

2010

## 2010 Presentation Abstracts

Grand Valley State University

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## Academic Conference Fund Presentation Abstracts

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## **ACF 2010 January - June Presentations**

### **Bender, Lucas**

January - June FY10

25th Annual Society for the Advancement of Management Case Competition: Sustainability

“Recommendation to better Wynn Resorts, Inc”

No Abstract.

### **Bouley, Renee**

January - June FY10

Great Lakes Regional Meeting of the American Chemical Society

“Bioelectrochemical Catalysis on Mars”

No Abstract.

### **Brown, Sarah**

January - June FY10

Michigan Society for Clinical Laboratory Science 2009 Annual

“The Importance of Culturing All Negative Specimens from the Rapid Strep A Antigen Screen”

No Abstract.

**Craft, Nathan**

January - June FY10

The 237th American Chemistry Society National Meeting

“Cyclohexene Derivatives in Transfer Hydrogenation”

No Abstract.

**DeLaMarre, Michael**

January - June FY10

Pittsburg Conference 2009

“Capillary Electrophoresis: Affinity and Chiral”

No Abstract.

**Dobb, Molly**

January - June FY10

Michigan Society for Clinical Laboratory Sciences 2009 Spring Meeting

“Automation of Sample Preparation for the Comparison of Hologic Invader Technology Human Papillomavirus (HPV) DNA Testing to Digene Hybrid Capture 2 High-Risk HPV DNA Testing”

No Abstract.

**Eggelston, Benjamin**

January - June FY10

38th Great Lakes Regional Meeting of the American Chemical Society

“Widespread Chemical Warfare Agent Sensors”

No Abstract.

**Foster, Dean**

January - June FY10

World Ceramics Biennale 2009 Korea Conference and International Society for Ceramic Art  
Education and Exchange Symposium

“GVSU and SNUT (Seoul National University of Technology) Ceramics Collaborative Project”

No Abstract.

**Hagler, Rebecca**

January - June FY10

World Ceramics Biennale 2009 Korea Conference and International Society for Ceramic Art  
Education and Exchange Symposium

“GVSU and SNUT (Seoul National University of Technology) Ceramics Collaborative Project”

No Abstract.

**Heldt, Lindsey**

January - June FY10

Michigan Academy of Science, Arts, and Letters Annual Meeting

“The Effect of Intracellular and Extracellular Density on Gravitropic Curvature of Rice Roots”



No Abstract.

**Herrema, David**

January - June FY10

25th Annual Society for the Advancement of Management Case Competition: Sustainability

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No Abstract.

**Heerema, Sonya**

January - June FY10

Michigan Society for Clinical Laboratory Sciences 2009 Spring Meeting

“Can EDTA tubes be used to perform a LAP stain?”

No Abstract.

**Hipshear, Nora Jane**

January - June FY10

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**Horsford, Eric**

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**Kelly, Meghan**

January - June FY10

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“GVSU and SNUT (Seoul National University of Technology) Ceramics Collaborative Project”

No Abstract.

**Kilbourne, Zoe**

January - June FY10

The Louisville Conference on Literature and Culture Since 1900

“Resisting Colonization: The Priest, the Pole, and the Peacock in Flannery O’Connor’s The Displaced Person”

No Abstract.

**Loutzenhiser, Derek**

January - June FY10

Great Lakes Regional Meeting of the American Chemical Society

“Bioelectrochemical Catalysis on Mars”

No Abstract.

**Mitchell, Amanda**

January - June FY10

Midwestern Psychological Association Conference

“Predicting Cosmetic Surgery Attitudes among College Women”

No Abstract.

**Prominski, Patrick**

January - June FY10

The Louisville Conference on Literature and Culture Since 1900

“Tradition and Technology: New Media Connections in the “Aeolus” Episode of James Joyce’s Ulysses”

No Abstract.

**Smith, Stephanie**

January - June FY10

Michigan Society for Clinical Laboratory Science 2009 Annual

“The Importance of Culturing All Negative Specimens from the Rapid Strep A Antigen Screen”

No Abstract.

