2010 Symposium

University of Oklahoma College of Engineering Centennial Symposium

April 21 - 23, 2010

Centennial Program

Message from the Dean

The world we live in now is smaller and more connected than ever before. This means the challenges facing the engineers of tomorrow are not only those of America but also of the entire planet. As we look ahead to opportunities the next century will bring, one thing is certain: There has never been a better time to be an engineer than now.

This spring commemorates 100 years of engineering education and research at the University of Oklahoma. We take great pride in the endless contributions made by those who preceded us in fields such as bioengineering, aerospace, chemical, electrical and computer, civil and environmental, industrial, mechanical, and petroleum and geological engineering.

But for all engineering accomplishments of the last 100 years, the decades ahead still pose aggressive challenges. Fortunately, Oklahoma's engineering graduates are well-educated to continue finding new solutions and creating a better tomorrow. In fact, some of the world's most creative research is taking place in Oklahoma.

At OU, faculty and students are generating world-class research in the areas of environmental science, aerospace, nanotechnology and energy, to name a few. Likewise, OU-Tulsa is known internationally for its groundbreaking research in cyber security.

To meet the long-term challenges of competing in the global arena, it's critical we increase the numbers and diversity of our engineering workforce. In January, OU opened Devon Energy Hall, a five-story, 100,000-square-foot facility that's home to the School of Computer Science and the School of Electrical and Computer Engineering. In February, the ExxonMobil Lawrence G. Rawl Engineering Practice Facility opened at OU. This 41,000-square-foot building provides students with the best resources of experiential learning.

These types of facilities provide incredible learning experiences for students, which helps them develop into professionals who can bring products from ideas to market reality.

We need to be inspiring our young people to study science and math because innovation and technology are vital careers of the future. Engineering is a creative profession that offers exciting and meaningful opportunities; we need elementary and secondary school programs that prepare our students to study in the field.

Finally, Oklahoma's engineering schools need to have the best faculty, staff, scholarships, facilities and equipment. In today's competitive environment, this is how we recruit and retain the best and brightest students.

We can be fairly certain issues like energy, water, food, environment, security and health will continue to present opportunities for creative problem-solving.

With technologies evolving at an exponential pace, a new generation of students and graduates will find this is a very exciting and rewarding time to be engineers.

Tom Landers, Dean, College of Engineering
AT&T Chair

Featured Speakers

Bayless

Jon W. Bayless is President and CEO of Xtera Communications Inc. in Dallas, a private company that develops ultra-broadband and long reach fiber communications transport systems. He also serves as a General Partner with Sevin Rosen Funds in Dallas, which is a multi-billion dollar venture capital partnership that invests in technology based start-ups. Prior to his work at Sevin Rosen Funds, Bayless served as Director, Advanced Systems, for Arthur A. Collins Inc. in Dallas, which is a research and development organization.

Greg D. Bear is the author of more than thirty books of science fiction and fantasy, including Blood Music, The Forge of God, Darwin's Radio, and Quantico. He received two Hugo and five Nebula awards for his writing, and is one of two authors to win a Nebula in every category. Bear has been called the "Best working writer of hard science fiction" by "The Ultimate Encyclopedia of Science Fiction."

Bear

Bell

Paul B. Bell, dean of the OU College of Arts and Sciences, graduated from Washington University, St. Louis, Mo. and attended the University of Missouri at St. Louis, Mo. before earning his Ph.D. from Yale University in 1975 in Biology. He was a post-doctorate fellow at Uppsala University, Uppsala, Sweden, in 1974 and the California Institute of Technology in Pasadena from 1974-76 in Biology. From 1976 to 1979, Bell served as an adjunct professor in Biology at UCLA and a research fellow at Cal Tech.

Susan W. Brenner is the NCR Distinguished Professor of Law and Technology at the University of Dayton School of Law. A renowned cybercrime scholar, Professor Brenner has been invited to speak internationally and domestically. She also chairs the Security Incident Working Group for the ABA's Privacy and Computer Crime Committee. Susan Brenner is the author of Law in the Era of 'Smart' Technology.

Brenner

Edwards

Eddie B. Edwards, Managing Partner of CTG, was born and raised in Amarillo, Texas. He graduated from the University of Oklahoma in 1978 with a BBA in Accounting and from the University of Texas (Austin) in 1979 with an MBA in Finance. CTG makes investments in small private companies, ranging from real estate, technology, marketing, and energy.

