

Academic Affairs Research

NEWSLETTER

WINTER 2012

Welcome to the Winter edition of the quarterly Research Newsletter. The purpose of the newsletter is to share with the university academic community the accomplishments of our faculty in the publication of books, chapters, journal articles, conference presentations, exhibits, invited lectures, and awards during the previous quarter (July 1 – September 30, 2012). We will announce research project awards and contracts and grants from philanthropic foundations that have been funded in the previous quarter. Periodically, we will include feature articles or matters of interest to the research community as well as honors and awards received by faculty.

Recent Publications

Journal Articles and Book Chapters

Cory Bolkan (Human Development)

Zivin, K., D. G. Campbell, A. B. Lanto, E. F. Chaney, C. Bolkan, L. M. Bonner, E. M. Miller, M. Valenstein, T. J. Waltz, and L. V. Rubenstein. 2012. "Relationships between Mood and Employment over Time among Depressed VA Primary Care Patients." *General Hospital Psychiatry*, 34/5: 468-477. Associations between depression, productivity and work loss have been reported, yet few studies have examined relationships between longitudinal depression status and employment continuity. We found that although general employment rates remained stable (21%-23%), improved depression status was associated with an increased likelihood of becoming employed over seven months among those who were both depressed and nonemployed at baseline. Improvements in depression status starting at seven months and continuing through 18 months were associated with remaining employed over the 18 months, relative to those who were depressed throughout the same timeframe.

Michael Dunn (Education)

Dunn, M. 2012. "Response to Intervention: Employing a Mnemonic Strategy with Art Media to Help Struggling Writers." *Journal of International Education and Leadership*, 2/3. One of the means to manage intervention programming for struggling writers is for educators to provide these children with mnemonic-strategy instruction. In this study, four 4th-grade struggling writers at a Pacific Northwestern U.S. school completed a writing-interest survey, learned the Ask, Reflect, Text (ART) story-writing mnemonic strategy which included the use of art, received story content and quality progress-monitoring scores at selected sessions, and completed a final exit interview about the intervention. All four participants improved with content; improving quality was more of a challenge.



Recent Publications

Journal Articles and Book Chapters

John Harrison (School of the Environment)
Harrison, I. A., P. J. Frings, A. H. W. Beusen, D. J. Conley, and M. L. McCrackin. 2012. "Global Importance, Patterns, and Controls of Dissolved Silica Retention in Lakes and Reservoirs." *Global Biogeochemical Cycles*, 26. Silica is a critical resource for certain kinds of phytoplankton, and it has been proposed that by constructing dams and impounding rivers, humans have dramatically altered the amount of silica in freshwaters and the coastal ocean, thereby affecting aquatic ecosystems. This paper uses published lake and reservoir data to develop a new global model to predict silica retention by lakes and reservoirs, and presents the first-ever global maps of silica retention efficiency and a new estimate of the importance of dams in removing silica from aquatic systems.

John Harrison (School of the Environment)
Davidson, E. A., M. B. David, J. N. Galloway, C. L. Goodale, R. Haeuber, I. A. Harrison, R. W. Howarth, D. B. Jaynes, R. R. Lowrance, B. T. Nolan, J. L. Peel, R. W. Pinder, E. Porter, C. S. Snyder, A. R. Townsend, and M. H. Ward. 2012. "Excess Nitrogen in the U.S. Environment: Trends, Risks, and Solutions." *Issues in Ecology*, 15. This paper presents new research results showing widespread effects on ecosystems, biodiversity, human health and climate, suggesting that in spite of decades of research quantifying the negative consequences of too much available nitrogen in the biosphere, solutions remain elusive. There have been important successes in reducing nitrogen emissions to the atmosphere and this has improved air quality. Effective solutions for reducing nitrogen losses from agriculture have also been identified, although political and economic impediments to their adoption remain.

Barry Hewlett (Anthropology)
Hewlett, B. S., J. Mongosso, R. King, and A. C. Lehmann. 2012. "Searching for the Truth: The Poison Oracle among Central African Foragers and Farmers." *Magic, Witchcraft and Religion: A Reader in the Anthropology of Religion*, 9th Edition, Eds., P. Moro and J. Myers. Columbus, Ohio: McGraw-Hill, 2012, Chapter 7: 316-322. This chapter describes how a plant (*Strychnos icaia*) that contains strychnine is used to answer important questions about illness, death, fertility, and theft.