**Stahl, Katee**

January - June FY10

American Criminal Justice Society Annual Meeting

“The Use of Developmentally Appropriate Services in Juvenile Drug Treatment Court”

No Abstract.

**Tomlinson, Jenna**

January - June FY10

American Society of Biochemistry and Molecular Biology (ASBMB)

“Effects of Asn152 mutation on substrate selectivity of P99 cephalosporinase”

No Abstract.

**Whims, MacKenzie**

January - June FY10

World Ceramics Biennale 2009 Korea Conference and International Society for Ceramic Art Education and Exchange Symposium

“GVSU and SNUT (Seoul National University of Technology) Ceramics Collaborative Project”

No Abstract.

**Workman, Candice**

January - June FY10

Michigan Society for Clinical Laboratory Sciences 2009 Spring Meeting

“Can EDTA tubes be used to perform a LAP stain?”

No Abstract.

## **ACF 2010 July – September Presentations**

**Biegalle, Neil**

July – September FY10

MathFest 2009

“The Extremality of Bernstein Polynomials”

Extremal problems in the geometry of polynomials concern which polynomials possess certain maximal or minimal geometric properties. We seek to employ results related to polynomial root dragging and root motion to further understand such problems. Of special interest is our investigation into why Bernstein polynomials frequently arise as maximizers.

**Brege, Wyatt**

July – September FY10

MathFest 2009

“Symmetry Analysis of the Lane-Emden Equation”

We will focus on Lie theory and how it can be used to find symmetries of the Lane-Emden equation. This equation has provided a simple, physical description of the density distribution in many a stellar structure. Symmetry results of the equation will be presented.

**Cohan, J.P.**

July – September FY10

2009 PRSSA National Conference

“Change in Economic System Leads to a New Hope”

China has been in a state of reform and change since December 1978 when the Third Plenum of the Eleventh National Party’s Congress of the Chinese Communist Party (CCP) changed the main party focus from class struggle to economic development. In turn, this leads to a complex relationship between the private and the public sector. As a result, “The CCP is increasingly integrating itself with the private sector, both by co-opting entrepreneurs into the Party and encouraging current Party members to go into business” (Dickson 2007, 852). Therefore, a relationship is built between the wealthy class and the party as well as the private sector. With economic development, the middle class in China has just recently emerged. However, the creation of a middle class leaves the people wanting a greater involvement in their own government. Global organizations such as the World Bank and the World Trade Organization help China loosen its government’s control. Considering all points in mind with privatization, can China move forward with political reform? Or will the government command the economy with partnerships between private and public? My argument is that with the complex relationship between the public and private sector, the elite business owners and party members, a creation of the “new bourgeoisie class” or middle class, and the influence from the World Bank and the WTO; influences political change in China. It fits the entrepreneurs, party members, and the middle class growing into a more democratic China.

**Dahlberg, Samantha**

July – September FY10

MathFest 2009

“On Proofs of Summation Identities”

The problem of finding closed-form expressions for various sums and proving identities among them is among ancient and attractive mathematical problems. One of the most exciting discoveries in the early nineties, due to H. Wilf and D. Zeilberger, was that finding close-form expressions for various sums and proofs for special class of summation identities can be efficiently and elegantly handled by the computer. In this talk we explore and highlight the Wilf-Zeilberger (WZ) method and show various practical applications of Zeilberger's algorithm. This work was done at the 2009 REU program at Grand Valley State University.

**Ferre, Matt**

July – September FY10

Midwestern Criminal Justice Association

“Mediating in the Streets: Exploring the Intersections of Common Policing and Common Mediation Practices”

Managing and resolving interpersonal conflict reflect a common and recurring responsibility for police officers. Research suggests that resolving these responsibilities through traditional policing methods may have situational limitations (Cooper, 1999). Other policing philosophies, including community policing and problem-oriented policing, have also been implemented in law enforcement, but evaluations into their effectiveness has produced mixed results.