Jorge E. Estrada is President and Chief Executive Officer of JEMPSA Media & Entertainment which he founded in 1987. Mr. Estrada also serves as the President of Petrolera del Comahue. Mr. Estrada has served as the President of Worldwide Drilling Division of Geosource, and Vice President of Geosource Exploration Division in Latin America. Mr. Estrada has served as a consultant to Pride International, Inc.

Estrada

Golemon

R. Kinnan Golemon has over 40 years of providing professional advice, counsel, strategic planning and public advocacy on complex environmental, energy and natural resources issues. From 1992 to 2006, he served as General Counsel for the Texas Chemical Council, the association representing the approximate 90 chemical manufacturers located in Texas, and continues to provide counsel to the association's management team.

Anil V. Gollahalli, Vice-President of the University of Oklahoma and General Counsel to the Board of Regents governing OU, Cameron University and Rogers State University, earned his chemical engineering degree from the University of Oklahoma in 1997 and his law degree from the University of Chicago in 2000. Gollahalli previously served as law clerk to the Hon. Lee R. West, U.S. District Court for the Western District of Oklahoma. He also is licensed to practice before the U.S. Patent & Trademark Office and is active in the American Bar Association and American Intellectual Property Law Association.

Gollahalli

Graham

Charles W. Graham, dean of the University of Oklahoma College of Architecture is an award-winning educator and architect whose specialties include residential design and construction. Graham comes to OU from Texas A&M University, where he was the executive associate dean of the College of Architecture.

Grillot

Larry R. Grillot, dean of the Mewbourne College of Earth and Energy at the University of Oklahoma, is a geophysicist with 30 years of technical and managerial experience in the petroleum industry. Grillot worked for Phillips Petroleum Co. for 30 years, almost half of which were spent in Bartlesville, in a variety of technical and managerial posts in exploration and production.

Jerry D. Holmes, adjunct faculty member in the School of Aerospace and Mechanical Engineering. He received his bachelor's degree in geological engineering in 1958 and his master's degree in aerospace engineering in 1964 from the College of Engineering at the University of Oklahoma. While at the University, he was a member of the Air Force ROTC unit and was commissioned as an officer in 1958, thus beginning a distinguished 31 year military career, where he reached the rank of Major General.

Holmes

Kennedy

William J. Kennedy, founder and CEO of Sequoyah Group, Inc., graduated from OU in 1955 with a bachelor's of science degree in mechanical engineering. While in school, he was a member of Phi Eta Sigma, Sigma Tau, Tau Beta Pi and Pe-et. He also served as vice president of the Engineers' Club and president of his senior class. He was awarded the Gold Letzeiser Award as the Outstanding Senior Man of his class. Kennedy continued his education at Harvard Graduate School where he received a master's in business administration.

John A. Kenney, shareholder and practice group leader at MacAfee and Taft, is involved in litigation of complex business cases, including those involving intellectual property and other technical and scientific issues. He has handled and tried cases, arbitrations, and administrative proceedings and hearings in many state and federal courts in the United States, the Virgin Islands, and several foreign countries. Over the years, this has included cases involving patents and other intellectual property, product liability, oil and gas, environmental, antitrust, securities fraud and other contract and general business issues.

Kenney

Kolar

Randall L. Kolar, Austin Presidential Professor in the School of Civil Engineering and Environmental Science is the associate director of the OU Water Center. He teaches courses in environmental engineering, open channel hydraulics, and numerical methods. His research interests center on quantitative solutions to environmental problems.

Knox

Robert C. Knox is the Ted A. Kritikos Chair, Presidential Professor and director of the School of Civil Engineering and Environmental Science. His research interests are in subsurface transport and fate processes, ground water remediation technologies, ground water modeling, and the impacts of petroleum hydrocarbons, oilfield brines and mining effluents.

Thomas C. Knudson is president of Tom Knudson Interests, LLC, which provides consulting services in the areas of energy, sustainable development, and leadership. He is the Chairman of Bristow Group Inc., and a director of MDU Resources Inc. He has served as an adjunct professor of management at the Jones Graduate School of Business at Rice University.