Kristin Huggins (Education)
Margolis, J. and K. S. Huggins. 2012. "Distributed, But Undefined: New Teacher Leader Roles to Change Schools." *Journal of School Leadership*, 22/5. This paper examines teacher leader role development and definition by looking at one emergent model of distributed leadership: the hybrid teacher leader (HTL). Participants included six HTLs across four school districts over two years, as well as their administrators. Extensive qualitative data was collected and subsequently analyzed, including interviews, on-site observations, and artifacts. Findings included a pervasive lack of role definition for the HTLs amidst heightened organizational complexity, leading to numerous de facto definitions emerging.

Clayton Mosher (Sociology)
Mosher, C. "The Myth of Accurate Crime Measurement." *Demystifying Crime and Criminal Justice*, Second Edition, Eds., R. M. Bohm and J. T. Walker. New York, New York: Oxford University Press, 2012, Chapter 1. This chapter examines the three primary methods of measuring crime (official data, victimization studies, and self-report studies) and argues that none can provide a completely accurate depiction of the amount of crime in society.

Recent Publications *continued*

Journal Articles and Book Chapters

Gregory Rose (Business)

Carlo, J. L., K. Lyytinen, and G. M. Rose. 2012. "A Knowledge-Based Model of Radical Innovation in Small Software Firms." *MIS Quarterly*, 36/3: 865-895. This paper adopts the lens of absorptive capacity (ACAP), defined by two dimensions—the knowledge base (consisting of knowledge diversity, depth, and linkages) and routines (consisting of sensing and experimentation)—to explain how a software firm's knowledge endowments influence its level of radical information technology innovation during a technological breakthrough.

Yoshie Sano (Human Development)

Sano, Y., M. M. Manoogian, and L. L. Ontai. 2012. "The Kids Still Come First: Creating Family Stability during Partnership Instability in Rural, Low-Income Families." *Journal of Family Issues*, 33/7: 942-965. This study examined the nature of partnerships among 28 rural, low-income mothers who experienced partnership transitions across three waves of annual interviews. The qualitative analysis revealed that mothers desired the Standard North American Family (SNAF) as a normative family structure, yet their pursuit of SNAF, ironically, resulted in partnership instability. The mothers' quest for SNAF resulted in constant negotiation to try to ascribe a role to each family member and define/re-define boundaries among internal and external family systems.

Praveen Sekhar (Electrical Engineering)

Sekhar, P. K. and V. Uwizeye. "Review of Sensor and Actuator Mechanisms for BioMEMS." *MEMS for Biomedical Applications*, Eds., S. Bhansali and A. Vasudev. Philadelphia, Pennsylvania: Woodhead Publishing, 2012, Chapter 2: 46-77. This chapter presents a brief introduction to sensors and actuators and the difference between them is highlighted. The classification of sensors and actuators is discussed, and the variables deciding the choice of sensors and actuators are listed. A brief description of the common sensing (optical, chemical,

electromagnetic, and piezoresistive) and actuation (electrostatic, piezoelectric, magnetic, thermal, etc.) modalities is presented along with relative merit of each technique over another. Finally, an optical biosensor and microrobot illustrating the biomedical application of sensors and actuators are detailed.

Stephen Solovitz (Mechanical Engineering)

Saffaraval, F. and S. A. Solovitz. 2012. "Near-Exit Flow Physics of a Moderately Overpressured Jet." *Physics of Fluids*, 24/8. This study uses high-accuracy flow measurements to examine the reasons for reduced air entrainment in moderately overpressured jets, such as those seen in volcanic eruptions.

Steve Sylvester (Sciences)

Rodriguez del Rey, Z., E. F. Granek, and S. Sylvester. 2012. "Occurrence and Concentration of Caffeine in Oregon Coastal Waters." *Marine Pollution Bulletin*, 64/7: 1417-1424. This study measured anthropogenic caffeine in seawater collected from the intertidal zone near stream/river outflows at multiple sites along the Oregon coast. An association with rain events suggesting the source was ground water rather than riverine in origin was observed. A fascination with caffeine amongst the media was also discovered as the story went viral within a few weeks of publication.

