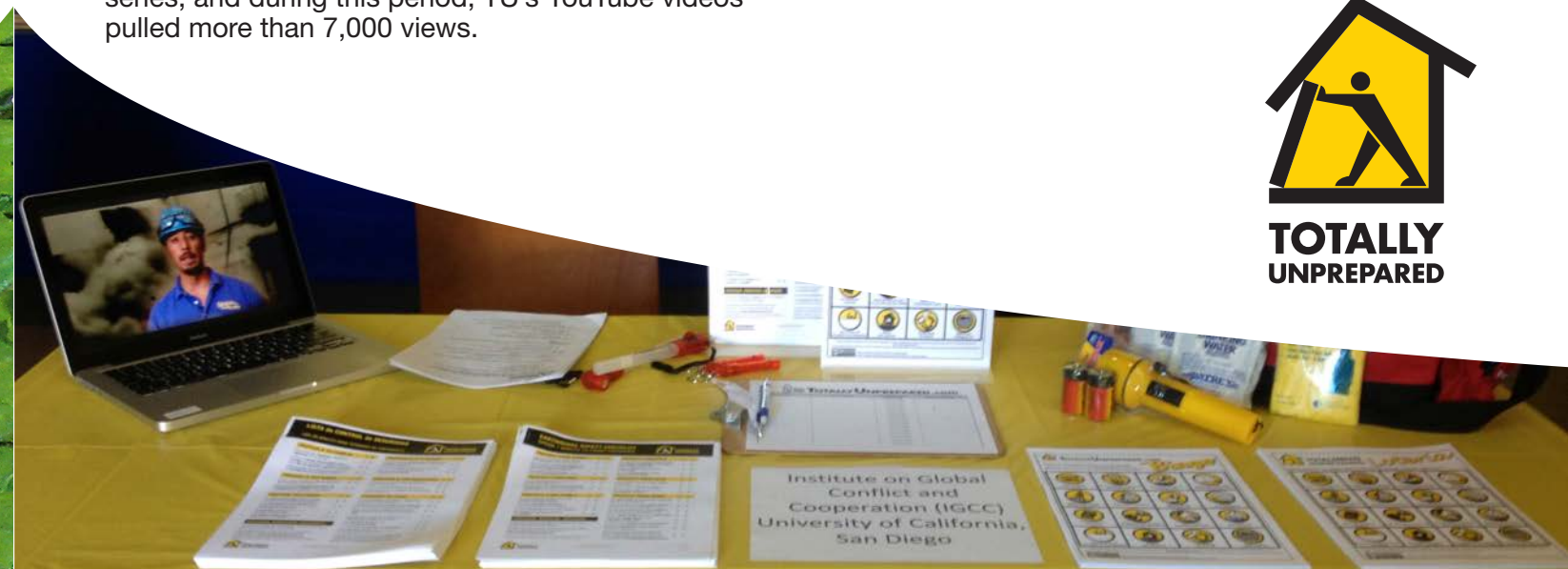
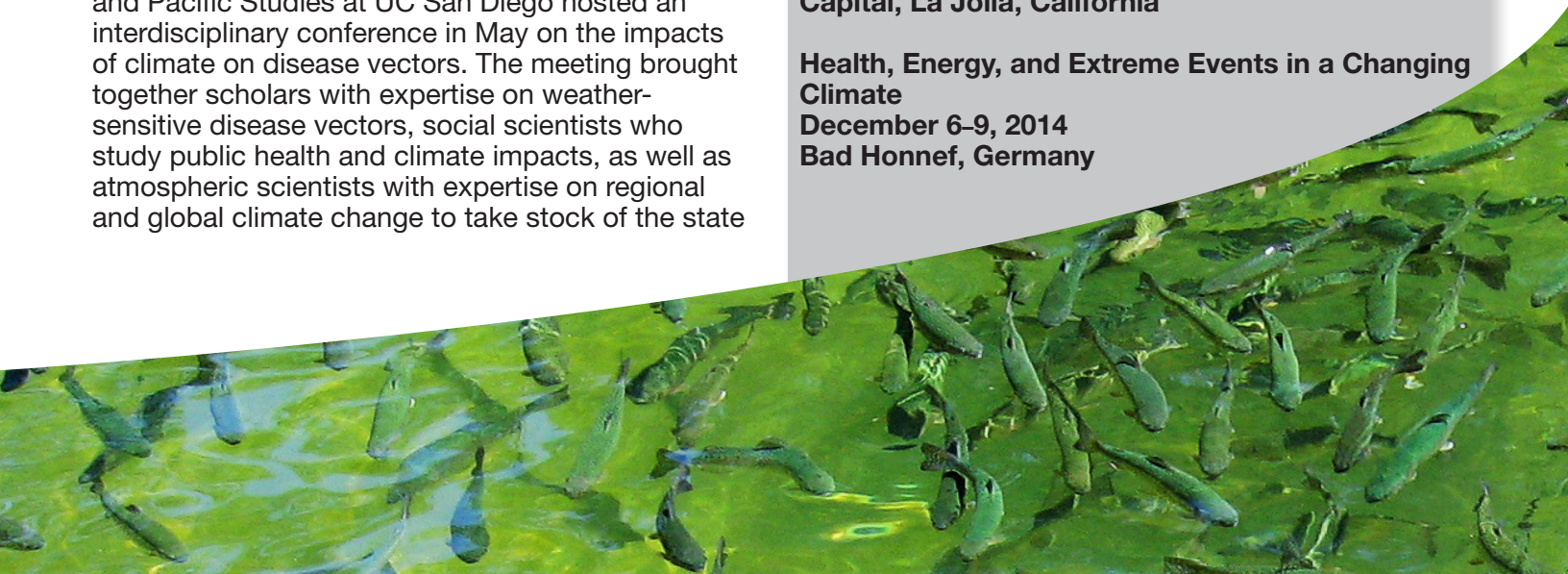
Focusing on a public with low levels of disaster preparedness that often tunes out traditional messaging approaches, Totally Unprepared (TU) effectively engages people to help themselves, their families, and communities become more prepared for earthquakes and other emergencies in California.

