RICE UNIVERSITY INVENTORY OF ACADEMIC RESEARCH IN SUSTAINABILITY - SUMMER 2014

Name	Department Affiliation	Brief description of research/areas of interest
Andrea Ballestero	Anthropology	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.* *Andrea Ballestero's research examines the changing values of nature as expressed through legal and economic tools. Considering that relations between nature and exchange are at the core of how we understand ourselves as humans, what new forms is the valuation and regulation of nature taking in the 21st century? And how do these technical efforts tie into broader political and ethical projects in places such as Costa Rica and Brazil?*
Dominic Boyer	Anthropology	**Member/Director of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.* *He is studying the contribution of fuel and electricity (or what he terms "energopower") to the constitution of political power in Latin America, North America and Europe. He is particularly interested in analyzing the conditions under which carbon-based forms of political power can transition to renewable energies, despite massive institutional and political resistance.* *Dr. Dominic Boyer has done extensive anthropological research on the practice of news journalism in Germany and the United States and has published widely on the relationship between media and knowledge in modern society. In recent research, he has shown how over the past thirty years the rise of new digital information technology combined with the spread of neoliberal policy regimes to profoundly unsettle broadcast-era patterns of newsmaking and news circulation, thus forcing news journalists to reinvent their expertise and authority. In his current work, Boyer examines the contribution of energy systems to modern political culture. He is involved in ongoing collaborative field research with Prof. Cymene Howe on renewable energy development in Southern Mexico, a project that asks through what configuration of alliances carbon energy dependent states will be able to implement important projects of energy transition.*
Cymene Howe	Anthropology	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.* *Dr. Howe's research is concerned with how forms of subjectivity, knowledge and advocacy become produced within distinct social and political contexts. Howe's research project (currently in its initial phase) is a collaborative investigation, with Dominic Boyer, to better understand the political cultures and implementation practices of renewable energy projects. While there has been substantial global attention to the politics of climate change at the level of international conferences, protocols and agreements, there is little anthropological research that has addressed how these global, moral and ecological imperatives can be implemented at the local level. Working in the Isthmus of Tehauntapec (Oaxaca, Mexico) which is corridor to some of the world's richest wind resources and where many large wind parks are in place (or in development), our project will involve the key stakeholders and "brokers" of wind development projects in the region, including government officials, local residents and activists, transnational wind power corporations and journalists. Ultimately, we are interested in exploring what we term "energopolitics" as an alternative to the biopolitical genealogy of modern state formation.*
Eugenia Georges	Anthropology	*Eugenia Georges joined the Rice faculty in 1988. Her major interests and research focus on medical anthropology, the cultural study of reproduction, labor migration and economic development. She is currently interested in researching the new reproductive technologies, medicalization of the life cycle, relationships among social class, ethnicity, and disease.*
Susan Keech McIntosh	Anthropology	*Dr. McIntosh's current research focuses on the emergence of large-scale, complex societies in Africa, the impact of climate and environmental change on human society in the past, and the politics of archaeology and archaeological representations of the past.*
Stephen A. Tyler	Anthropology	*Research in coopeation with Matt Shibatani and Gail M. Coelho, Dept. of Linguistics, Rice University. Funded by Shell Sustainability Project. Investigation of "language death" and how marginal languages can persist in the contemporary world where only a few written languages are hegemonic.*
William T. Cannady	Architecture	*In his architectural practice, Cannady has designed and built over two hundred projects, which have been honored with sixty awards, both nationally and locally, for outstanding design including Educator of the Year Award from the Houston Chapter of the American Institute of Architects in 2010. His teaching pedagogy and built work is rooted in the philosophy "the poetry of pragmatism." This approach aspires to preserve tradition while pioneering change. His academic and professional experience covers a wide range of design problems and building types including residential, commercial, institutional and public. His constructed buildings are intended to be easy to build, use, maintain and enjoy.*

Nonya Grenader	Architecture	*Nonya Grenader has co-taught the first-year design studio at the School of Architecture since 1994. She is a Professor in Practice and the Associate Director of the Rice Building Workshop. Her work with students through the Rice Building Workshop has resulted in many published projects and design awards. Over the past ten years, three hundred students have designed and built projects at various scales in the community, from exhibit venues in Houston museums to affordable housing at Project Row Houses in Houston's Third Ward. The Workshop received the 2004 NCARB Prize for the "Integration of Practice and Education" from the National Council of Registration Boards and the "Collaborative Practice Award" in 2005 from the Association of Collegiate Schools of Architecture. RBW exhibited their latest project, Ze-Row House, at the Solar Decathlon in Washington, D.C. in 2009. Principal of her own small firm, Nonya's recent projects have received design awards from AIA/Houston and from the Greater Houston Preservation Alliance. She received the "Educator Award" from the AIA/Houston in 1990, and in 2000, she was elected to the College of Fellows of the American Institute of Architects. She was recently co-chair of the 99K House Competition sponsored by Rice Design Alliance and AIA/Houston in partnership with the city of Houston. She has served as President of the Rice Design Alliance and as editor and a contributor to RDA's publication, Cite: the Architecture and Design Review of Houston.*
Christopher Hight	Architecture	*Christopher Hight is an associate professor at the Rice University School of Architecture, where he is pursuing design and research on architecture's potential at the nexus of social, natural and subjective ecologies within the built environment. In collaboration with colleagues and student researchers he has recently completed a design strategy for the bayou system in Houston, available at www.hydraulicty.org, and is working with John Anderson on a book examining alternative models of coastal development based on the case study of Galveston Island. He has been a Fulbright Scholar and obtained a masters degree in Histories and Theories of Architecture from the Architectural Association, and a Ph.D. from the London Consortium at the University of London. He has taught in the Architectural Association's Design Research Laboratory, and has worked for the Renzo Piano Building Workshop. He has lectured and published internationally in books and journals including Harvard Design Magazine, Praxis, Perspecta, and AD. He is the co-editor of Space Reader: Heterogeneous Space in Architecture (2009), and AD: Collective Intelligence in Design (2006), and has recently published a book on subjectivity and epistemology since the middle of the 20th century, Architectural Principles in the Age of Cybernetics (2008). He also serves on the Board of Directors for the Rice Design Alliance.*
Lars Lerup	Architecture	*Mr. Lerup's work focuses on the intersection of nature and culture in the contemporary American metropolis, and on Houston in particular. He is currently finishing up work on a new book, entitled Toxic Ecology: At the Limit of the Entrepreneurial City, which examines the consequences the city's relentless growth and expansion has had on various natural systems, and further, how those consequences will effect the future of the city.*
Tom Lord	Architecture	*From July 1965 to February 1967, Mr. Lord was the Analyst in Housing and Urban Affairs for Congressional Research Service, an organization designed to serve the research needs of the U.S. Congress. During this period, Mr. Lord worked on legislation for the Rent Supplement and Model Cities Programs.* *From February 1967 to November 1967, Mr. Lord served as Assistant Director of Urban America, Inc. a private organization supported by the Ford Foundation in Washington, D.C. In this capacity he aided in the establishment of private housing development corporations in Detroit, Philadelphia, Washington, D.C., Buffalo, and Corpus Christi. In May 1967, Mr. Lord was invited by the Mayor's Citizens' Advisory Committee on Housing to determine the feasibility of a housing development corporation. Mr. Lord has taught housing management courses at Texas Southern University, housing law at the University of Houston, and is a lecturer at Rice University's College of Architecture.*