Knudson

Lambert

Philip Lambert is CEO of Lambert Energy Advisory Ltd (LEA), which is one of London's leading M&A and Strategic Advisory firms dedicated solely to the Global Energy sector. LEA was founded in 1999, and its team of twelve professionals is based in Mayfair, London. LEA also has senior representation in Oslo and Moscow. LEA's work for its clients concentrates primarily on advising on the corporate transformations occurring in the oil and gas sector.

Thomas L. Landers is AT&T Chair and dean of the College of Engineering. He came to the University of Oklahoma in 1998 as director of the School of Industrial Engineering after a twenty-five year career in industry, government, and academia. He has also served as Associate Dean for Research and helped found several cross-disciplinary centers that promote applied research in coalitions with industry and other universities. He received the Phillips Petroleum Outstanding Faculty Award for the College of Engineering at the University of Arkansas. He currently serves on the Army Science Board.

Landers

Miller

David P. Miller is the Lester Wilkinson Chair of Intelligent Systems in the School of Aerospace and Mechanical Engineering. Miller helped design NASA's successful Mars Pathfinder Rover, the first semi-autonomous roving vehicle capable of conducting scientific experiments on the surface of another planet. From a distance of 310 million miles, the small planetary rover sent back 500 images of the Red Planet that awed earthbound humans and captured the imagination of the world.

Mortenson

Greg Mortenson is co-founder and executive director of the nonprofit Central Asia Institute and founder of the international service-learning program Pennies For Peace. *Three Cups of Tea,* which has sold more than 3.6 million copies, been published in 41 countries, and is required reading for U.S. senior military commanders, U.S. Special Forces deploying to Afghanistan, Pentagon officers in counter-insurgency training, Canadian Defense Ministry ministers, and others involved in military affairs. Several bipartisan U.S. Congressional representatives have nominated Mortenson twice for the Nobel Peace Prize in both 2009 and 2010.

Robert W. Nairn is director of the Center for Restoration of Ecosystems and Watersheds, Associate Professor in the School of Civil Engineering and Environmental Science and an associated faculty member with the Ecology and Evolutionary Biology Program, Aquatic Research Facility, Institute for Oklahoma Technology Applications and Water Technologies for Emerging Regions Center, all at the University of Oklahoma.

Nairn

Pullin

Daniel W. Pullin is the University Vice President for Strategic Planning and Technology Development, University of Oklahoma. He directs the commercialization operations of the Office of Technology Development and manages Strategic Planning efforts for the University including the administration of OU's Center for the Creation of Economic Wealth (CCEW). Additionally, Pullin serves as an instructor in OU's Price College of Business, where he received the OU Foundation Excellence in Teaching Award in 2007, 2008 and 2009.

David A. Sabatini, is the David Ross Boyd Professor, Sun Oil Company Chair and director of the Water Center at the University of Oklahoma. He received his B.S. at the University of Illinois-Urbana, his M.S. at Memphis University, and his Ph.D. at Iowa State University. Dr. Sabatini's research has developed microemulsion systems and separation processes for application in the consumer product and environmental fields, and has evaluated chemical transport phenomena in the environment.

Sabatini

Sheppard

Robert A. Sheppard is the chairman of IPM Advisors, an international consulting firm that provides senior-level advice to the oil & gas and related industries. He is also a senior advisor to BP on Russia and CIS and a past member of the board of directors of TNK-BP, the 10th largest integrated petroleum company in the world. He currently serves on the board of directors for DTEK, the largest private Ukrainian power company and is chairman of the firm's HSE committee and member of the Strategy development committee.

Shirley

Donna L. Shirley is author of *Managing Martians: The Extraordinary Story of a Woman's Lifelong Quest to Get to Mars -- and of the Team Behind the Space Robot That Has Captured the Imagination of the World.* She surprised many people when as a very small girl, she took an intense interest in flying airplanes. Before she was out of her teens, she had earned her pilot's license. She entered college in the 1950s, with the express purpose of studying aeronautical engineering when engineering schools were still an all-male bastion.

Singer

Peter W. Singer is the director of the 21st Century Defense Initiative and a senior fellow in Foreign Policy at the Brookings Institution. Singer's research focuses on three core issues: the future of war, current U.S. defense needs and future priorities, and the future of the U.S. defense system. Singer lectures frequently to U.S. military audiences and is the author of several books and articles, including *Wired for War: The Robotics Revolution and Conflict in the 21st Century.*

Smith

Trem Smith serves as president & CEO of Hillwood International Energy. Hillwood Energy operates oil and gas interests around the world. They include significant positions in the Barnett shale gas field, the largest gas field in the United States, the Floyd shale in Alabama, and a 1224 square kilometer (340,000 acre) license in northern Iraq. Hillwood is also acquiring additional positions in the Middle East, Europe and Russia.