IGCC's community outreach and public education efforts on topics surrounding disaster preparedness include the TU website, live outreach events, presentations, and distribution of materials by private and public partners. School outreach consisted of preparedness activities with 18 classrooms at four schools, which has impacted nearly 500 students.

TU's digital outreach continues to focus on social media and the creation of blogs, with careful monitoring for TU's online presence through Google Analytics, Facebook Insights, and Twitter Mentions. From January to June of 2014, the TU website drew more than 50,000 visitors. Promotion of TU's existing media assets in blog posts drove traffic to the video series, and during this period, TU's YouTube videos pulled more than 7,000 views.

With the support of the California Governor's Office of Emergency Services and the California Safety Seismic Commission, IGCC raises public awareness about earthquake risks and preparedness activities.

Roundtables with ethnic media in Northern and Southern California organized by New America Media (NAM) helped to elicit their participation and collaboration surrounding effective preparedness messaging for their respective communities. IGCC further collaborated with NAM to identify ethnic media partners, create effective messaging targeted at broader and more diverse audiences, and carry out a media campaign focused on Native Americans in Southern California.



ADVANCING THE STUDY OF INNOVATION AND TECHNOLOGY IN CHINA

The Project on the Study of Innovation and Technology in China (SITC), led by IGCC Director Tai Ming Cheung, examines China's drive to become a world-class technological power, especially in the defense and dual-use sectors, and seeks to understand the implications for the United States and the rest of the world. One of the central research problems is to identify, understand, and measure the key sources of innovation, broadly defined, and the barriers that will shape China's technological development trajectory.

To address this overarching question, the project looks in detail at a number of areas, from the roles and relationship between the state and market, China's place in the global technology order, governance regimes and incentive mechanisms, and the different elements of the innovation ecosystem, to the inter-relationship of the civilian and defense economies. A relational database supports quantitative and network analysis of data from the project. Additionally, a robust analytical framework to survey and compare innovation capabilities at the sector level in high-tech industries in China and the United States has been developed.