Notwithstanding attempts to transform policing through these approaches, mediation has been proffered as a viable skill set beneficial to police officers. However, minimal research exists exploring the compatibility of traditional policing practices and the management of conflict through mediation in the field. This research recommends exploratory case study protocol that will assess both the formal and “natural” mediation and conflict resolution practices of officers in the field.

**Gallaway, Meghan**

July – September FY10

The 14th European Conference on Developmental Psychology

“Societal and Personal Views of Criteria for Adulthood: A Cross-National Comparison”

This poster aims to investigate how university students from modernized nations view criteria for adulthood from both a societal and personal perspective. Three countries were included in this study: Slovenia, Austria, and the United States. The facts that individuals in the late teens and early twenties in such nations tend to put off some criteria until later in life (e.g., marriage, start of career) and that there is a lack of clear markers of adulthood, the transition into adulthood has become of increasing interest to developmental psychology. Three central questions were asked here: (1) Which personal criteria of adulthood are most important? (2) How well defined are students' conceptions of societal norms regarding adulthood? (3) Does the importance of these criteria vary across the three countries and/or between societal and personal perspectives?

N = 636 participants (210 in Austria, 201 in Slovenia, 225 in USA) ( $M = 21$  years,  $SD = 1.8$ ) completed the Conception of the Transition to Adulthood (Arnett, 1998). In this instrument they rated 38 specific criteria as personally important to becoming an adult or not, and also how important these same criteria were to the society that each participant lived in. These specific criteria comprised six larger categories, e.g., Role Transitions and Independence.

Nationality was found to be a significant factor for personal image of adulthood in four out of the six categories and for societal image of adulthood in three out of the six categories. To evaluate the strength of shared social norms, the standard deviations of societal and personal importance were compared. With one exception, there were no differences; this rather supports the claim that the societal criteria seem to be vague. In addition, the means of societal importance of criteria are higher than personal views, except in the case of the Independence category.

Sean Townshend, Meghan Gallaway, Wolfgang Friedlmeier Ph.D.,



\*Ulrike Sirsch Ph.D., & \*\*Melita Puklek-Levpuscek Ph.D.

Department of Psychology, Grand Valley State University, Grand Rapids, MI, USA

\*Faculty of Psychology, University of Vienna, Austria

\*\*Department of Psychology, University of Ljubljana, Slovenia

**Gardner, Sharon**

July – September FY10

Lilly Conference on Teaching and Learning

“Student Conference Attendance: Bridging the Gap between School and the Professional World”

Session Type: Round Table

Abstract: Upon graduation, Public Administration students are often unaware of the struggles they will face in their profession. Public administration educators have a vested interest in encouraging their students to attend or present at academic conferences in order to help their students make connections between school and the professional world. Conferences serve as an arena for students to meet and mingle with experienced professionals who can provide valuable insight about the interworkings of the field of PA.

Objectives: The School of Public and Nonprofit Administration at Grand Valley State University is developing a program which will encourage students to present at academic conferences. The three major goals of this program are: 1) Improve students’ abilities to communicate by presenting research they have performed on a topic relating to public administration, 2) Have students gain greater insight into field of public and non-profit administration by attending conference presentations, 3) Facilitate networking between students and public administrators at academic conferences.

**Golenbiewski, Kyle**

July – September FY10

MathFest 2009

“Modeling Nonseparable Preferences in Referendum Elections”

Referendum Elections often require voters to cast ballots simultaneously on multiple proposals, some of which may be interrelated. When a voter's preferences on one proposal depend on the known or predicted outcomes of other proposals, the voter's preferences are said to be nonseparable. In this talk, we will explore ways to mathematically model and analyze various forms of nonseparability. This work was completed as part of the 2009 REU program at Grand Valley State University.

**Jensen, Tarah**

July – September FY10

MathFest 2009

“Extreme Curvature of Polynomials”

Let  $P$  be a real polynomial of degree  $n$ . We are interested in the number of points of extreme curvature. Curvature is defined by:

1

and to find the points of extreme curvature we look at  $k' = 0$ . We will discuss our progress in showing that the number of points of extreme curvature is at most  $n - 1$ . This problem is reminiscent of the  $P^2 + P'$  problem.