Snow

John T. Snow, dean of the College of Atmospheric and Geographic Sciences. He came to OU in 1994 from Purdue University where he had been a faculty member in the Department of Earth and Atmospheric Sciences since 1977. He is a Fellow of both the American Meteorological Society and the Royal Meteorological Society.

Stover

Bruce H. Stover, is president of BHS Enterprises, LLC. He is retired executive vice-president and founding member of Endeavour International Corporation. With more than 38 years of experience in the oil and gas industry, Stover has an extensive background in international business development, previously serving as senior vice president, worldwide business development for Anadarko Petroleum Corporation.

Walker

Tom Walker, President and Chief Executive Officer for i2E, brings his energy and leadership experience to the creation of commercialization and entrepreneurial development initiatives for Oklahoma's advanced technology sector. Tom leads i2E's efforts to develop and invest in companies that create knowledge-based jobs in Oklahoma.

Wednesday April 21, 2010

8:00 a.m. - 9:30 a.m.

Engineering and the Sciences
Oklahoma Memorial Union, Meacham Auditorium

This panel will explore the past, present and future collaborations among the College of Engineering, , the College of Arts and Sciences, the College of Architecture, the Mewbourne College of Earth and Energy, and the College of Atmospheric and Geographic Sciences.

Panelists:
Paul Bell
Charles Graham
Larry Grillot
John Snow

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9:45 a.m. - 11:15 a.m.

Engineering and the Law
Oklahoma Memorial Union, Meacham Auditorium

This panel will explore the mutual interests of engineering and legal professionals in creating and protecting value.

Panelists:
Susan Brenner
Kinnan Golemon
Anil Gollahalli
John Kenney

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11: 30 a.m. - 12:45 p.m.

Wired for War: Technology, Politics, Ethics and the Revolution in Robotics
Oklahoma Memorial Union, Molly Shi Boren Ballroom
Lunch Keynote - Peter W. Singer *(By Invitation)*

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Peter W. Singer is the director of the 21st Century Defense Initiative and a senior fellow in Foreign Policy at the Brookings Institute.

1:00 p.m. - 2:30 p.m.

Technology and Society
Oklahoma Memorial Union, Meacham Auditorium

This panel will explore the pervasiveness of technology, from how we imagine and create to how we wage war.

Panelists:
Astrid Bear
Greg Bear
Jerry Holmes
David Miller
Donna Shirley
P.W. Singer

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2:30 p.m. - 3:15 p.m.

Bear, Brenner and Singer Book Signing
Oklahoma Memorial Union, President's Room

4:00 p.m. - 5:00 p.m.

Greg Mortenson - Open Lecture to the Community
Lloyd Noble Center

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By replacing guns with pencils, rhetoric with reading, Mortenson combines his unique background with his intimate knowledge of the developing world to fight terrorism with books, not bombs, and successfully bring education and hope to remote villages in central Asia. Three Cups of Tea is at once an unforgettable adventure and the inspiring true story of how one man really is changing the world, one school at a time.

Thursday April 22, 2010

10:30 a.m. - 11:45 a.m.

Engineering and Economic Value Creation
ExxonMobil Lawrence G. Rawl Engineering Practice Facility, Room 200

This panel will explore the centrality of innovation and entrepreneurship in the engineering approach to problem solving and value creation.

Panelists:
Jon Bayless
Eddie Edwards
William Kennedy
Daniel Pullin
Tom Walker

Hosted by Bill Kennedy

Sponsored by:
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12:00 p.m. - 1:15 p.m.

CoE Recognition Luncheon *(By Invitation)*
Oklahoma Memorial Union, Governors, Regents and Associates Rooms

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1:30 p.m. - 3:00 p.m.

Botball Exhibition
ExxonMobil Lawrence G. Rawl Engineering Practice Facility, Frank G. Miller Practice Bays

Hosted by KISS Institute
Sponsored by:
National Instruments

3:00 p.m.

Sooner Racing Team Car Unveiling
Courtyard between Devon Energy Hall and ExxonMobil Lawrence G. Rawl Engineering Practice Facility

6:30 p.m.