The project is organized into six research topics: 1) annual assessments of the reform and modernization of critical sectors in China's defense and dual-use science, technology, and innovation (STI) base; 2) comparison of China's approach to technology development, defense industrialization, and forging of a dual-use base with peer competitors and latecomers; 3) analysis of the political economy of China's defense science and technology (S&T) and technological rise; 4) China's technological development and implications for U.S. and international technology trade policies; 5) the structures, processes, and leadership of the Chinese civilian and defense S&T systems, and 6) historical influences on contemporary Chinese grand strategic thinking on S&T.

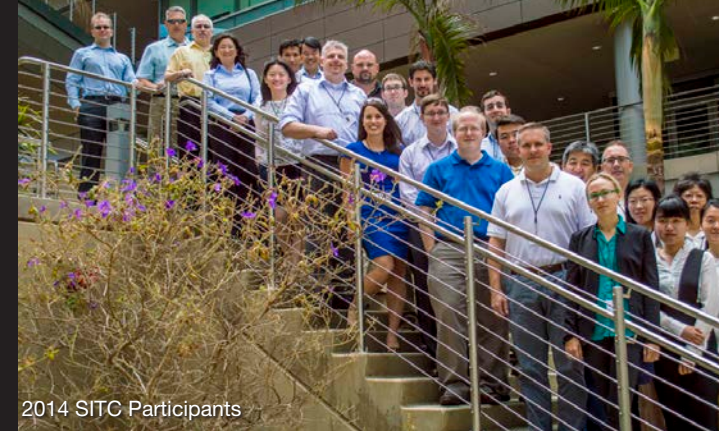
The SITC project conducted numerous conferences and workshops in 2014, beginning with a January workshop focusing on a wide-ranging examination

of current developments and longer-range trends in Chinese defense STI and industrial activities under the new leadership of Xi Jinping, held at the University of California Washington Center.

A two-day workshop took place in August on "Personalities, Talent, and the Human Capital Base" to discuss the role of human factors related to science, technology and innovation. Papers were presented focusing on higher education, the cyber workforce, and the science and engineering communities. The fifth annual summer training workshop on "The Relationship Between National Security and Technology in China" was held just before the conference, involving 24 participants from government, academia, and industry.

In October a "Joint Dialogue on Comparing U.S. and Chinese Approaches to Science and Technology Budgetary and Resource Allocation" was held in Beijing, China, co-sponsored with the Chinese Academy of Science and Technology for Development. The dialogue brought Chinese and U.S. practitioners and experts on STI policy together to candidly share their insights about how the public and private sectors in their countries think about, organize, manage, and carry out strategies, policies, and measures dealing with budgetary and resource allocation issues in the science and technology domain.

SITC investigators also gave briefings to senior leadership at the Department of Defense (DoD), including the U.S. Pacific Command, the Marine Corps, U.S. Air Force, and U.S. Navy. These were intended to provide DoD decision-makers access to the latest academic research on key developments and trends in the Chinese national and defense STI systems and their possible impact on the United States.



2014 SITC Participants

Events

Jan. 30–31, 2014
Chinese Defense Science, Technology, and Innovation in the Era of Xi Jinping: Research Insights from the Project on the Study of Innovation and Technology in China, UC Washington Center, Washington, D.C.

Aug. 3–8, 2014
Fifth Summer Training Workshop on the Relationship Between National Security and Technology in China, La Jolla, California

Aug. 8–10, 2014
2014 Conference on the Chinese Defense Industry on Personalities, Talent, and the Human Capital Base, La Jolla, California

Oct. 22–23, 2014
Joint Dialogue on Comparing U.S. and Chinese Approaches to Science and Technology Budgetary and Resource Allocation, Beijing, China



IGCC RESEARCHERS SEEK TO UNDERSTAND THE APPROACHES, CHALLENGES, AND PROSPECTS FOR SUCCESS IN CHINA'S QUEST FOR TECHNOLOGICAL TRANSFORMATION.



Understanding the political economy of terrorism and insurgency has immediate implications for development in the world's trouble spots.