Albert Pope	Architecture	*Professor Pope's current research is involved with the phenomenological impact of urban infrastructure. It specifically addresses the role that infrastructure plays in the construction of a contemporary subjectivity. The architectural vehicles of this research are the subdivision, the tower and the blind box.*
Danny Marc Samuels	Architecture	*Samuels' and Associate Nonya Grenader's work with students through the Rice Building Workshop has resulted in a stream of realized projects: over the past ten years, more than two hundred students have designed and built projects at various scales in the community -- from exhibit venues in Houston museums to affordable housing at Project Row Houses in Houston's Third Ward. The Workshop received the 2004 NCARB Prize for the "Integration of Practice and Education" from the National Council of Registration Boards and the "Collaborative Practice Award" in 2005 from the Association of Collegiate Schools of Architecture. Samuels' and Grenader's strong interest in the processes of making also carries into their work with First Year Design Studio.*

Rives Taylor	Architecture	*Rives Taylor has more than 25 years experience in institutional and commercial architecture with 18 years spent focusing on strategic planning, programming, and sustainable design. Rives casts a wide net in elevating both the why and how of sustainable design, including students, faculty, professionals, public officials and the general public. In 17 years as adjunct professor at the University of Houston and visiting professor at Rice University, Taylor has influenced more than 5,000 students in his technical and high-performance design studios and seminars. The approaches Rives developed for Gensler not only affect the firm's extensive practice but also influence clients' building decisions worldwide. He developed a firm-wide green practice primer called "The Four Tiers of Sustainability," led the inclusion of sustainable design in the firm's in-house education program, and in partnership with Architecture 2030 and the Design Futures Council, developed an "eco-charrette" process and developed a building performance metric that is now used in all of Gensler's projects. Design and construction standards Rives developed for clients such as BP and Toyota are now embedded in those clients' protocols and are followed worldwide.*
Sarah Whiting	Architecture	*Whiting is a design principal of WW Architecture and currently serves as Dean of the Rice University School of Architecture. She has previously taught at institutions such as Harvard's Graduate School of Design, the Princeton University School of Architecture, the Illinois Institute of Technology, the University of Kentucky and the University of Florida. She received her Bachelor of Arts from Yale University and a Master of Architecture from Princeton before going on to receive a Ph.D from the Massachusetts Institute of Technology. She had previously worked in the offices of Peter Eisenman, Michael Graves, and the Office for Metropolitan Architecture, where she served as a designer for the Euralille master plan, among other projects.*
Gordon Wittenberg	Architecture	*Gordon Wittenberg is a Professor and Director of the Technology, Environment, and Practice Program in the School of Architecture, and a partner in WO Architects. He teaches design studios in both the undergraduate and graduate cores and the introductory course in technology: "Introduction to the Science and History of Building," as well as a seminar in "Advanced Materials and Systems." When Professor Wittenberg frst came to Rice his primary focus was teaching and research in the area of energy conservation and sustainability. He has written a number of articles and a book on the special problems related to cooling and comfort in hot, humid climates such as Houston and the traditional architecture of the South as a response to climate. More recently, Professor Wittenberg has been involved in experimenting with ideas about environment, design, and materials through the work of his architectural frm, WO Architects. Since the firm was started in 1991, it has won many awards for excellence in design including a TSA award in 2004 and awards from both the masonry and metal building industries.*
Steven Lewis	Asian Studies	*Dr. Lewis' areas of research interest generally look at the role of media in new public spaces in collective identity formation, the role of informal norms and forms of organization in the privatization of state owned enterprises and government agencies, the influence of subway public spaces in the urbanization of Chinese cities, the privatization and corporatization of Chinese national oil companies, and the development of demand-reduction and environmental conservation policies and regulations in Chinese and global coastal cities.* *Current research projects include:* *-The interaction of commercial and public sector advertisements to create new forms of collective identity, using case studies of subway advertisements and outdoor advertisements in Chinese cities and Houston;* *-The role of corporatization and privatization in the ability of Chinese National Oil Companies (NOCs) to provide secure oil supplies for China's development;* *-Decentralization of propaganda campaigns in China, using recent surveys of outdoor political advertisements in urban districts of Beijing and Shanghai (updating 1998 study);* *-Examining the interaction of local forms of environmental governance and public awareness of environmental issues, an interdisciplinary, comparative research project offering policy prescriptions on sustainability for Chinese and American coastal cities.*
George N. Bennett	Biochemistry & Cell Biology	*Dr. Bennett's current research interests include metabolic engineering of microbes for chemical production, generating genetic tools for synthetic biology and investigating the mechanisms of environmental responses of bacteria. He is interested in using microbes for sustainable industrial, agricultural and environmental processes.*
Janet Braam	Biochemistry & Cell Biology	*Dr. Braam is involved in a research project entitled Genetic and Environmnetal Impact on Lignin Accumulation which seeks to expand fundamental knowledge of the genetic basis of carbon distribution in plants and understand how environmental conditions affect this distribution with the goal of improving feedstock properties for bio-based, renewable energy generation. Cellulose is the most abundant energy-rich biopolymer on earth and currently is the most promising source of conversion to a biofuel. In addition, because plants store CO2 below ground, the use of biofuel crops can potentially reduce global warming.*

Ka-Yiu San	Biochemistry & Cell Biology	*K.Y. San is a professor in the department of Bioengineering and Department of Chemical Engineering along with being a member of the Institute of Biosciences and Bioengineering at Rice University. In addition, his research is in the area of metabolic engineering. K.Y. San's research laboratory is mainly concerned with the development of new concepts and novel ways of altering metabolic routes in Escherichia coli using recombinant DNA technology to improve cellular activities and achieve more advanced production systems. The main focus is on the development of a framework for the systematic analysis of the cellular responses in regulating its metabolic activities upon precise genetic perturbations. Understanding these responses is critical to design organisms and processes for efficient and reliable manufacturing of gene products from recombinant cells.*
William M. Arnold	Business	*Bill Arnold is Professor in the Practice of Energy Management at the Jones Graduate School of Business at Rice University in Houston, Texas. Bill joined Rice in June 2009 and taught courses on the Geopolitics of Energy and managing in a carbon-constrained world. He actively engages with professionals in academia and industry from around the world. Previously, as Royal Dutch Shell's Washington Director of International Government Relations and Senior Counsel for the Middle East, Latin America, and North Africa, he engaged at the highest levels of government in the US and abroad to provide geopolitical insights, develop business strategies, build scenarios, and advance multi-billion dollar projects. He had been with Shell since 1993.*