Distinguished Graduate Society 20-Year Reunion Dinner *(By Invitation)*
Sam Noble Oklahoma Museum of Natural History

Friday April 23, 2010

11:00 a.m. - 1:00 p.m.

Global, Social and Economic Challenges: The Role of Engineering *(By Invitation)*
Devon Energy Hall, Stover Family Room 120

The world's population has grown exponentially and will continue to do so in the future. The global population today is almost 7 billion people and over 6 billion live in the developing world. By 2030, it is estimated that global population will be over 8 billion with 7.5 billion in the developing world. A significant issue for all of us is that the most critical economic and social challenges affecting basic levels of the human condition – life and health – are concentrated in the developing world. The most fundamental of these challenges are clean water, food, shelter and access to power / electricity. Even today, these issues create tremendous stress on social and political stability in these regions, which adds social and economic stress to the developed regions of the world as immigration trends threaten an already straining infrastructure. These problems will worsen exponentially in the future.

This panel will examine the evidence that defines these challenges and relay their own unique insights on these problems based on their considerable personal and collective international experience. Additionally, the panel will highlight the role of engineering driven technologies that can make a material difference in the outlook for the future in those regions most affected. Finally, the panel will challenge and encourage the students, faculty and administration of the University to build upon initiatives already underway (like the Clean Water Project) and to embrace a broader vision for such initiatives that can have significant long term benefits for OU.

Panelists:

Jorge Estrada
Tom Knudson
Philip Lambert
Bob Sheppard
Trem Smith
Bruce Stover

Hosted and Sponsored by:
BRUCE STOVER

3:00 - 4:00 p.m.

Water Center Presentation

Devon Energy Hall, Stover Family Room 120

The WaTER Center evolved in 2006 from the Environmental and Groundwater Institute (EGWI), that, for 23 years, served a leadership role in the area of groundwater resource management. The WaTER Center was formed to meet a growing need for university-based programs with the personnel and resources to assume a leadership role in the international water development scene that includes not only technical innovations, but educational opportunities for US students and citizens of the affected regions. Dr. David A. Sabatini, David Ross Boyd Professor in Civil Engineering and Environmental Science (CEES), became the first director of the center. Dr. Sabatini's expertise is in the area of physio-chemical processes for water and wastewater treatment. Sabatini was assisted by two associate directors in the formation of the WaTER Center - Dr. Keith A. Strevett, whose expertise centers on biological water and wastewater treatment, and Dr. Randall L. Kolar, whose expertise centers on surface and groundwater supply. Together they began to partner with faculty from CEES and across campus to become a national center of excellence while accomplishing the center's mission. More recently, Dr. Robert Knox (groundwater hydrology) and Dr. Robert Nairn (treatment ecosystems) have joined the leadership team and Dr. Strevett has stepped off. Over several years many initiatives of the WaTER Center, such as having graduate/undergraduate course offerings, initiating the International WaTER Prize and building connections with many faculty around the world have been accomplished. The center's current leadership continues working towards implementation of additional initiatives and advancing water quality research for developing areas.

A lack of access to safe and reliable drinking water for all of mankind has been a persistent and significant problem throughout history. Today, the World Health Organization estimates that 1.1 billion people do not have access to safe drinking water and 2.6 billion have inadequate sanitation. These are staggering numbers given the economic prosperity and technical advances of our times. Consequently, it comes as no surprise that the U.N. has chosen, as one of its millennium goals, to cut in half by the year 2015 the number of people without clean drinking water, and has designated 2005-2015 as the International Decade of Action. To assist with these goals, the US passed the Paul Simon Water for the Poor Act. But one does not have to go to Africa or Asia to find affected areas; even in the U.S. many remote areas have unsafe water supplies, including Native American communities in Oklahoma.

Panelists:

Randall Kolar
Robert Knox
Robert Nairn
David Sabatini

Sponsored by:

SAIC
From Science to Solutions

6:00 p.m.

Minority Engineering Program Reunion

Devon Energy Hall, ConocoPhillips Atrium

Tours of the ExxonMobil Lawrence G. Rawl Engineering Practice Facility and Devon Energy Hall will be followed by a silent auction.

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The University of Oklahoma College of Engineering
The First 70 years

"Author, Dr. Tom J. Love, whose experience as a student, faculty member and administrator lend a unique historical perspective."

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