Brian Tissot (School of the Environment)

Ortiz, D. M. and B. N. Tissot. 2012. "Evaluating Ontogenetic Patterns of Habitat Use by Reef Fish in Relation to the Effectiveness of Marine Protected Areas in West Hawaii." *Journal of Experimental Marine Biology and Ecology*, 432-433: 83-93. An examination of habitat use by reef fish in Hawaii in areas protected from fishing.

Recent Publications *continued*

Journal Articles and Book Chapters

Brian Tissot (School of the Environment)
Fox, H. E., K. M. Haisfield, M. S. Brown, T. C. Stevenson, B. N. Tissot, W. J. Walsh, and I. D. Williams. 2012. "Influences of Oceanographic and Meteorological Features on Reef Fish Recruitment in Hawaii." *Marine Ecology Progress Series*, 463: 259-272. An examination of how oceanographic and climate factors influence recruitment in reef fish in Hawaii.

Tom Tripp (Business)
Cox, S. S., R. J. Bennett, T. M. Tripp, and K. Aquino. 2012. "An Empirical Test of Forgiveness Motives' Effects on Employees' Health and Well-Being." *Journal of Occupational Health Psychology*, 17/3: 330-340. Two critical-incident studies were conducted to determine what motivates employees to forgive (or reconcile) with coworkers who offend them. Data from the first study revealed five types of motives for forgiveness: apology, moral, religious, relationship, and lack of alternatives. Data from the second study on a different sample confirmed the five-factor structure, and structural equation modeling demonstrated differential relationships between the five motives and the outcome variables, stress and health. Individuals who claimed to have forgiven because they believed they had no other alternatives, or who forgave because they believed a high power (religious) required it, were most likely to report greater stress and poorer health. Positive outcomes of forgiveness (less stress) were discovered for those employees who forgave because they believed it was the right (moral) thing to do. Forgiving for relationship and apology reasons was not significantly related to either stress or general health.

Jie Xu (Mechanical Engineering)
Hashmi, A., A. Strauss, and I. Xu. 2012. "Freezing of a Liquid Marble." *Langmuir*, 28/28: 10324-10328. This study presents for the first time the observations of a freezing liquid marble, which is noticed to undergo a shape transition from a spherical to a flying-saucer-

shaped morphology. The freezing dynamics of liquid marbles is observed to be very different from that of a freezing water droplet on a superhydrophobic surface. For example, the pointy tip appearing on a frozen water drop could not be observed for a frozen liquid marble. In the end, a possible explanation of the observed morphology is highlighted.

Jie Xu (Mechanical Engineering)
Lu, X., Q. Huang, W. Miller, D. E. Aston, I. Xu, F. Xue, H. Zhang, B. A. Rasco, S. Wang, and M. E. Konkel. 2012. "Comprehensive Detection and Discrimination of Campylobacter Species by Use of Confocal Micro-Raman Spectroscopy and Multilocus Sequence Typing." *Journal of Clinical Microbiology*, 50/9: 2932-2946. A novel strategy for the rapid detection and identification of traditional and emerging Campylobacter strains based upon Raman spectroscopy is presented. A total of 200 reference strains and clinical isolates of 11 different Campylobacter species recovered from infected animals and humans from China and North America were used to establish a global Raman spectroscopy-based dendrogram model for Campylobacter identification to the species level and cross validated for its feasibility to predict Campylobacter-associated food-borne outbreaks.

Wei Xue (Mechanical Engineering)
Li, P., N. Lei, I. Xu, and W. Xue. 2012. "High-Yield Fabrication of Graphene Chemiresistors with Dielectrophoresis." *IEEE Transactions on Nanotechnology*, 11/4: 751-759. This paper demonstrates a simple, low-cost, but effective approach to deposit graphene on silicon wafers with dielectrophoresis. With a comb-shaped electrode design, graphene sheets can be actively captured between electrodes. The high-precision, high-yield deposition provides a practical approach for the fabrication of future graphene electronic devices and sensors.

Recent Publications *continued*

Journal Articles and Book Chapters

Wei Xue (Mechanical Engineering)

Zhao, J., L. Pengfei, and W. Xue. 2012. "Aligned Single-Walled Carbon Nanotubes as pH Sensors: Design, Fabrication, and Characterization." *Dekker Encyclopedia of Nanoscience and Nanotechnology*, Second Edition, Eds., J. Schwarz, C. I. Contescu, and K. Putyera. New York, New York: Taylor and Francis Group, 2012, DOI: E-ENN2-120048583.