**Kelch, Timothy**

July – September FY10

Globalization and the Challenge of the Humanities and Social Sciences

“Change in Economic System Leads to a New Hope”

China has been in a state of reform and change since December 1978 when the Third Plenum of the Eleventh National Party’s Congress of the Chinese Communist Party (CCP) changed the main party focus from class struggle to economic development. In turn, this leads to a complex relationship between the private and the public sector. As a result, “The CCP is increasingly integrating itself with the private sector, both by co-opting entrepreneurs into the Party and encouraging current Party members to go into business” (Dickson 2007, 852). Therefore, a relationship is built between the wealthy class and the party as well as the private sector. With economic development, the middle class in China has just recently emerged. However, the creation of a middle class leaves the people wanting a greater involvement in their own government. Global organizations such as the World Bank and the World Trade Organization help China loosen its government’s control. Considering all points in mind with privatization, can China move forward with political reform? Or will the government command the economy with partnerships between private and public? My argument is that with the complex relationship between the public and private sector, the elite business owners and party members, a creation of the “new bourgeoisie class” or middle class, and the influence from the World Bank and the WTO; influences political change in China. It fits the entrepreneurs, party members, and the middle class growing into a more democratic China.

**Larsen, Angela**

July – September FY10

The Annual Wildlife Society Conference

“Impacts of Savannah Restoration on Small Mammal Density and Diversity in West Michigan”

Savannah and other grassland ecosystems are one of the most endangered ecosystems in Michigan and much of North America. Consequently, species which rely on habitat found in this ecosystem are frequently species of concern for management agencies. The US Forest Service is currently beginning a program to restore areas of mixed deciduous forest that were traditionally savannahs. The impetus for this effort is to provide habitat for the federally endangered Karner Blue butterfly (*Lycaeides melissa samuelis*). Our objective is to monitor and analyze the impacts of the restoration project on small mammal diversity and density. A control and three treatment plots (shearcutter, bulldozer, and masticator) were monitored. Small mammals were trapped in a grid of 36 Sherman live traps within each replicate. Trapping results indicated that White-footed mice (*Peromyscus leucopus*) had the highest number of captures in all replicates. Other small mammal species present included Short-tailed shrew (*Blarina brevicauda*), Masked shrew (*Sorex cinereus*), Eastern chipmunk (*Tamias striatus*), Southern flying squirrel (*Glaucomys volans*), Thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), and Meadow vole (*Microtus pennsylvanicus*). The intent is to continue monitoring for the foreseeable future to determine the long-term impacts of the restoration effort.

**Lechy, Jennifer**

July – September FY10

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**Lincoln, Jesse**

July – September FY10

Botany & Mycology 2009 (Botanical Society of America)

"*Ailanthus altissima* increases nodulation in *Trifolium pratense*: A novel weapon for an invasive species"

*Ailanthus altissima* (Simaroubaceae) is an invasive tree from China that has spread over much of North America. A number of characteristics contribute to its success, notably tolerance of poor soils, rapid growth rates and production of allelopathic compounds. A mechanism increasing soil nitrogen would facilitate rapid growth on poor soils and previous studies indicate sites invaded by *A. altissima* have increased soil nitrogen levels. Increased soil nitrogen may be achieved through an alleochemical impact on legumes which solicit nitrogen-fixing rhizobia by emitting flavonoids into the rhizosphere under low nitrogen conditions. We investigated if and how *A. altissima* root exudates impact nodulation and growth in *Trifolium pratense* (Fabaceae). The experiment included a factorial design with the following treatments: soil leachate source (presence / absence of *A. altissima*), leachate source fertilization, and *T. pratense* fertilization. Treatment effects on *T. pratense* total biomass and shoot:root ratio were complex. *Trifolium pratense* treated with *A. altissima* leachates had a significantly increased nodule biomass to total biomass ratio and were twice as likely to be nodulated compared to control groups. We are currently monitoring changes in transcript abundance for *T. pratense* genes encoding enzymes

chalcone synthase and chalcone isomerase in response to *A. altissima* leachates. These genes are involved in the production of the flavonoid released by *T. pratense* to solicit rhizobia for nodulation. Flavonoid signaling molecules are analogous to early responsive defense genes, suggesting increased nodulation results from an upregulation along a defense pathway. This previously unreported plant-plant interaction potentially facilitates rapid growth of *A. altissima* in poor soils via increased nitrogen fixation in neighboring legumes.