Marc J. Epstein	Buisiness	*Dr. Epstein is currently working extensively in developing countries in Africa, Asia, and South America on innovative and entrepreneurial solutions to global challenges and measuring and managing the social impacts of corporations, NGOs, and foundations. Each year he takes all of his MBA students to Africa as part of his course "Commercializing Technology in Developing Countries." In 2011, his book Joining a Nonprofit Board: What You Need to Know was published. In 2013, his book Pharmacy on a Bicycle: Innovative Solutions for Global Health and Poverty was released. And in February 2014 his new book based on extensive field research throughout the world, Measuring and Improving Social Impacts: A Guide for Nonprofits, Companies, and Impact Investors, will be published.* *In 2014, the second edition of his highly acclaimed book Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts, was published to provide guidance to managers and academics on the implementation of corporate social responsibility. He has also written extensively on corporate and non profit board governance, the role of boards of directors, organizational trust, the business case for sustainability, and corporate accountability.*
Douglas A. Schuler	Buisiness	*Dr. Schuler also examines facets of corporate social responsibility (CSR). His work describes the linkages between a firm's CSR and consumer purchases – the CSR linkage to financial performance. Other work examines a firm's CSR as practiced through voluntary organizations, such as industry self-regulatory governance mechanisms. Recent work focuses upon the linkages between CSR and CPA. With colleagues in engineering, Dr. Schuler also studies the introduction of technologies into low-resource settings. He has recently published an article examining one specific technology, a solar powered autoclave, used to sterilize medical equipment in health facilities outside of a power grid such as in rural areas of developing countries*
Walter Chapman	Chemical & Biomolecular Engineering	*Dr. Chapman is widely recognized for applications of his research in the energy and high performance polymer industries. The theories Walter has developed to predict fluid properties and interfacial structure of complex fluids have been widely adopted in industry, academia, and national laboratories. His research focuses on flow assurance issues of asphaltenes and gas hydrates, polymer solutions and blends and associating fluids. Walter is also widely recognized for experimental studies of water content in hydrocarbons at extremes of temperature and pressure. Since 2005, Dr. Chapman has been the Director of the Energy and Environmental Systems Institute at Rice University.*
James Clomburg	Chemical & Biomolecular Engineering	*Dr. Clomburg's research focus is on the improved understanding of the microbial utilization of glycerol under fermentative conditions and using this knowledge base as a means for the implementation of metabolic engineering strategies for the biological production of fuels and chemical from glycerol.* *The rising concerns related to the cost, sustained availability, and environmental impact of use of fossil fuels has led to the search for new technologies that generate fuels and materials from renewable carbon sources. Although biofuels such as biodiesel and bioethanol represent a secure, renewable, and environmentally safe alternative to fossil fuels, their economic viability is a major concern. A solution to this problem is the conversion of glycerol, a by-product generated in large amounts in the production of these biofuels, into fuels and chemicals. Given highly reduced nature of carbon atoms in glycerol and the cost advantage of anaerobic processes, fermentative metabolism of glycerol is of special interest. In order to utilize these advantages, however, microorganisms able to perform glycerol fermentation in the absence of electron acceptors are required.*

Kenneth R. Cox	Chemical & Biomolecular Engineering	*Research Areas: Thermodynamics of electrolytes, sustainability analysis of energy resources, phase equilibria for advanced separations design, gibbs energy modeling for extreme environments, molecular thermodynamics. The goal of Dr. Cox's research is to develop new mesoscale and molecular modeling methods to characterize complex microstructuring fluids. To accomplish this, he and his research group bring together theoretical and computational approaches that provide molecular insight for chemical engineering design. These appproaches include a variety of statistical mechanics, molecular thermodynamics, and computational chemistry techniques. Systems of particular interest to us include biomembranes, colloidal dispersions, thin films, and microstructured polymers.*
Ramon Gonzalez	Chemical & Biomolecular Engineering	*The long-term goal of Dr. Gonzalez's research is the development of biological platforms for the production of chemicals and fuels from renewable sources. His research focuses on microbial catalysis in an effort to understand how microbial cells function and how they can be manipulated to produce valuable chemicals. Although microorganisms are intrinsically capable of biosynthesizing a wide range of useful chemicals (i.e. metabolites), they typically do so at concentrations and rates that do not correspond to those required for commercial production. A complex network of regulatory, enzymatic, and transport processes determines which metabolite is synthesized (and at what level) under a given environmental condition. We believe then that the successful manipulation of cellular metabolism requires an understanding of these biological processes.*
George Hirasaki	Chemical & Biomolecular Engineering	*One area of Dr. Hirasaki's research focuses on gas hydrates. Gas Hydrates offer a vast, untapped source of energy, a key element in the global carbon balance and past global warming events and the number one problem for hydrocarbon transmission in deepwater oil and gas production. This research combines Rice University and external expertise in the natural occurrence of methane hydrates, thermodynamics and kinetics of gas hydrates, and transport through porous media. The research will develop mechanistic models to describe the accumulation and dissociation of gas hydrates. Such knowledge is important to understanding the role that gas hydrates might play in energy exploration and production and with regard to climate change.*
Clarence A. Miller	Chemical & Biomolecular Engineering	*interfacial phenomena, especially those involving surfactants, are the focus of Professor Miller's research. The increased emphasis in the chemical industry on specialty products has brought with it increased interest in surfactants and their applications in detergency, enhanced oil recovery, pharmaceutical and food products, ground water cleanup, agricultural chemicals, personal care products, etc.*
Matteo Pasquali	Chemical & Biomolecular Engineering	*Matteo Pasquali's research focuses on processing flows of microstructured liquids. Micro-structured liquids are ubiquitous in the chemical, polymer processing, coating, food, and biomedical industries. Theoretical and computational modeling of flow and transport in microstructured liquids will be a very important tool to design new processes and apparatus that can produce defect-free products at high rate with minimal environmental impact. Conventional transport laws based on classical irreversible thermodynamics fail to describe transport in liquids like polymer melts, solutions, blood, and dough. In recent years, two new approaches have appeared to model flow and transport in microstructured liquids. One method (mesoscopic) introduces field variables obeying transport equations to represent average local values of the liquid microstructure. The other method (micro-scopic) represents the microstructure by means of a large number of micromechanical contrivances distributed in the flow volume and following stochastic differential equations. The equations of the mesoscopic models include several phenomeno-logical coefficients, whereas the microscopic models depend on few parameters that can be estimated often from knowledge of the liquid's molecular structure. Microscopic models are presently impractical for process modeling because their equations are computationally much more expensive than those of the mesoscopic models.*
Michael S. Wong	Chemical & Biomolecular Engineering	*The Catalysis and Nanomaterials Laboratory, led by Professor Michael S. Wong, is located in the Department of Chemical and Biomolecular Engineering at Rice University, Houston, TX. Our laboratory is engaged in fundamental and applied research at the interface of Chemical Engineering, Chemistry, and Materials Science, with the central theme of functional nanoparticle-based materials. Treating nanoparticles (NPs) as building blocks and assembling them into useful structures is a powerful concept in "bottom-up" nanotechnology, in which the dimension-dependent properties of the NPs can be handled and exploited in a usable form (such as porous oxides and microcapsules). Through such materials we can address long-standing problems in the environment, energy, and health.* *Our current research activities involve (1) designing and characterizing metal-on-metal NPs for water-phase catalytic reactions; (2) synthesizing model nanostructures to elucidate structure-property relationships; (3) developing reduction catalysis as a non-classical approach to cleaning polluted water; (4) exploring nanostructured materials for energy applications; and (5) engineering charge-assembled nanocomplexes into encapsulation and bio-delivery agents.*

