ABOUT THE CAS JUNIOR FACULTY SUMMER RESEARCH AWARD PROGRAM

The College of Arts & Sciences Junior Faculty Summer Research Awards program was initiated in the 2005-2006 academic year to support selected junior faculty as they develop their research and creative projects during their probationary period, a critical time in their careers. The program provides summer salary support to junior faculty for the purpose of advancing their research and creative projects and scholarship. Recipients are selected on a competitive basis.

A total of 96 awards have been made since the program’s inception, with 13, 17, 13, 11, 15, 11 and 16 awards being made in 2006, 2007, 2008, 2009, 2010, 2011 and 2012, respectively.

ACKNOWLEDGMENTS

Sincere thanks are due to members of the College Research & Faculty Development Committee for their diligent work in reviewing the applications and selecting the recipients. We are also indebted to Mrs. Dana Kearns and Ms. Roxann Sumner, the Dean’s office staff who worked meticulously in handling the logistics involved in the application review process, award management, and the setting up of the poster presentation session. Last but not least, our gratitude goes to award recipients and all applicants for making the junior faculty summer research program the success that it is.

PROGRAM

Date: November 15, 2012
Location: First Floor Lobby, Roark Building (Refreshments served)

8.00 - 8.30 am Set up
8.30 - 8.35 am Opening remarks, Dr. John Wade, Dean
8.35 - 9.10 am Poster session
9.00 - 9.30 am Clearing

FURTHER INFORMATION

For further information please contact:

Dr. Tom Otieno
Associate Dean for Administrative Affairs & Research

E-mail: tom.otieno@eku.edu
Phone: 622-1393
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ABSTRACTS

1

Altered Landscapes in Ron Rash’s *Serena*

**Erin Presley**
Department of English & Theatre

Set in Western North Carolina near the end of the lumber boom of the 1920s and the birth of the campaign to create the Great Smoky Mountains National Park, Ron Rash’s *Serena* emphasizes the far-reaching effects of outside forces on the physical landscape and on the people of the Mountain South. Viewing the area as isolated and foreign, Rash’s titular character, her husband Pemberton, and their associates ruthlessly exploit the land and its people for their own personal gain as their lumber company clear-cuts thousands of acres of virgin hardwoods. In addition to their abuse of the land, they also dismiss the locals as their inferiors, people subject to superstition and backwardness. While the Pembertons never understand or appreciate the area or its population, several outsiders and locals strive to protect the physical landscape and way of life. For example, Rash’s rendition of Horace Kephart not only seeks to save the mountains from the unyielding ambition of the Pembertons but also forging meaningful relationships with two key characters, Sheriff McDowell and Rachel Harmon, both natives of the region.

Even though Kephart represents a positive outside agent in the novel, he receives far less attention than Serena and Pemberton or, more importantly, the locals. Indeed, Rash privileges the stories of the loggers, Rachel, and Sheriff McDowell, allowing those voices to present and ponder the altered landscape of their mountain home. The loggers discuss the ecological devastation wrought by timbering as well as the impending loss of their livelihoods if the National Park becomes a reality. Through these complex characterizations, Rash clearly reveals the ruinous results of logging on the land but he also presents the people’s conflicted response to the Park’s creation, both projects primarily engineered by outside forces.
Is There a Future for French in the United States?

Randi Polk
Department of Foreign Languages & Humanities

A discussion on the future of French programs in the United States has been brewing for several years now. Many institutions have cut French programs, citing low enrollment and poor financial gain from course offerings. In institutions where French remains, programs are run by significantly fewer faculty members than in the past; nevertheless, enrollment trends do not reveal a tragic decline and many programs continue to thrive. However, the story does not end there. We do have to modify our programs and goals to reflect the challenges and opportunities facing students, and help them prepare for careers with the current state of affairs in mind. Global and local economies are not healthy and this creates a sense among incoming university students that they must seek “practical” degrees for the sake of their future careers. My objective is to analyze successful programs as well as the specific characteristics of Eastern Kentucky University students to come up with some strategies that will help the French program at EKU to maintain its success. It shall remain practical and relevant by keeping up with evolving trends and student needs.

Some Rights are Reserved: An Argument for Breaking the Intellectual Property Binary

Jill Parrott
Department of English & Theatre

Intellectual property issues are important for all academics as we create, incorporate others’ works for research and writing, and facilitate student work. This project argues that flexible copyright laws such as some rights reserved most accurately meet the needs of contemporary authorship, where information exchange happens at speeds unimaginable when most copyright laws were written. Some rights reserved is uniquely situated in our time and widens discussions about the role of the author and the protection of intellectual property by neutralizing the all rights reserved/no rights reserved binary currently at work.