### **Miara, Sheila**

July – September FY10

The Annual Wildlife Society Conference

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**Norris, Rebecca**

July – September FY10

The Annual Wildlife Society Conference

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**Stockero, Nick**

July – September FY10

Globalization and the Challenge of the Humanities and Social Sciences

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### **Townshend, Sean**

July – September FY10

The 14th European Conference on Developmental Psychology

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N = 636 participants (210 in Austria, 201 in Slovenia, 225 in USA) ( $M = 21$  years,  $SD = 1.8$ ) completed the Conception of the Transition to Adulthood (Arnett, 1998). In this instrument they rated 38 specific criteria as personally important to becoming an adult or not, and also how important these same criteria were to the society that each participant lived in. These specific criteria comprised six larger categories, e.g., Role Transitions and Independence.

Nationality was found to be a significant factor for personal image of adulthood in four out of the six categories and for societal image of adulthood in three out of the six categories. To evaluate the strength of shared social norms, the standard deviations of societal and personal importance were compared. With one exception, there were no differences; this rather supports the claim that the societal criteria seem to be vague. In addition, the means of societal importance of criteria are higher than personal views, except in the case of the Independence category.

Sean Townshend, Meghan Gallaway, Wolfgang Friedlmeier Ph.D.,

\*Ulrike Sirsch Ph.D., & \*\*Melita Puklek-Levpuscek Ph.D.

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**Xhumari, Sandi**

July – September FY10

MathFest

“Generating Functions and their applications”

A lot of problems turn into Recurrence Relations, where the next term depends on the previous ones. For example, every term in the Fibonacci sequence is defined as the sum of the two previous terms, which is a Recurrence Relation. One of the most powerful tools to solve Recurrence Relations is Generating Functions. In this presentation, I will introduce you to Generating Functions and apply them to some specific problems. Next time you are faced with a Recurrence Relation, you will have a brand new secret weapon up your sleeve!

## **ACF 2010 October – December Presentations**

**Bacon, Jessica**

October – December FY10

Feminism(s) and Rhetoric(s) 2009

“(e)Racing Cervical Cancer: Analyzing Visual Representations of Gardasil”

It is now a given that race plays a role in healthcare education and drug marketing (Dignan, et al; O'Malley, Forrest, and Mandelblatt; Welch Cline and Young). Recent advertisements and political cartoons about Gardasil, the new cervical cancer vaccine, is just another example of how much race matters when it comes to healthcare education and marketing. A rhetorical and design analysis of advertisements for Gardasil and political cartoons from opponents of the vaccine reveal that minorities are primarily marketed to by Merck, but ignored by the political cartoons of Gardasil opponents.

While Caucasian women are conversely unrepresented in Merck's Gardasil advertisements, they figure prominently into Gardasil opponents' political cartoons and into other Gardasil advocate advertisements. It's unbalanced and under-representations like these that (e)race the importance of cervical cancer education for everyone.

**Barr, James**

October – December FY10

Geological Society of America Annual Meeting

“Determination of Paleolatitude of the Mississippian Michigan Formation: Jackson, Michigan”

We measured detrital remanent magnetism induced by a past magnetic field(s) within shale units of the Mississippian Michigan Formation. One inch cubes were cut from a core from a borehole in Jackson, Michigan, and tested using a spinner magnetometer and alternating field demagnetization. We used a spinner magnetometer to infer paleolatitude and to test our hypothesis of detrital remanent magnetism (induced during deposition) as the carrier of remanent magnetism. Data collected from a suite of samples show a paleo-inclination (dip) of  $-11.9^\circ \pm 46^\circ$  which corresponds to a paleolatitude of approximately  $6^\circ$  south of the equator. A secondary overprint of magnetism shows an inclination of  $67.9^\circ$  which translates to a modern latitude of  $51^\circ$  North.