Kyriacos Zygourakis	Chemical & Biomolecular Engineering	*Biochar for Carbon Sequestration and Soil Amendment: To better understand the fundamental mechanisms controlling biochar formation, our group is working to determine the pyrolysis conditions that lead to highly stable biochars with optimal carbon sequestration capacity, nutrient retention, and water holding capacity. We have developed specialized reactors that allow us to accurately control the pyrolysis conditions and produce biochars from various feedstocks and for a wide range of heating rates, final heat treatment temperatures and pyrolysis atmosphere. Several analytical techniques (NMR, XPS, gas adsorption, thermogravimetry) are used to characterize the chemical composition, surface chemistry, pore structure porosity and reactivity of the produced biochars. Finally, we study the ability of biochars to enhance plant growth with a combination of experimental measurements (like cation exchange capacity) and numerical simulations aimed at understanding how biochar properties influence the transport and retention of nutrients in biochar-amended soils.* *The ultimate goal of this research effort is to develop and evaluate sustainable processes for large-scale carbon sequestration through bio-char soil amendment.*
Andrew R. Barron	Chemistry	*Research in the Barron Group is currently aimed at the development of rational molecular design approach to materials synthesis, with an emphasis on the leap from synthesis to application of nano-based materials. Since 2002, the focus of research within the Barron Research Group has involved the functionalization of fullerenes and single walled carbon nanotubes (SWNTs). Areas being investigated include: biological applications and interactions, catalysis and materials applications. Functionalization of fullerenes as amino acids allows for their inclusion into polypeptides for the development of new approaches to the treatment of flagrant diseases. The development of a catalytic approach for the amplification of SWNTs may be likened to the polymerase chain reaction for DNA and is aimed at the fabrication of specific nanotube structures for energy applications.*
Vicki L. Colvin	Chemistry	*Professor Colvin's research explores how nanoscale particles interact with the environment and living systems. Her research draws on both synthetic chemistry for the preparation and control of novel nanophase systems as well as physical chemistry for the investigation of their unusual behavior. Currently her projects draw on the unique and responsive behavior of nanoparticles to solve problems related to water purification and targeted cell death.*
Robert H. Hauge	Chemistry	*Single wall carbon nanotubes have many potential applications in energy, power, electrical, sensor and strong light weight materials. For many of the applications they must be made in large amounts at low cost and preferably with specific diameters and band gaps, for instance as semiconductors or metallic tubes. The primary goal of my research is to develop new swnt growth methods that can be scaled to pound and ultimately ton quantities where only specific types of swnt are grown. In addition a second goal is the development of scalable chemistries of swnt that permit swnt to be dispersed as molecular species in solvents and polymers.*
Kristen M. Kulinowski	Chemistry	*Dr. Kulinowski published the first database of citations to peer-reviewed papers addressing nanomaterial risks, a survey of best practices for nanomaterial workplaces, and theGoodNanoGuide, an interactive forum for sharing information about nanomaterial handling practices. Dr. Kulinowski has advised governments in North America, Europe, Africa, and Asia on nanotechnology policy issues. She is co-author of a National Institute for Environmental Health Sciences white paper on training hazardous waste workers to handle nanomaterials and was principal investigator on an Occupational Safety and Health Administration grant to develop instructional materials to assist companies in creating and sustaining safer nanomaterial workplaces.*
John T. McDevitt	Chemistry	*John T. McDevitt is a pioneer in the development of "integrated nano-bio-chip" technologies. McDevitt's miniature, cost-effective, battery-powered diagnostic devices have tremendous long-term potential for a variety of clinical, environmental, and humanitarian applications – especially in developing countries and remote regions where traditional laboratory measurements are not practical.*
James M. Tour	Chemistry	*Tour's scientific research areas include nanoelectronics, graphene electronics, silicon oxide electronics, carbon nanovectors for medical applications, green carbon research for enhanced oil recovery and environmentally friendly oil and gas extraction, graphene photovoltaics, carbon supercapacitors, lithium ion batteries, CO2 capture, water splitting to H2 and O2, water purification, carbon nanotube and graphene synthetic modifications, graphene oxide, carbon composites, hydrogen storage on nanoengineered carbon scaffolds, and synthesis of single-molecule nanomachines which includes molecular motors and nanocars.*

Bruce Weisman	Chemistry	*Dr. R. Bruce Weisman and his group investigate the spectroscopy and photophysics of fullerenes and carbon nanotubes. All of these are closed nanoscopic structures formed from carbon atoms. Fullerenes, such as C60, C70, and their chemical derivatives, have unusual molecular properties that cause interesting behaviors following the absorption of light. Time-resolved absorption and emission methods are used to study radiationless decay, photochemical reactions, and energy transfer in fullerenes. Another major research topic is single-walled carbon nanotube spectroscopy. Following the discovery in Weisman?s lab of near-infrared nanotube fluorescence, the group has measured and unraveled the absorption and emission spectra of more than 30 semiconducting nanotube species. Follow-up projects include detailed elucidation of nanotube electronic structure, as well as applications in non-invasive biomedical imaging and analytical nanotechnology.*
Pedro Alvarez	Civil and Environmental Engineering	*Prof. Alvarez's research focuses on environmental sustainability through bioremediation of contaminated aquifers, fate and transport of toxic chemicals, water footprint of biofuels, microbial-plant interactions, water treatment and reuse, and environmental implications and applications of nanotechnology.*
Philip B. Bedient	Civil and Environmental Engineering	*Dr. Philip B. Bedient is the Herman Brown Professor of Engineering in the Department of Civil and Environmental Engineering at Rice University. He teaches and performs research in surface water hydrology and flood prediction systems, and radar based flood alert. He has directed 60 research projects over the past 35 years, has written over 180 articles in journals and conference proceedings. He has worked on hydrologic problems including major floodplain studies, water quality assessments, and hydrologic modeling for a number of watersheds in Texas, Florida, and Louisiana. He has been actively involved in the area of hydrologic analysis for flood prediction and warning, and has developed a real-time flood alert system for the Texas Medical Center, based on the use of NEXRAD radar data. Dr. Bedient directs the SSPEED Center at Rice for Severe Storm Prediction, consisting of several universities in the Gulf Coast area, which has funding to address the impacts of Hurricane Ike in the Houston area. Both storm surge prediction, inland flooding, and long-term mitigation strategies are being studied with funding from the Houston Endowment. Dr. Bedient also is evaluating low impact development schemes with funding from the City of Houston.*
Jim Blackburn	Civil and Environmental Engineering	*His research includes work with the SSPEED Center on "Lessons Learned From Hurricane Ike" where he studies coastal resiliency and long-term sustainability as well as work with the Shell Center for Sustainability where he has completed a paper titled "Measuring City Sustainability: Project Houston".*
Daniel Cohan	Civil and Environmental Engineering	*The Cohan Research Group at Rice University specializes in the development and application of photochemical models to investigate atmospheric processes and inform air quality management. We are especially interested in how energy use impacts the atmosphere, and how air pollution in turn impacts human health. Current research includes a study of how uncertainty in photochemical modeling impacts environmental decision making; inverse modeling to characterize atmospheric responses to long-term emission trends; and studies exploring the air quality and economic implications of electric power generation.*