DEVELOPMENT AND CONFLICT RESEARCH IN DANGER ZONES

This year, Berman has assembled a team from Stanford, Princeton, Hebrew University of Jerusalem, Paris School of Economics, Columbia University and the London School of Economics to analyze and test a framework for “boots off the ground” suppression of terrorism through allies. The framework is based on a model of deterrence in dynamic principal-agent relationships. Research includes theory development, econometric analysis in India and Gaza, and case studies covering a range of countries, including Pakistan, Afghanistan, Yemen, Colombia, North Korea, Saudi Arabia, and Iraq.

Events

May 29, 2014
Effective Development in Conflict Zones,
La Jolla, California

May 30, 2014
Empirical Studies of Conflict Annual Meeting
La Jolla, California

The Development and Conflict Research (DACOR) project, led by IGCC Research Director Eli Berman, implements a broad program of theoretical, empirical, and field research on terrorism, insurgency, governance and development in key locations around the world.

DACOR is multidisciplinary, bringing together economists, political scientists, military personnel, and development practitioners. Partners include faculty at Princeton, Stanford, Harvard, UC Berkeley, and the Hebrew University of Jerusalem.

In 2014, DACOR research investigated how to design and monitor interventions that allow human development goals to be met in conflict and post-conflict environments. In that context researchers are developing and testing models complementary to the “Heart and Minds” framework established in previous research.

As one example, Berman, Joseph H. Felter of Stanford and graduate student Mitch Downey examined the effect of the expansion of state control in the Philippines on human welfare outcomes, as measured by infant malnutrition.

In addition, graduate student Arman Rezaee continued an innovative project to evaluate the impact of mobile technology on livestock outcomes, which could dramatically improve critical veterinary services in rural Pakistan. The research team created and implemented an Android app to gather information from farmers on quality of service each time that a government veterinary officer provides them a service.



INTERNATIONAL COOPERATION ON CYBER SECURITY

The rise of cyberspace has created a number of challenging problems for global security. These include the proliferation of cyber weapons to state and non-state actors; systemic vulnerabilities in the infrastructure of globalization and military power; friction between private sector actors who manage the Internet and public sector actors who are supposed to defend them; mismatch between the pace of policy formation and the pace of technological change; coordination failures among government agencies responsible for national security, law enforcement, and industrial policy; and major normative disagreements about how the Internet should be managed domestically and internationally.

In short, technological complexity has amplified political complexity. This in turn has complicated political analysis. Because cybersecurity problems cross many jurisdictional and intellectual borders, a basic challenge is simply to develop useful theoretical concepts to analyze them. Empirical assessment of cyber threats and national policies is also important.

The volume *China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain*, edited by Jon Lindsay, Tai Ming Cheung, and Derek Reveron, will be published by Oxford in March 2015. This volume, the first collection of scholarship focusing in depth on this urgent contemporary issue, is an outgrowth of IGCC conferences held in collaboration with the U.S. Naval War College. Contributors include expert scholars, scientists, and policy analysts from the United States, United Kingdom, Canada, and China.

IGCC and partners are exploring emerging threats in cyberspace and security strategies to address them.



Deterrence as a strategy and doctrine was convincingly and effectively deployed by the United States during the Cold War. Today, in addition to traditional nuclear threats from other states, governments must also consider potentially serious risks created by dependence on space, cyberspace, financial, and other global infrastructures. The technological complexity of these interconnected threats, and the political complexity of the actors who pose and face them, generates tremendous uncertainty. This in turn undermines the simple logic of traditional deterrence frameworks, as well as the credibility of such efforts.

DETECTING COMPLEX THREATS IN AN INCREASINGLY FRAGMENTED INTERNATIONAL ORDER.

“Cross domain deterrence” (CDD) is the problem of countering threats in one arena (such as space or cyberspace) by relying on different types of capabilities (such as sea power or nuclear weapons, or even non-military tools such as market access) where deterrence may be more effective. CDD may not be new—indeed, states have mixed different tools of coercion since antiquity—but the complexity of the contemporary threat landscape makes it more important than ever to understand its logic. CDD poses both opportunities and challenges that necessitate, and will benefit from, a major evolution in thinking (and practice) about how deterrence operates.