**Busch, Ashlee**

October – December FY10

Performance: Le poisson Rouge

“In C Remixed”

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symbiotic relationship between art and revelry; to establish a creative asylum for both artists and audiences. LPR prides itself in offering the highest quality eclectic programming, impeccable acoustics, and bold design. The state-of-the art performance space, engineered by the legendary John Storyk/WSDG, offers full flexibility in multiple configurations: seated, standing, in-the-round, and numerous alternative arrangements. A work of art itself, the physical facilities are the embodiment of the experimental philosophy that drives the venue.

### **Adam Cuthbert**

October – December FY10

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**Deiters, MaryBeth**

October – December FY10

Celebrating Change, Defining the Future: Social Justice, Democracy and Cultural Renewal

“Paradoxes and Pitfalls of the International Criminal Court: Africa in the Circuit of ICC Justice”

Since 2002, the International Criminal Court has investigated four cases, all of which have been focused in the African continent. While support for the formation of the ICC was high during the Rome Conference, recent developments have resulted in increased tensions between many African leaders and the ICC. In March 2009, African voices rose in dissent when the ICC issued an arrest warrant for Sudanese President Omar Al-Bashir. As some African leaders praised the decision of the ICC, others demanded that the United Nations Security Council defer Bashir's arrest warrant.

There is a concern among many African leaders that the ICC has become unfairly focused on Africa. This paper seeks to evaluate these concerns and what these tensions mean for the future of the relationship between Africa and the ICC. To do this, speeches given by African diplomats during the Rome Conference will be analyzed to discover the concerns and desires shared among them. By examining the cases before the court, the functioning of the court and the prosecutor can be pitted against the ideals put forth during the Rome Conference and the new concerns of the African leaders concerning the courts alleged bias. Further, situational factors surrounding both detractors and supporters will be examined to determine whether something beyond justice and fairness is at work.

**DeWitt, Andrew**

October – December FY10

Geological Society of America Annual Meeting

“Seasonal Substrate Temperature Anomalies At Sand Creek, Aman Park, Ottawa County, Michigan”

Substrate and stream temperature data were collected on Sand Creek, a small, sand-dominated stream in West Michigan. Data collected in February, May, August, and October of 2008 (171, 204, 181, and 215 data points respectively) showed pronounced substrate temperature anomalies within a 40 meter reach of the stream. During February and October anomalous areas were warmer than the average substrate and stream temperatures, whereas during May and August anomalous areas were cooler than the average substrate and stream temperatures. February average substrate and stream temperatures were 3.6°C and 0.7°C, respectively, while anomalous areas showed temperatures in excess of 10°C. In August, average substrate and stream temperatures were 15.1°C and 19.4°C, respectively, while anomalous areas had temperatures as low as 10.4°C. Fixed temperature probes placed in shallow wells on the flood plain of the Creek, and in the stream, had thermographs consistent with a combination of surface water, groundwater, and hyporheic water. Diurnal temperature variations in some some wells suggest that hyporheic water does exist on the flood plain of Sand Creek and may be contributing to substrate temperature anomalies within the stream channel. Observed substrate anomalies are likely the result of a combination of groundwater and hyporheic water traveling through preferential flow paths in abandoned stream channels which intersect the modern stream channel.

**Disselkoen, Amy**

October – December FY10

Michigan Teachers of English to Speakers of Other Languages (MITESOL) Conference  
Transforming Learning: Teaching and Advocacy

“English Proficiency for Immigrant Women – At What Cost?”