Leonardo Dueñas-Osorio	Civil and Environmental Engineering	*Computational and theoretical complex system reliability assessment, failure analysis and topological characterization of interdependent infrastructure systems, instantaneous reliability and resilience of smart lifeline systems, soil-foundation-bridge interaction effects on road networks, long-term performance analysis of wind turbines, and hurricane risk evaluation for urban evacuation.*
Robert Griffin	Civil and Environmental Engineering	*Dr. Griffin's research interests lie in performing field, laboratory, and computational experiments designed to understand the effects and behavior of organic species in the troposphere.*
Qilin Li	Civil and Environmental Engineering	*Dr. Qilin Li teaches courses and conducts research on physical chemical processes that impact water quality in natural aqueous as well as engineered treatment systems. Dr. Li's current research focuses on the behaviors of environmental colloids and macromolecules at aqueous-solid interfaces and the subsequent impact on their fate and transport in natural and engineered systems. By studying natural water quality and advanced water and wastewater treatment technologies, Dr. Li is devoted to finding a way to sustainable water supply.*
Satish Nagarajaiah	Civil and Environmental Engineering	*Dr. Satish Nagarajaiah's teaching and research interests are in the areas of structural dynamic systems; seismic protection; earthquake engineering; smart structures; system identification; structural health monitoring; fault and damage detection; sensing and monitoring of structures subjected to earthquake, wind and waves; applied nanotechnology; and offshore structures. His current research focuses on seismic protection with novel negative stiffness systems, smart structures, health monitoring of deepwater risers and damage detection, and nanosensors in projects funded by the National Science Foundation, Department of Energy, Air Force Office of Scientific Research and other private industries.*
Jamie Padgett	Civil and Environmental Engineering	*Professor Padgett's research focuses on the application of probabilistic methods for risk assessment of structures, including the quantification and promotion of infrastructure sustainability. Her work addresses the protection of sturctures and infrastructure such as bridges exposed to multiple hazards, including earthquakes, hurricane surge or corrosion, as well as the use of advanced materials for retrofit and rehabilitation.*

Mason Tomson	Civil and Environmental Engineering	*His research has focused around two themes, fate and transport of organic and inorganic chemicals in the environment and mechanisms of mineral scale formation and control. His research team was one of the first (circa 1978) to prove that ground water could be readily contaminated by organic chemicals from the surface; they then developed and demonstrated the concepts of facilitated (enhanced) transport and more recently of irreversible (resistant) desorption of chemicals from soils and sediments. These concepts have recently been demonstrated to apply to fullerene and activated carbon nanoparticles. Chemicals that prevent mineral formation, called scale inhibitors, are used in nearly all industrial water treatment as well as in nearly every and oil or gas well in the world and Prof. Tomson has developed one of the only fundamental theories of how these chemicals work. He presently directs five research projects, two from NSF on nanotechnology, two from EPA one on heavy metals in sediments and one on nano-particle transport, and a Brine Chemistry Consortium of ten oil and gas production and service companies. Prof. Tomson is also leading an effort to establish a joint program between Rice University and Nankai University, in Tianjin, China, on sustainable environmental development.*
Calvin H. (Herb) Ward	Civil and Environmental Engineering	*During his 44-year tenure at Rice University, Dr. Ward's research has focused on microbial processes and engineering for surface and ground water quality. His current research involves microbial degradation of DNAPL source zones in the subsurface. Other areas of reserach include: Environmental Microbiology Remediation Technology Development, Chemical Transport and Fate, Environmental Science and Engineering, Technical Writing and Presentation, Urban Systems Analysis.*
Krishnal V. Palem	Computer Science	*Krishna V. Palem is the Kenneth and Audrey Kennedy Professor of Computing at the Department of Computer Science at the George Brown School of Engineering at Rice University. His research interests while focussed on all aspects of embedded computing, include adaptive architectures and computing, algorithms, compiler optimizations, embedded systems, low energy computing and nanoelectronics. He is the founding director of the "Value of Information-Based Sustainabile Embedded Nanocomputing" (VISEN) center at Rice University.*
John B. Anderson	Earth Science	*John has conducted research on various aspects of Antarctic marine geology since his first visit there as a student in 1970. He has participated in 24 scientific expeditions to Antarctica. The culmination of this research was published in "Antarctic Marine Geology" by Cambridge University Press. Anderson's other research has focused on the evolution of the northern Gulf of Mexico Basin (see Late Quaternary Stratigraphic Evolution of the Northern Gulf of Mexico Margin, Society of Sedimentary Geology Special Publication No. 79), and the response of coastal systems to global change. His most recent book is entitled "The Formation and Future of the Upper Texas Coast" and he recently co-edited a Geological Society of America Special Paper entitled "Response of Upper Gulf Coast Estuaries to Holocene Climate Change and Sea-Level Rise," and the American Geophysical Union Special Publication "Tectonic, Climatic and Cryosphere Evolution of the Antarctic Peninsula."*
Gerald Dickens	Earth Science	*Oceanic gas hydrates: Clathrate hydrates of gas (gas hydrates) are crystalline substances composed of water and certain gases (usually methane) that occur naturally in pore space of marine sediment. These hydrates are of interest because they represent a potential future energy resource and modulator of climate change. My research has included studies on the distribution and composition of gas hydrate in sediment columns, experimental work on the thermodynamic conditions of gas hydrate formation and dissociation, and numerical models pertaining to the release of methane into the ocean and atmosphere.*
André Droxler	Earth Science	*Carbonate Sedimentology with emphasis on periplatform carbonate ooze; Paleoceanography and paleoclimatology of the Neogene; Shallow carbonate platforms and deep adjacent environments, evolution, and processes* *Dr. Droxler's past and current research programs involve detailed studies of carbonate periplatform sedimentary records and environments. Areas where research has been and is conducted include the Nicaragua Rise and Belize (Caribbean Sea), the Gulf of Mexico, the Bahamas (Northwestern Atlantic Ocean), the Maldives (equatorial Indian Ocean), and the Queensland Plateau/Great Barrier Reef (Southwest Pacific Ocean).* *Dr. Droxler and his current students are involved in comparative research programs of Holocene, Pleistocene, and Neogene sediments deposited in deep environments surrounding shallow carbonate platforms. Their studies focus on:* *(1) processes related to recent carbonate sedimentation and* *(2) the understanding of variations through time of carbonate mineralogy, micropaleontology and geochemistry in periplatform sediments with direct global and regional implications with respect to paleoceanography, paleoclimatology, and paleoecology.*

Brandon Dugan	Earth Science	*Dr. Dugan's research focus is on the hydrodynamics of the shallow crust (0-5 km). Through observation, theory, and experimentation, he studies the interaction of subsurface flow, sediment deformation, and slope failure. Dr. Dugan is particularly interested in how physical properties (e.g., porosity, permeability, compressibility) vary in response to stress perturbations and fluid content (water and hydrocarbon), and how these properties influence sediment strength. It is important to understand these processes to describe fluid/sediment dynamics in the shallow subsurface, to define the conditions of sediments that are eventually buried deeper, and to understand the nature of sediments involved in submarine slope failures. The results are applicable to understanding the hydrodynamic processes in accretionary prisms, gas hydrate provinces, and terrestrial environments. Dr. Dugan uses numerical models to describe interaction of geology and fluids as basins and flow systems evolve. Currently he is using models to understand the generation of overpressure, fluid flow processes, and sediment stability along passive continental margins. The research documents that passive margins are active and exciting centers for coupled geological processes such as faulting, slope failure, and shallow hydrogeologic flow systems. At the experimental level, his research is two-tiered. Dr. Dugan performs deformation experiments on natural and reconstituted samples to evaluate in situ conditions and physical behavior of sediments over a wide range of stresses and temperatures. He characterizes the effects of mineralogy, grain size, fluid content, and phase changes (e.g. free gas becoming gas hydrate) on poro-elastic and flow behaviors of porous media. He also hopes to develop scaled experimental sedimentation models to observe active fluid flow and deformation processes. These models will provide a rare opportunity to observe and measure phenomena that often are not observed in nature, such as the conditions just prior to a submarine slope failure.*