Dielectrophoresis has been used in the controlled deposition of single-walled carbon nanotubes (SWNTs) with the focus on the alignment of nanotube thin films and their applications in the last decade. This entry extends the research from the selective deposition of SWNT thin films to the alignment of small nanotube bundles and individual nanotubes. The simple fabrication process, high sensitivity, and fast response of the SWNT-based sensors facilitate their applications in a wide range of areas.

Recent Presentations

Conference Presentations, Exhibits, Invited Lectures, Awards

Cory Bolkan (Human Development) was a co-author on a paper accepted for presentation at the annual Joint Statistical Meetings in San Diego, California, on July 28-August 2, 2012. The presentation, titled "The Longitudinal Relationship between Depression and Employment among VA Primary Care Patients," investigated the links between depression and employment over time.

Allison Coffin (Neuroscience) chaired the Gordon Research Seminar on the Auditory System at Bates College in Lewiston, Maine, on July 7-8, 2012. She also presented a poster at this conference entitled "Bc12 proteins and p53 are necessary for aminoglycoside-induced hair cell death in the zebrafish lateral line." This research seeks to understand how some antibiotics can cause hearing loss and how this hearing loss can be prevented.

Jane Cote and Claire Latham (both Accounting) presented their research study with co-author Anne Christensen (Montana State University) titled "Is the Defining Issues Test the Right Instrument for Accounting Ethics Research?" at the American Accounting Association Annual Meeting in Washington, D.C., on August 8, 2012. This study uses meta-analysis to aggregate findings across accounting studies which have employed the Defining Issues Test in ethics research. The results provide insights across commonly employed variables such as ethical choice, ethics instruction, political ideology, accounting experience, gender, GPA, age, and major.

Steve Fountain (History) gave the keynote lecture titled "What Comes After the New Western History?: Western and Public History in the Classroom, on the Web, and on the Trail" at the Fall Meeting of the Northwest Oregon-California Trails Association in Vancouver, Washington, on September 15, 2012.

John Harrison (School of the Environment) and co-authors Patrick Frings and Daniel Conley presented their research on "Regional and Global Controls and Potential Significance of Dissolved Silica Retention in Lakes and Reservoirs" at the 2012 Summer Meeting of the American Society of Limnology and Oceanography in Kyoto, Japan, on July 8-13, 2012, and at the 97th Annual Meeting of the Ecological Society of America in Portland, Oregon, on August 10, 2012.

John Harrison (School of the Environment), Bridget Deemer, and Maria Glavin presented "Water Level Drawdown Boosts Greenhouse Gas Production in a Small Eutrophic Reservoir" (with Deemer as lead presenter) and "Water Level Drawdown is a Hot Moment for Methane Ebullition in a Small Eutrophic Reservoir, Lacamas Lake, Washington" (with Glavin as lead presenter) at the 97th Annual Meeting of the Ecological Society of America in Portland, Oregon, on August 9, 2012.

Funded Research

John Harrison, United States Army Corps of Engineers - \$250,000 (over two years)
Characterizing Greenhouse Gas Emissions from Water Reservoirs and Possible Mitigation Measures with Water Level Drawdown Policy

There is increasing recognition that freshwater impoundments (reservoirs) are, collectively, an important source of greenhouse gases to the atmosphere. This work will characterize greenhouse gas fluxes from several Pacific Northwest reservoirs experiencing different water drawdown regimes in an attempt to understand how water drawdown affects release of greenhouse gases to the atmosphere.

Alair MacLean, National Science Foundation - \$81,772

Military Service and the Life Course

This project focuses on whether and how relationships between military service and a variety of outcomes (i.e., marriage, employment, education, and earnings) have changed as broader institutional changes have reshaped American society. Two specific empirical questions are addressed. First, how have differences between veterans and non-veterans changed over the past half century? Second, how have the correlates of specific military experiences—including serving in combat and having a service-related disability—changed in recent decades across the past half century?

Brian Tissot, Marine Conservation Alliance - \$40,000

Benthic Habitats within Bering Sea Submarine Canyons

This project compiles data from several sources to examine the potential benefits of deepsea corals and sponges in the Bering Sea, Alaska, in submarine canyons.