The issue of language and gender has become an increasingly “hot” topic over the past twenty years. Tannen (1990, 1998) has explored issues of solidarity and power in gendered language in the U.S. as well as cross-culturally. Fisher (2001) has investigated the covert messages in the asymmetrical power situation found between the medical establishment and Mexican-American women. More recently, Norton and Pavlenko (2004) have compiled a volume on the topic of

gender across an array of ESL/EFL situations. Although the prevailing view seems to be that increased English proficiency empowers all learners, the following question must also be raised: at what cost?

This proposed panel presentation seeks to explore the above question in the following manner: first, an overview of language and gender issues will be presented with a focus on the ESL/EFL setting. The panel will then explore several cases of language and the disempowerment of women in the L1 setting, based on work, in part, by Emandi (2002), Haeri (2006), and Tiemeir (2006). This will be followed by an exploration of the acquisition of English by immigrant women in the U.S., including issues of identity and empowerment (Gordon, 2004; Menard-Warwick, 2004, 2005; Skapoulli, 2004; Warriner, 2004), as well as ultimate proficiency attainment (Alfred, 2003; Fennelly & Palasz, 2003; Warriner, 2007). The question will then be raised as to the cost involved in the social and relationship power shifts and identity reconstruction that often result as immigrant women become proficient speakers of the English language. Finally, the session will open to audience discussion of the role ESL teachers play in this shift and how an awareness of this issue can lead to improved support for immigrant women in ESL classes. Handouts will be provided.

**Ettema, Nicholas**

October – December FY10

Midwest Fish and Wildlife Conference

“Metabolism as an indicator of river ecosystem health: a case study on the Little Susitna River, Alaska”

When assessing river ecosystem health, many researchers note that structural metrics (physical and biotic characteristics) can misdiagnose river condition and the inclusion of functional metrics (energy flow and nutrient cycling) provide a more robust assessment. Ecosystem metabolism is often favored because it quantifies important functional attributes including autochthonous energy production and total energy consumption. Ecosystem metabolism was used to monitor

river health in the Little Susitna River, south-central Alaska, where a popular sport fishery leads to extensive boat and foot traffic during the summer salmon runs resulting in poor bank stability and elevated turbidity. Ambient dissolved oxygen concentration was continuously monitored at upstream "reference" and downstream "impact" sites during the summer of 2008. Gross primary productivity (mean) was higher at reference vs. impacted sites (0.43 vs. 0.19 g O<sub>2</sub> m<sup>-2</sup> day<sup>-1</sup>). Ecosystem respiration was relatively constant across sites (0.33 g O<sub>2</sub> m<sup>-2</sup> day<sup>-1</sup>) and net ecosystem metabolism revealed autotrophic conditions (P:R, 1.42) upstream and heterotrophic conditions (P:R, 0.58) downstream. Decreases in productivity at impact sites were best explained (R<sup>2</sup>, 0.53) by increases in turbidity suggesting recreational activity is altering natural metabolic processes of the system. Less autotrophic energy production may trigger a trophic cascade leading to decreased salmon production in the lower reaches of the Little Susitna. Utilizing a functional approach to assess river health was successful and further exploration of these metrics would improve our understanding of ecosystem processes.

### **Giraud, Alain**

October – December FY10

North American Case Research Association

“Trelleborg Automotive: A Growth Initiative Decision”

In 2008, Trelleborg Automotive (TA) was the largest rubber non-tire manufacturer in the world, and its automotive business segment represented 30 percent of its net sales. However, strong global competition in the automotive market resulted in low margins, and restoring sustainable profitability became a strategic priority for the firm. By using material alternatives to rubber and focusing on more profitable segments, the case explores whether the proposed growth initiative could support the long-term competitiveness of the firm.