Cin-Ty A. Lee	Earth Science	*The Earth's atmosphere is to a large extent "buffered" by the Earth's interior. For example, over long (>1 My) timescales, volcanic and metamorphic degassing are the main inputs of CO2 into the atmosphere while chemical weathering and organic carbon burial are the main outputs of CO2. We also know that the Earth does not give up free O2 because all O2 is bound up in silicate or oxide minerals (e.g., rocks!). Atmospheric O2 comes ultimately from reduction of CO2 to CH2O, liberating O2 in the process. Thus, the O2 budget of the Earth's atmosphere is controlled by the CO2 cycle, which itself is controlled by the composition and frequency of volcanic eruptions. All of this together must be intimately linked to the thermal and dynamic history of the Earth's interior, the origin and evolution of continents, and the origin of life. This is what interests me the most right now.*
William Leeman	Earth Science	*In particular, I have focused on the geochemistry of boron and other trace elements and their isotopes in understanding the origins of volcanic rocks, magmatic and other fluids, and borosilicate minerals. Convergent margin magmatism is a significant process contributing to the evolution of the Earth, and impacts humanity locally due to proximity to many populous areas and globally through its influence on atmospheric chemistry and climate effects. Understanding of the fundamental energy and mass budgets that drive this magmatism is relevant to many important issues. As a contribution to that understanding we propose to address several unresolved questions, using the Cascade volcanic arc as a natural laboratory.*
Alan R. Levander	Earth Science	*My primary interests are studying the structure and tectonics of active plate margins, modern orogenic belts, and the structure of the upper mantle under continents using active and passive source seismic methods. I've been involved in a number of experiments, utilizing instrumentation from the PASSCAL facility of IRIS. I also make images of the shallow subsurface using active seismic methods for environmental remediation.*
Andreas Lüttge	Earth Science	*Dr. Lüttge's primary field of research interest covers the processes that govern fluid/mineral or fluid/rock interactions from low-temperature conditions up to the pressure and temperature conditions throughout the Earth's crust. The investigation of the dynamics and kinetics of these interactions will lead to a better understanding of many geologic (and technical) processes including mineral reactions in sedimentary basins, weathering, the fate of nanoparticles in the environment, atmospheric and global change, environmental pollution, hydrothermal systems, and the containment of radioactive wastes.*
Carrie A. Masiello	Earth Science	*I study the Earth's carbon cycle on timescales from 5 years to 100,000 years. My main interests are in* *1. fundamental mechanisms of the carbon cycle and* *2. how humans are altering these mechanisms through combustion of fossil fuel, land use change, and erosion.* *My research uses natural radiocarbon coupled with organic geochemical tools like wet chemical extractions, 13C NMR, physical separations, chromatographic and spectroscopic studies to address problems related to carbon and climate. By combining geochemical tools with a chronometer I can answer questions about both mechanisms and timescales of carbon movement between reservoirs. I am particularly interested in problems related to the movement of carbon between fast and intermediate-cycling carbon pools, including the terrestrial biosphere, the atmosphere, rivers, and ocean sediments. New research in my lab includes the development of organic carbon oxidation state as a tracer of Earth system processes.*

Dale S. Sawyer	Earth Science	*Dr. Sawyer's current research focuses on the dynamic processes which have created continental margins. He uses two tools in his studies: geodynamic modeling and wide-angle ocean bottom seismology. Geodynamic models of the rifting of continental lithosphere are not explaining many previously enigmatic observations at divergent continental margins. Dr. Sawyer uses the finite element method running on a variety of machines up to supercomputer class to simulate the plate tectonic deformation of the upper 125 km of the earth. Along with a colleague at Rice, he recently published a model which can explain why the character (location and style of rifting) of some rifts (including the US Atlantic margin and Australian Exmouth Plateau margin) changes during rifting from so called "simple" shear to "pure" shear.*
Manik Talwani	Earth Science	*Dr. Talwani is engaged in a variety of research efforts. These include:* *Interpreting the results of an airborne gravity gradiometer survey over the San Andreas Fault drill site.* *Examining the potential application of a very sensitive gravity gradiometer to trace the leakage of CO2 sequestered in drill holes.* *Studying the feasibility of increased use of Venezuelan heavy oil.* *Investigating the structure of continental margins.*
Amy Dunham	Ecology & Evolutionary Biology	*Dr. Amy Dunham is primarily interested in the interactions of species in complex tropical forests and especially in relation to anthropogenic disturbances. However, her research spans a wide range of topics in ecology, evolution and conservation biology, from geographic and phylogenetic patterns of trait distributions and community assembly to impacts of extinction and invasion on trophic cascades and ecosystem processes, to studies of global climate change impacts on demography and species interactions.*
Frank Fisher	Ecology & Evolutionary Biology	*Wetlands and estuaries are the "breadbasket" of the coastal ecosystem and represent a natural laboratory for biogeochemical and trace gass processes. The diverse fauna of these ecosystems afford endless opportunities for the study of comparative physiology and animal associations.*
Paul Harcombe	Ecology & Evolutionary Biology	*Dr. Harcombe's publications have elucidated the environmental factors that control plant communities and the distribution of forest types across the landscape. He has documented the effects of floods, fires, and windstorms on forest change. The results of the research are used by the National Park Service for natural area monitoring and management planning.* *Dr. Harcombe is also interested in biomass and stand dynamics in the coastal spruce-hemlock forests of the Pacific Northwest. With collaborators, he has documented patterns of change in long-term study plots on the Oregon coast. In their most recent paper, they reconstructed stand development over 150 years, and used a simple model to project change into the future.*
Volker Rudolf	Ecology & Evolutionary Biology	*Dr. Rudolf's interests are broad but mainly focus on the ecological and evolutionary factors that determine the structure and dynamics of communities and ecosystem functioning. In his research he combine theoretical and empirical work to develop predictive frameworks for understanding how species interactions and abiotic environmental factors determine the structure and dynamics of communities and how they drive population dynamics and the evolution of complex life histories. Most of his current research focuses on the impact of population size structure, cannibalism and seasonal variation (including climate change) on the structure and dynamics of communities and their evolutionary consequences. This research partly overlaps with his work on the role of infectious diseases in determining the dynamics and structure of populations and communities. Most of his empirical research has been on aquatic systems, including phytotelmata, temporary and permanent ponds and headwater streams, using amphibian and invertebrates as model systems. Currently, Dr. Rudolf is working in local pond ecosystems in Texas, but his past research was conducted in the tropics in Ivory Coast, West Africa & in the Southern Appalachian.*
Ronald Sass	Ecology & Evolutionary Biology	*Work is conducted in the Wetland Center for Biogeochemical Research at Rice University. Since 1988 this group has been studying the generation of biogenic atmospheric trace gases and the biological processes in waterlogged plant-soil environments leading to their formation. These gases, principally methane and nitrous oxide are important contributors to global climate change and major components of the chemical system responsible for stratospheric ozone depletion. Our work originally focused on projects sponsored by the National Aeronautics and Space Administration in the tundra and boreal forest wetlands of Northern Canada and Alaska. Our current interests are in process studies of methane production and possible mitigation strategies for methane gas emissions from rice paddies and natural wetlands, the source of nearly half of all methane gas emitted annually to the global atmosphere.*