IGCC has been awarded a five-year grant, funded by the U.S. Department of Defense Minerva Initiative, to develop a deeper understanding of CDD. Deterrence Complex Threats: The Effects of Asymmetry, Interdependence, and Multi-polarity on International Strategy features collaboration between researchers at UC San Diego, UC Berkeley, and the Lawrence Livermore, and Los Alamos National Laboratories. Through qualitative research, analytic modeling, and computational simulation, this program seeks to explain how increasing technological and political complexity affects coercive strategy.

Events

July 16, 2014
Cross-Domain Deterrence
Workshop, La Jolla, California

Nov. 6–7, 2014
Conference on Cross-Domain
Deterrence, La Jolla, California

CROSS-DOMAIN DETERRENCE

HIGH PERFORMANCE COMPUTING

IGCC's High-Performance Computing (HPC) project, funded by a grant from the University of California Laboratory Fees Research Program, examines China's efforts to become a leader in high-performance computing. The project is being conducted in collaboration with the Computational Division of Lawrence Livermore National Laboratory.

As part of this project, IGCC hosted an international conference in April 2014 on "Comparing High Performance Computing in the United States and China" to examine the rapid emergence of China's HPC industry and compare its development with the United States and other countries with major HPC programs. The conference brought together more than 20 leading scientists and social scientists from China, the United States, and Japan. Key issues discussed included: 1) factors contributing to industry leadership in supercomputing, based on observations from China, the United States, Japan, and Europe; 2) drivers that are contributing to the impressive growth in China's HPC industry and how these compare with the United States and other countries; 3) notable features and outputs of China's developing HPC ecosystem; and

4) a comparison of which models are most suitable to meet the challenges in the pursuit of exascale-speed computing.

Additionally, support was provided for a research trip to China conducted by an IGCC researcher in the fall of 2014. IGCC also hosted visitors from the Institute of Computing Technology, Chinese Academy of Sciences, and the National University of Defense Technology during 2014 to brief IGCC researchers.

Events

Jan. 8, 2014

Workshop on the State of High Performance Computing in China: Political, Economic, Strategic, and Innovation Perspectives, Lawrence Livermore National Laboratory

April 29–30, 2014

Comparing High Performance Computing in the U.S. and China, La Jolla, California



THE MIDDLE EAST REGIONAL SECURITY PROGRAM

Participants engage the Middle East's most critical issues, enabling communication where there might otherwise be only misunderstanding.

IGCC and the UCLA Center for Middle East Development (CMED) jointly conduct research and provide educational programs on matters of political, economic, and diplomatic development in the Middle East.

Guided by UCLA Professor Steven Spiegel, the Middle East programs examine issues of regional security and conflict resolution. Through conferences, task forces, publications and other programming, CMED explores key subjects for the region, including Arab-Israeli issues, Gulf security, Mediterranean security, regional business and economics, gender issues, technological cooperation, regional strategic cooperation, and democratic culture and media.

The project convenes an annual public conference, supported by the Qatari government, on key economic topics in the Middle East. The 2014 event brought together 700 participants from 100 countries to discuss entrepreneurship, sustainable job creation, and innovation in the public and private sectors. Finalists for the new Doha Prize for Economic Innovation presented proposals, and the five winners were awarded prizes totaling \$100,000.

The project also produces a peer-reviewed book series on Middle East security and cooperation, published by Routledge Press. The series features new and original scholarship on many of the most critical issues facing the region.