Copyright licenses have become stricter as entities strive to hold tightly to their intellectual property, often to the detriment of creative progress and for the purpose of maintaining profit control. In fact, as language theories have argued for the inherent separation of text and author, copyright laws have inversely argued for tighter control between text and author. On the other hand, a movement to abolish copyright law altogether has arisen that seeks to sever connections between creator and creation in favor of a free-for-all that keeps authors from any legal right to their intellectual property. These differing ideologies set up an unnecessary choice in which a creator must control work to ward off thieves or open herself up to a world where authors are not given any credit. As with other binaries, neither extreme accurately expresses the possibilities that could exist between “all rights reserved” and “no rights reserved” copyright. The some rights reserved movement represents a marked enough shift in language studies to warrant deep and broad intellectual inquiry, and my discussion contributes to the growing support for the ideological space of some rights reserved and spurs others to include it as part of their intellectual and pedagogical approach.
The Student’s Voice in the Formative Assessment Feedback Loop

Gill Hunter
Department of English & Theatre

Great changes occurred in the English Department at East Jessamine High School in Nicholasville, KY over the past year as they transitioned from a traditional grading structure to one that implements the new Kentucky Core Academic Standards and employs standards-based grading. The changes were dramatic and required teachers to make extensive use of formative assessment, a practice that re-envisions the teacher-student relationship in important ways: teachers interpret student work in order to make instructional decisions, not to assign letter or numerical grades. This interpretive work is complex, as is the two-way communication that must occur between student and teacher and the reflective work in which students must engage. At East Jessamine this work was made concrete in ways I argue are vital to the effectiveness of the formative assessment process and the authenticity of the feedback students give teachers (and tell themselves) about what they need to know and the corresponding instruction teachers provide so that students can meet their own goals and demonstrate mastery of the standards when formative assessments give way to unit-end summative assessments, the only grades that exist in a standards-based grading environment. One of these ways, “Learning Target Logs” is relatively private and entirely within each student’s control, while the other – the use of sticky notes to self-identify as either “Lost” or Found” in regard to a unit’s key concepts – is very public and, when demonstrable learning is documented, cause for celebration. Both practices empower students and both fit within the formative assessment literature. By contextualizing the practices through the foundational theory undergirding them, I strive to make this knowledge available to educators who prioritize student learning. And by extending this research to consider feedback more broadly, I am identifying the most important ways teachers and students communicate to maximize instructional effectiveness.

The Effects of Group Music Making on Salivary Cortisol, Secretory Immunoglobulin-A, and Positive Affect

Christine Carucci
Department of Music

The purpose of this study was to examine the effects of group music making on selected salivary analytes, as well as self-reported psychological benefits in a small sample of adult recreational musicians. Specifically, this study examined two indicators of immune functioning: Salivary cortisol and secretory immunoglobulin-A (S-IgA). Salivary cortisol is a biomarker indicative of the body’s response to stress, while S-IgA is an antibody that is key in protecting the oral cavity, lungs and intestines from invading pathogens. A psychological measure of positive affect was also examined.

To answer the question, “Do adult recreational musicians experience changes in positive affect, salivary cortisol, or S-IgA as a result of group music making?” a repeated measure design was used. Days 1 and 3 used a group music making treatment, while days 2 and 4 used a non-music
Subjects (N=9) completed a pre and post-test for each data collection point, which consisted of a “Group Music Making Questionnaire,” and the “Positive and Negative Affect Schedule.” In addition, subjects collected pre and post-test saliva samples using the passive drool method of collection.

At this time, data collection and analysis is ongoing and will be completed in November 2012. It is hypothesized that subjects will experience higher positive affect, increases in SIgA and decreases in salivary cortisol following a ninety minute group music making session, when compared to a ninety minute non-music making control.

The Playground as a Community Art Space: A Study in Art Education

Ilona Szekely
Department of Art & Design

Children’s energy exhibited at a playground is not just physical, but creative, and mentally challenging. The playground has great opportunities for learning beyond kinesthetic awareness, offering a place to foster creative exploration. For children, the playground can offer an understanding of basic art processes and problem solving skills. Beyond ordinary play structures, exceptional playgrounds allow for experiencing spaces, manipulating grounds, exploring nature and manmade forms. Young participants can challenge the spaces and creative play opportunities offered by the designer: building, forts, hidden alcoves, and setting up fantasy worlds. Model playgrounds offer vast opportunities to explore the nature of children’s creative behavior and discover new teaching approaches in art.