Evan Siemann	Ecology & Evolutionary Biology	*The focus of Dr. Siemann's research has been investigating how local environmental factors (e.g. enemies, resources, disturbance regime and recruitment limitation) interact with post-invasion adaptation to determine the likelihood and severity of Chinese tallow tree (Sapium sebiferum) invasions into East Texas coastal prairie, mesic forests, and floodplain forests. The results of this research have been highlighted in Science Daily, Environmental News Service, and The Sciences. He has also recently begun to explore the ecosystem level impacts of exotic tree invasions into coastal prairies. His research group is also engaged in a number of applied research projects related to controlling exotic plant and animal invasions into Texas ecosystems.*
Dagobert L. Brito	Economics	*Current research: Optimal Tax Theory, Economics of Defense, Energy Economics, and Law Economics*
Peter Reginald Hartley	Economics	*His research has covered a number of areas, but has recently focused on energy economics. With regard to sustainability, he is interested in the long-term transition of the economy to renewable energy sources and the relationship between energy use and its environmental impacts.*
Kenneth Medlock	Economics	*Kenneth B. Medlock III, Ph.D., is the James A. Baker, III, and Susan G. Baker Fellow in Energy and Resource Economics at Rice University's Baker Institute and the senior director of the Center for Energy Studies, as well as an adjunct professor and lecturer in the Department of Economics at Rice University. He is a principal in the development of the Rice World Natural Gas Trade Model, aimed at assessing the future of international natural gas trade. He has published numerous scholarly articles in his primary areas of interest: natural gas markets, energy commodity price relationships, gasoline markets, transportation, national oil company behavior, economic development and energy demand, and energy use and the environment. He also teaches courses in energy economics and supervises Ph.D. students in the energy economics field.*
Robin C. Sickles	Economics	*Applied Econometrics; Productivity; Empirical Industrial Organization; Panel Data Econometrics.*
Peter Mieszkowski	Economics	*Public finance, urban economics and health economics. Most research interests are centered on health insurance. Peter Mieszkowski is studying emploer provided health insurance as a local public goal where high wage employees who have high demands for health insurance cross subsidize the insurance of lower wages workers. In another project he is studying Medicaid expenditures by U.S. states for the period 1975-2004 to determine the determinants of the relative generosity of different state programs. His most recent article, with Ronald Soligo, Ph.D., is on the governance of the oil and gas industry in the United States.*
Ron Soligo	Economics	*Ronald Soligo is a professor of economics at Rice University and a Rice scholar at the James A. Baker III Institute for Public Policy. His research focuses on economic growth and development and energy economics. Soligo is currently working on issues regarding energy security and the politicization of energy supplies.*
Ted Temzelides	Economics	*His research lies in the intersection of Macroeconomics and Energy, where he studies issues related to trading in OTC markets, the role of R&D in renewable energy on economic growth, properties of emissions trading mechanisms, and strategic issues in oil and gas production.*
Naomi Halas	Electrical and Computer Engineering	*Dr. Halas' group is currently pursuing several projects in the harvesting of solar radiation for energy applications. Plasmonic nanoparticles can be used to redirect incident light into the waveguide and evanescent surface modes of thin film photovoltaic devices. They are also currently collaborating with an Energy Frontier Research Center (EFRC) based at Los Alamos National Laboratory and the National Renewable Energy Laboratory (NREL), based on the carrier generation properties of semiconductor nanocrystals. Coupled quantum dot-plasmonic devices and materials are currently being investigated for their current-harvesting properties. They also have several projects in the area of solar thermal energy that are of interest for delivering new solutions for energy-demanding applications in developing countries, such as water purification, autoclaving, and electricity production, for Global Health needs.*
Isabell Thomann	Electrical and Computer Engineering	*Dr. Thomann's research interests are centered around novel applications of nanophotonics, in which engineered metallic (plasmonic) and dielectric nanostructures are used to achieve unprecedented control over the flow of light and its spatial localization into tiny volumes. In a second exciting area of research, the temporal confinement of light down to attosecond durations has just become possible. He group aims to leverage advances in both of these areas to create novel materials and nanostructures, to study their fundamental properties (optical, electrical and photoelectrochemical), and use them to solve practical problems, e.g. in the areas of energy and photocatalysis.*

Joseph Campana	English	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics as well as Arts & Media research clusters.* *Joseph Campana is a poet, critic, and scholar of Renaissance literature. The Pain of Reformation: Spenser, Vulnerability, and the Ethics of Masculinity (Fordham UP, 2012), and two collections of poetry, The Book of Faces (Graywolf, 2005) and Natural Selections (2012), which received the Iowa Poetry Prize. His poems appear in Slate, Kenyon Review, Poetry, Conjunctions, Colorado Review, and many other venues. He has received the Isabel MacCaffrey Essay Prize, the MLA's Crompton-Noll Award for LGB studies, and grants from the NEA and the HAA. Current projects include a study of children and sovereignty in the works of Shakespeare entitled The Child's Two Bodies, an edited collection (with Scott Maisano) entitled Renaissance Posthumanism, and a collection of poems entitled The Book of Life. His interests also include energy, affect, and enervation and their representation in a range of arts and media from the Renaissance to the present. He hosts a blog titled "Alternate Currents" which explores how central art is to the conversations we now have about energy, sustaianbility, and ecology. It considers the way range of sarts and media engage with energy: extraction, generation, consumption, crisis, distribution, sustainability, and enervation.*
Caroline Lavendar	English	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics research cluster.*
Timothy Morton	English	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics as well as the Arts & Media and Philosophy & Ethics research clusters.* *Timothy Morton studied English literature at Oxford (BA and D.Phil.), and then did postdoctoral work at Princeton. He has worked at NYU, CU Boulder and UC Davis. Morton is currently writing Dark Ecology and Buddhaphobia, two studies of philosophy and culture in the global nineteenth century. He is the author of Realist Magic: Objects, Ontology, Causality (Open Humanities Press, 2013), Hyperobjects: Philosophy and Ecology after the End of the World (U of Minessota P, forthcoming), The Ecological Thought (Harvard UP, 2010), and Ecology without Nature (Harvard UP, 2007). He has published seven other books, all of which are about issues and authors in the Romantic period (Frankenstein, Percy Shelley, Romantic-period food and eating, radicalism). Professor Morton is the author of over eighty essays on philosophy, ecology, literature, food and music. He gives lectures around the world on literature, ecology, philosophy, and culture.*
Alexander Regier	English	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics research cluster.*
Douglas G. Brinkley	History	*Research Areas: Environmental History and U.S. foreign policy*
Kathryn M. de Luna	History	*Research Areas: Africa, Historical Methodologies, Social History of Food and Environment. Dr. de Luna is a historian of Africa specializing in the precolonial period. She is interested in the intersection of political economy, social affiliation, and forms of individualism and subjectivity in precolonial African societies over the longue durée. She works in a region that today encompasses the nation of Zambia, the southern regions of the Democratic Republic of the Congo, and the northern zones of Zimbabwe, Botswana, and Namibia. As an historian of oral societies, her work is shaped by the imperative to produce the archives of evidence from which I write history. As a result, she is a specialist in comparative historical linguistics and have a keen interest in archaeology, ethnography and oral traditions*