Book Series

Yaacov Bar Siman Tov, *Justice and Peace in the Israeli-Palestinian Conflict* (2014)

Galia Golan, *Israeli Peacemaking Since 1967: Factors Behind the Breakthroughs and Failures* (2014)

Chen Kane and Egel Murauskaite, editors, *Regional Security Dialogue in the Middle East: Changes, Challenges, and Opportunities* (2014)

Galia Golan and Walid Salem, editors, *Non-State Actors in the Middle East: Factors for Peace and Democracy* (2013)

Moha Ennaji and Fatima Sadiqi, editors, *Gender and Violence in the Middle East* (2011)

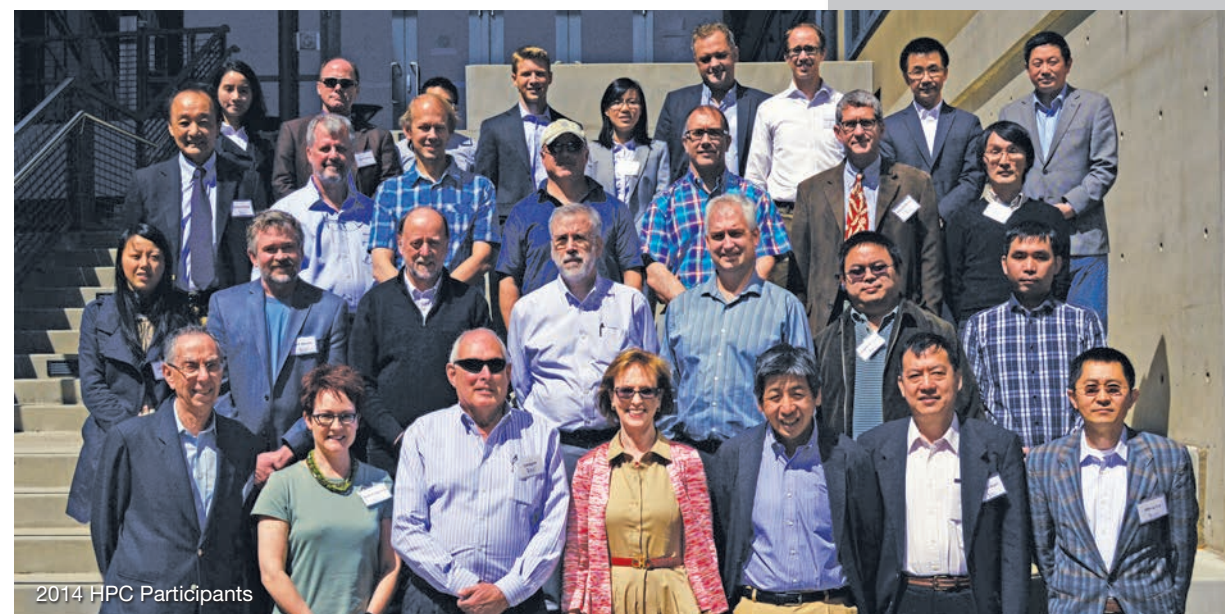
Elizabeth Matthews, editor, *The Israeli-Palestinian Conflict: Parallel Discourses* (2011)

Fatima Sadiqi and Moha Ennaji, editors, *Women in the Middle East and North Africa: Agents of Change* (2010)

Nathan Brown and Emad Shahin, editors, *The Struggle over Democracy in the Middle East: Regional Politics and External Policies* (2009)

Events

May 12–14, 2014
Enriching the Middle East's Economic Future IX
Doha, Qatar



2014 HPC Participants

THE NORTHEAST ASIA COOPERATION DIALOGUE

IGCC's Northeast Asia Cooperation Dialogue (NEACD) was created in 1993 to build an institutional mechanism for dialogue and communication in Northeast Asia. Officials and academics from the six NEACD countries (China, Russia, North and South Korea, Japan, and the United States) have enthusiastically participated in its annual meetings. Founded and led by IGCC Director Emeritus Susan Shirk, NEACD seeks to reduce the risk of military conflict in the region and to lay the groundwork for an official multilateral process in Northeast Asia.

Track II, or unofficial diplomacy, offers a venue for officials and academics to express their views and enhance mutual understanding in an informal atmosphere. Officials participate in their personal capacity, not as representatives for their governments, and all discussions are kept off-the-record, rules that permit brainstorming and frank discussion of divergent views.

IGCC HAS LED THE WAY IN SEEKING TO REDUCE THE RISK OF CONFLICT IN NORTHEAST ASIA THROUGH THE TRACK II PROCESS.