My research looks at the history of playgrounds and innovative playground models. The research examines the design of playgrounds, from typical playgrounds that suggest a conforming style of play, where the same task are performed over and over again, and playgrounds that link and integrate objects and spaces to challenge children’s creativity by departing from the common urban playground formula’s of ‘isolating incidents.’

The research looks at the work of Paul Sorenson, a noted landscape-playground architect, who realized that children liked to play everywhere except the play spaces he designed. The research examines how ‘concrete and chains’ can be lifted for children to feel the freedom to move and imaginatively play in playground spaces. Model playgrounds, called Adventure Parks with free spaces and sculptural forms that are movable and interchangeable were looked at. Examples of playgrounds in Europe and in America were investigated. The research considered how art educators, city planners, and community activists can look for and create productive outdoor environments for creative playing.
A Geospatial Techniques-based Examination of Land-cover Change Associated with Drier Forest Composition in the Apalachicola River Floodplain of Northwest Florida

Kelly Watson
Department of Geography & Geology

Florida’s largest river and the fourth largest river in the Southeastern United States, the Apalachicola has an extensive forested floodplain, known for its high level of tree species richness and supporting a diversity of unique wetland habitats and associated species. A recent study of the Apalachicola River floodplain by researchers with the USGS found that anthropogenic changes to river hydrology have initiated a large-scale drying trend, which is causing significant declines of several floodplain tree species, most notably two species of tupelo (genus *Nyssa*). Through the use of geospatial techniques (remote sensing and GIS), my research provides a significantly larger-scale examination of the Apalachicola River floodplain through a land-cover change analysis. I used multi-temporal, multi-spectral Landsat 5 TM satellite imagery from September 1984 and October 2011 to identify land cover change through a maximum likelihood supervised classification of forest vegetation. My results show a transition from wetter tupelo-cypress forests to drier bottomland hardwood forests, with a decrease (21.24 percent) in tupelo-cypress forest and a significant increase (121.30 percent) in drier bottomland hardwood forest. These results support the hypothesis that wetland forests are experiencing a conversion from wetter tupelo-cypress communities to drier bottomland hardwood communities. Remote sensing and geospatial techniques are useful tools for classifying, mapping, and detecting change within wetlands, which can be used to both improve wetlands management and aid in conservation efforts. The results of this research also support additional research in ecology and biogeography, which suggest reduced river flow may have negative impacts on the distribution and abundance of riverine tree species.
Time Dependent Models for Newly Detected Interstellar Small Organic Molecules

Donghui Quan
Department of Chemistry

In between the stars, there is no vacuum. This is where the interstellar medium (ISM) located. The relatively dense regions in ISM, known as interstellar clouds, are found to be rich in chemistry. Many molecules, including organic ones, have been detected toward interstellar clouds. Very recently, toward the hot core of Sgr B2 (M), ethanimine (CH$_3$CHNH) was newly detected. To understand the chemistry undergoing in the region, chemical models were built. Three models were used to simulate the hot core Sgr B2 (M), and its surroundings: (a) the hot core model, for Sgr B2 (M); (b) the warm envelope model, for the warm surroundings near the hot core; and (c) the cold model, for the cold halo of Sgr B2. Results show that all three models give reasonably high fractional abundances of CH$_3$CHNH against the total density. The peak values are all well above the observational abundance. This suggests the proposed surface formation mechanism may be crucial for this organic molecule. In addition, the hot core model gives the highest fractional abundance of CH$_3$CHNH and may be preferred more than other two models.