Randal L. Hall	History	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.* *Randal Hall, building on his recently published study of extractive industry and environmental change since 1760 in a southern Appalachian river valley, is in the early stages of a project that takes a long-term perspective on U.S. debates about resource scarcity during the nineteenth and twentieth centuries.* *Research Areas: U.S. environmtnal history*
Cyrus C. M. Mody	History	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics research cluster.* *Cyrus Mody's work focuses on the broad changes in American science and science policy in the late Cold War and post-Cold War era. These changes include periodic attempts to adapt research infrastructures established for national security purposes in the early Cold War to the development of alternative energy and environmental remediation since about 1970.*
Jack Zammito	History	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.*

Masayoshi Shibatani	Linguistics	*Dr. Shibatani's research focusses on the issues of language endangerment. His research particularly targets the correlation between biological diversity and linguistic diversity and the impact of language loss on the transmission of environmental knowledge across generations. Specifically, more than one half of the currently spoken languages are expected to die over the next one hundred years. His research is engaged in the study and description of a number of endangered languages in Taiwan and Indonesia.* *Furthermore, Dr. Shibataniis also engaged in an NSF project entitled "Austronesian Voice Systems: An Eastern Indonesian Perspectives" which explores the empirical and theoretical issues of the controversial Austronesian focus system--from the original proto Austronesian four-way contrastive system to the complete loss via three-way and two-way systems. Finally, the field investigation of the minority languages of Flores Island facing marginalization will contribute significantly to their documentation and to our understanding of the role of language diversity in sustainable development.*
Yildiz Bayazitoglu	Mechanical Engineering	*Research Areas:* *Convective heat transfer with phase change, heat transfer in radiatively participating medium, micro and nano scale heat transfer, development of bioheat equation, advanced thermal manufacturing with emphasis on containerless processing and fuel cell microreformer design and thermal oil well heat transfer analysis.* *Research Statement:* *In the past I have made contributions into the fundamentals of radiation and convective heat transfer, phase-change heat transfer, electromagnetics, and applications of these fundamentals to solar energy utilization, thermal storage, heat exchanger design, solar collector design, oil reservoir fluid flow and thermal analysis, heat transfer and fluid flow analysis of thermal wells, containerless thermophysical property determination techniques, such as the thermal conductivity, viscosity and surface tension of high temperature materials using accoustic and electromagneticlevitators. Many of my contributed articles are currently used in textbooks. My research efforts have caused me to rely heavily on analytical and computational methods, as well as experimental validation and demonstration. Some of my recent research has become increasingly interdisciplinary, requiring an integration of topics from most engineering disciplines.*
Jun Lou	Mechanical Engineering	*Dr. Lou's research interest lies in the following areas: Materials related issues and device developments for MEMS/NEMS applications; Size effects in mechanical integrity and electrical properties of metallic nanostructures; Interfacial behavior of NT/NW reinforced nanocomposites; Novel nano-fabrication methods with implications for Bio-nano interactions and sensing applications.*
M. McStravick	Mechanical Engineering	*Research interests are in the areas: 1) Wind Energy: Turbine blade design and testing 2) medical equipment design and testing*
Gwen Bradford	Philosophy	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Philosophy & Ethics research cluster.* *Bradford's concerns the nature and value of achievement. Achievement and innovation present an interesting puzzle for environmental philosophers. Harnessing the Earth's resources for energy and power are among the most significant human achievements. Does preserving our valuable natural world come at the expense of holding back on the expansion of innovation and achievement? Or does a proper understanding of achievement show that preserving nature itself can be an achievement?*
Melinda Fagan	Philosophy	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Philosophy & Ethics research cluster.* *Fagan's research focuses on the 'living energy' inherent in stem cells and other developmental systems. How can we understand these complex dynamic systems, and can biological explanations provide insights about other complex systems – such as the environment? What should our role be, as planning agents within an intricate ecological system?*
Jeffrey Kripal	Religious Studies	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Catastrophe & Aesthetics research cluster.*
Michael O. Emerson	Sociology	*Dr. Emerson's latest line of research is on the role of migration on urban growth across nations, city development, urban transportation, and the future of cities. Currently he is working on a book examining how cities are developing in the post-modern world, tentatively entitled A Tale of Cities: Houston, Copenhagen, and Our Urban Future.*
Stephen L. Klineberg	Sociology	*In March 1982, he and his students initiated the annual Houston Area Survey, now in its 33rd year of tracking the changes in the demographic patterns, life experiences, attitudes, and beliefs of Harris County residents. The Houston region recovered from the collapse of the oil-boom in the 1980s to find itself squarely in the midst of a restructured economy and a demographic revolution. No other city in America has been the focus of a long-term longitudinal research program of this scope. None more clearly exemplifies the transformations that are refashioning the social and political landscape of urban America.*

Elizabeth Long	Sociology	**Member of Center for Energy & Environment Research in the Human Sciences at Rice. Specifically works in the Social Analytics research cluster.* *Elizabeth Long is currently studying the development of the anti-fracking movement in upstate New York, focusing on how participants engage science, democracy, and a bio-cultural understanding of place to win legitimacy and political traction for their conception of sustainability and fossil fuel "abolitionism."* *Generally, Dr. Long's research also explores the ways that culture both constrains and enables social identity, whether at the individual or more collective level. She is particularly concerned with how this relates to social inequality and social change. Informed by traditions in European social theory (Bourdieu, Foucault, critical theory) and feminist thought, her work is qualitative in nature, and tends to be historical and process-oriented in flavor. Dr. Long's research also focuses on environmental sociology.*
Gisela Heffes	Spanish and Portuguese	*Dr. Heffes' areas of interest include environmental studies and discourses on nature.* *Gisela Heffes is the editor of the anthology Judíos/Argentinos/Escritores (1999) and has published numerous articles, reviews and interviews in both Spanish and English. Her book Las ciudades imaginarias en la literatura latinoamericana (2008) was a study of the literary representations of non-existent urban spaces and their significance in the wider political and cultural framework of Latin America. Professor Heffes' new book, Políticas de la destrucción / Poéticas de la preservación, examines narratives from the mid-twentieth century to the present that are related to the environment in Latin America and analyzes how these texts refer to both the conservation and destruction of nature. She has also edited two collections of essays, one on the experience of displacement and translocation in the creative imagination of Spanish-American writers residing in the US (Literal, 2012), and another devoted to the intersections between utopia and cities in Latin America (Iberoamericana-Vervuert, 2013).*
Katherine Ensor	Statistics	*Dr. Katherine Ensor works on the theoretical development of statistical methods for practical problems. Her primary emphasis is the analysis of dependent data as it relates to environmental statistics and financial statistics. She has also done significant work in the area of simulation based estimation for stochastic processes. The underlying premise of this latter research effort is the practical implementation of stochastic models as a data analysis tool.*
Loren Raun	Statistics	*Environmental statistics, human health risk assessment (including stochastic), air, soil and ground water pollution fate and transport.*