NEACD consists of two back-to-back components: a defense information sharing (DIS) workshop consisting of 20–25 professionals, and the larger NEACD plenary, which includes around 50 diplomatic, defense, and academic participants. Five of the six countries rotate hosting duties. The most recent meeting was held in La Jolla, California, in September 2014 and participants in the DIS workshop were treated to a tour of the USS *Pinckney*, an Arleigh Burke-class destroyer.

North Korea declined to send representatives to the 2014 meeting, and the country's continued isolation makes it extremely difficult to determine what combination of policy levers can move its leadership toward denuclearization, economic reform and opening, and reduced repression. A related issue is what role can engagement by non-governmental organizations like universities, NGOs, and businesses play without undercutting the economic sanctions imposed by governments and the United Nations. An IGCC study project funded by the MacArthur Foundation will provide an opportunity to explore what types of non-governmental engagement may be of interest to the Democratic People's Republic of Korea while still advancing U.S. goals. The study group, made up of experts on North Korea from China, Russia, the Republic of Korea, and Japan, in addition to a group of U.S. scholars, will meet for two days of discussion in the spring of 2015 in Seoul.

A generous grant from the Carnegie Corporation will fund NEACD's annual meetings through 2016.

Events

Sept. 15–16, 2014
Defense Information Sharing Workshop
La Jolla, California

Sept. 17–18, 2014
24th Northeast Asia Cooperation Dialogue
La Jolla, California



2014 NEACD Participants



The USS Pinckney

THE NORTHEAST ASIA COOPERATION DIALOGUE

SUPPORT

IGCC depends on grants and donations to continue its vital work in global security and cooperation. Without this support, IGCC would not be able to continue its research and programs or continue to support the development of the next generation of security leadership through graduate training programs and fellowships.

HIGHLIGHTS

IGCC continues to fundraise for new research opportunities and bring in revenues to maintain its current research endeavors. From July 1, 2013, to June 30, 2014, IGCC received \$4,982,076 in extramural funding and \$474,920 in UC intramural funds for a total of \$5,456,996. Continuing grants came from the University of California Office of the President, the Carnegie Corporation of New York, the Near East South Asia/Center for Strategic Studies, and the Department of Defense, Army Research Office. New grants were funded by the Department of Defense Minerva Initiative, Office of Naval Research, the United States Institute for Peace, and the United States China Economic and Security Review Commission. Federal grants totaled \$4,144,920. Foundation grants totaled \$268,805. State grants totaled \$568,351.

SUPPORT FROM DONORS

From July 1, 2013, to June 30, 2014, IGCC Innovation Fund received \$4,775 in gifts. Thanks to a generous donation by the York family, the Herb York Memorial Endowment Fund income will provide a special fellowship in honor of Dr. York, to be awarded annually.

NEW GRANTS

Department of Defense Minerva Initiative
DOE National Nuclear Security Administration
Massachusetts Institute of Technology
NASIC
United States Institute of Peace
U.S.-China Economic and Security Review Commission

CONTINUING GRANTS

California Seismic Safety Commission
Carnegie Corporation of New York
DOE National Nuclear Security Administration
Department of Defense Minerva Initiative
John D. and Catherine T. MacArthur Foundation
Near East South Asia/Center for Strategic Studies
University of California Office of the President Lab Fees Research Program
University of California Office of the President Multi-Campus Research Program Initiative



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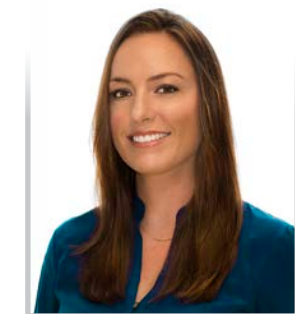
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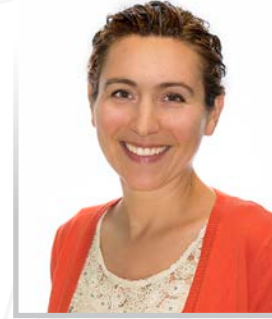
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