Convolutional Codes with Additional Algebraic Structure

Steve Szabo
Department of Mathematics & Statistics

Convolutional codes have appeared in the literature endowed with sufficient additional algebraic structure to be considered as (left) ideals of a (code-ambient) automorphism-twisted polynomial ring with coefficients in a (word-ambient) semisimple finite group ring. In this paper we extend the present scope of the theory by considering a code-ambient twisted polynomial ring having, in addition to an automorphism $\sigma$, the action of a $\sigma$-derivation $\delta$. In addition, we develop the basic theory without any specific restrictions for the semisimple finite word-ambient ring. This second element therefore extends even the original notions of both cyclic and group convolutional codes considered thus far in the literature. Among other results, in this paper we develop a matrix-based approach to the study of our extended notion of group convolutional codes (and therefore of cyclic convolutional codes as well), inspired by the use of circulant matrices by Gluesing-Luerssen and Schmale, and then use it to extend to this level the results on the existence of dual codes that were originally established by those authors for cyclic codes (in the narrower sense without a $\sigma$-derivation.) Various examples illustrate the potential value of extending the search for good convolutional codes in this direction.
10

Positive Solutions of a Fourth Order Three Point Boundary Value Problem

Jeffrey Neugebauer
Department of Mathematics & Statistics

We classify extremal points of a linear fourth order three point boundary value problem using Krein-Rutman theory and sign properties of the Green’s function. These results are then used to show the existence of a positive solution of the nonlinear fourth order three point boundary value problem.

11

Application of Stochastic Algorithm with Metaheuristic in the Estimation of Non-parametric Cross-covariogram in a Multivariate Spatial Model

Yong Wang
Department of Mathematics & Statistics

The purpose of this project is to search for improvements to the algorithms adopted in the newly proposed semi-parametric multivariate spatial model by Wang and Zhang. This model uses marginal models with parametric covariance functions together with a non-parametric cross-covariance function to describe multivariate spatial processes. It offers great flexibility and much improved predictive performance over many popular existing multivariate spatial models. However, it faces a challenge to estimate the non-parametric cross-covariance matrix which posts a combinatorial optimization problem over a very large search space. This project provides some adjustments to the original algorithms, the progressive search algorithm and the simulated annealing. We take measures to reduce the search space for both algorithms and evaluate the performance of different factors in the simulated annealing. The project is still on-going but we have found some adjustments that could significantly speed up the computation. The performance of the model with the adjusted algorithm is demonstrated by a real data example where both predictive accuracy and time usage are summarized.
Islamism and Anti-Baha'ism during the Reign of Mohammad Reza Shah Pahlavi (1941-1979)

**Mina Yazdani**  
Department of History

This project is a part of a larger study that explores the emergence of modern Iranian Islamism as an anti-Baha’i movement. As such, it is a natural extension of research that culminated in my PhD dissertation (“Religious Contentions in Modern Iran: 1880-1941”) which analyzed the historical background to the perception of Baha’is as the internal agents of colonialism in Iran. The current project focuses on the reign of the second and last Pahlavi monarch, Mohammad Reza Shah (r. 1941-79), investigating the relationship between the emergence of twentieth century Iranian Islamism and the politicization of anti-Baha’ism.

The study is divided into three parts based on a periodization of Mohammad Reza Shah’s reign: 1) from the beginning of the Shah’s rule in 1941 to the 1955 CIA backed coup d’état that kept him in a relatively secure position; 2) from the Shah’s indebtedness to some prominent Shi’i clerics such as Ayatollah Kashani (d. 1962) and Ayatollah Bihbahani (d.1963) for their support of the coup - leading to the anti-Baha’i campaign of 1955 - to Ayatollah’s Khomeini’s (d. 1989) open attacks on Baha’is from 1962 to 1964; 3) 1964-1979, a period that witnessed official silence regarding Baha’is, widespread activities of the Anti-Baha’i Society known as Hujjatiyyah, and portrayal of Baha’is as “Agents of Imperialism” (‘ummal-i amperialism) and “Instruments of Zionism” (ayadi-i sahyunism) by Islamists and their supporters. Using discourse analysis and micro-history as methodologies, this study will argue that the portrayal of an indigenous religious formation as the internal “other” played a fundamental role in the process of constructing an Islamist revolutionary identity and refashioning the political role of the Muslim clergy in a rapidly-crystallizing political project that reached a climax with the Islamic Revolution of 1979.
Reconsidering the Measurement of Ideology: Scale or Branch Format?

Anne Cizmar
Department of Government

One of the best-known findings in the field of American political behavior is that Americans are uninformed about politics. Citizens have limited information about the way the U.S. political system works, the important issues facing the U.S., and the elected and appointed officials that are critical to the functioning of our government. Furthermore, most Americans do not have any overarching structure to their political attitudes and their beliefs are not ideologically consistent, making it very difficult for them to provide meaningful policy feedback to the government. However, in a democratic society, citizen participation is critical to the legitimacy of government. As a result, political scientists have sought different measures of ideology. My project furthers this area of study and explores whether ideological orientations are more accurately measured through branch or scale format survey questions. Using a survey experiment from the 2000 American National Election Studies data, I find that branch format leads to a greater number of professed ideologues (fewer people identifying as “moderates” and more identifying as “strong liberals” and “strong conservatives”). Counter intuitively, though, the scale format is actually a more accurate measure of ideology.

Veterans on Job Search: Transition from Military to Workplace

Yoshie Nakai
Department of Psychology

Impact of returning veterans in U.S. workforce has been addressed in the recent years. The main purpose of the current project is to understand current U.S. veterans’ job search process by addressing 1) similarities and differences in job search process between veteran and civilian job seekers, and 2) personal and social factors that contribute to the job search process and outcomes.

Those veterans who are younger and served year 2001 or later showed relatively higher unemployment rate than overall U.S. veteran population; Twenty-nine percent of younger veterans (age 18-30) and 19 percent of those who served after 2001 were actively seeking for a job (Department of Veterans Affairs, 2010). Although more than half of the veterans indicated the skills and abilities they gained from their military training and experience are applicable to the civilian jobs (Department of Veterans Affairs, 2010), employers raised translation of veterans’ skillset to the civilian jobs and recruitment of this specific population as challenges in hiring veterans (SHRM, 2010).

The first phase of this project entailed the interviews of student veterans on their career view and job search plan. The preliminary result indicated that student veterans have strong sense of direction in their career and confidence in finding a job. The findings from the phase one will be reflected in survey development for the second phase involving the current veteran job seekers in the community.
A pessimistic view of the malleability of happiness has long been supported by research suggesting happiness changes little over time, even with significant changes in circumstances (Headey & Wearing, 1989; Lyubomirsky, Sheldon, & Schkade, 2005). However, recent work demonstrates that trait mindfulness, which varies naturally in the population, correlates with and mindfulness-based interventions result in long-lasting improvements to well-being (e.g., Baer, 2003; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Grossman, Niemann, Schmidt, & Walach, 2004). While there is strong evidence for the beneficial outcomes associated with mindfulness, less is known about the means through which mindfulness promotes well-being.

The current study examined the mechanisms by which trait mindfulness exerts beneficial effects among 632 undergraduate students at a large Midwestern university. Participants completed self-report measures of trait mindfulness (the Five Facet Mindfulness Questionnaire; FFMQ, Baer et al., 2006), personality (the International Personality Item Pool; IPIP, Goldberg, 1999) and well-being (the Scales of Psychological Well-Being; PWB, Ryff, 1989, Satisfaction with Life Scale; SWLS, Diener, Emmons, Larsen, & Griffin, 1985, Depression Anxiety Stress Scales; DASS, Lovibond & Lovibond, 1993, and Medical Symptoms Checklist; MSCL, Borysenko, 1988), along with measures of multiple hypothesized mechanisms of mindfulness (including cognitive defusion, self-compassion, goal orientation, temporal pleasure, contingent self-esteem, self-discrepancies, and role conflicts). Results indicate that trait mindfulness predicts variance in well-being above that predicted by personality ($F$ change = 22.14, $p < .001$). Apart from temporal pleasure and self-discrepancies, the hypothesized mechanistic variables met the criteria to be investigated as mediators. Results suggest that mindfulness promotes well-being, in part, through allowing individuals to view their thoughts and feelings as temporary events that are not necessarily true and do not necessitate particular responses (decentering), treat themselves with kindness and recognize shared humanity (self-compassion), and experience less conflict due to simultaneously holding two or more statuses (interrole conflict).
Association of Personal Distress with Burnout and Compassion Fatigue among Clinical Social Workers

Jacky Thomas  
Department of Anthropology, Sociology & Social Work

Studies of empathy and empathy-related responding show that while some people respond to observing the suffering of another with a pro-social concern and urge to help the suffering person, others have an aversive, avoidant response that is primarily self-focused and aimed toward relieving their own distress rather than helping the other person. This self-focused response, labeled personal distress, is associated with various social and psychological problems. Using a random sample of clinical social workers (N = 171), this study examines associations between four aspects of the empathy construct including empathic concern, perspective taking, fantasy, and personal distress with three measures of professional quality of life: compassion fatigue, burnout, and compassion satisfaction. Results indicate that personal distress is the only aspect of the empathy construct significantly associated with the dependent variables. Higher personal distress is associated with higher compassion fatigue and burnout and lower compassion satisfaction.