### **Blair Hotz**

October – December FY10



Performance: Le poisson Rouge

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**Huegel, Casey**

October – December FY10

Midwest Conference on Historical Archaeology

“An Analysis of Historic Ceramics at Indian Landing Site 20BA02 in Hastings, MI”

This report is an analysis of the ceramic assemblage excavated from Indian Landing site (20BA02) in Hastings, MI. The artifacts collected are associated with a mid nineteenth century log cabin which transferred ownership on multiple occasions throughout its existence. Originally built in 1850 to function as a schoolhouse for Indian Mission School District No. 5, the property was later sold by local Native Americans to Europeans in 1855, and became a permanent

residence. The primary goals of this research are to determine the socioeconomic status of the occupants and give further insight into the cabins primary occupation dates. This will be done by examination of ware type, decoration, and form to create a general distribution of the ceramic assemblage. Further analysis will classify the earthen wares into four levels of economic significance as recommended by George Miller in his article Classification and Economic Scaling of Mid-Nineteenth Century Ceramics. This mode of classification presents a detailed representation of social class based on common earthen wares; an effective tool when studying the settlers of the rural Midwest.

### **Jake Isaacson**

October – December FY10

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**Jewell, Alyssa**

October – December FY10

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Transforming Learning: Teaching and Advocacy

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**Kaufman, Darcy**

October – December FY10

American Society for Cell Biology Annual Conference

“Nato3 is Sufficient to Promote Ectopic Floor Plate Marker Expression in the Rostral Neural Tube of the Gallus Gallus Embryo”

Nato3 is a basic helix-loop-helix protein that is expressed in the floor plate region of the neural tube during development. Floor plate cells release the morphogen Shh, which influences the neural fate of neighboring neural progenitors in the neural tube. To determine if Nato3 expression is sufficient to promote floor plate cell lineage in the developing neural tube we misexpressed Nato3 in the neural progenitors of spinal cord and rostral neural tube using in ovo electroporation. We monitored neural progenitors and their progeny that misexpressed the electroporated Nato3 during development using a bicistronic EGFP reporter expression vector. Using immunohistochemistry we compared the effect of Nato3 misexpression on neural progenitors in the spinal cord and hindbrain using the floor plate cell marker Foxa2. Nato3 misexpression in the spinal cord after the closure of the neural tube did not change the expression of floor plate, glial or pan-neuronal markers. However, Nato3 misexpression in the hindbrain after of the closure of the neural tube caused ectopic expression of the floor plate marker Foxa2. These results indicates that there are regional differences in neural progenitor response to Nato3 overexpression in the neural tube.

**Lelli, John**

October – December FY10

Neuroscience 2009

“Multiple possible protective mechanisms associated with the alpha7 nAChR in pig retina: Agonist, modulator & feedback mechanisms”

Retinal ganglion cells (RGCs) are responsible for transmitting visual information from the retina to visual centers in the brain. Previous research on RGCs has revealed their vulnerability to glutamate-induced excitotoxicity, a possible glaucomatous mechanism. However, activation of nicotinic acetylcholine receptors (nAChRs) located on RGCs has been shown to provide protection (Wehrwein et al., 2004). Previous results (Bader & Linn, 2007) showed that PNU-282987 displayed significant neuroprotective effects against glutamate toxicity. The  $\alpha 7$ -specific nicotinic antagonist, methyllycaconitine (MLA), blocked this neuroprotective effect at 100nM indicating a direct agonist action. We found further protective effects of  $\alpha 7$  (nAChR) activation by applying a modulator with the agonist to RGCs. The selective allosteric modulator, PNU-120596, enhanced the protective action of the agonist in a dose-dependent manner with maximal effects exceeding survival seen under control conditions. Agonist and modulator, in the absence of glutamate, showed increase in cell survival. This suggests that the modulator provides protection against other causes of cell loss. In addition, evidence exists that  $\alpha 7$  receptors may exist on the cholinergic amacrine cells themselves. Tropisetron was found to evoke labeled ACh release comparable to kainate with having a more potent and prolonged effect of increased basal release. These data suggest direct and indirect activation of neuroprotective mechanisms in RGCs.

## **Karel Lill**

October – December FY10

Performance: Le poisson Rouge

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### **Nadvar, Negin**

October – December FY10

Biomedical Engineering Society 2009 (BMES)

“Compared to In Vivo, Isolated Hearts Respond Differently to Acetylcholine after Reperfusion Injury”

We examined changes in power spectral density (PSD) of atrial (AA) and ventricular (VV) tachograms (interbeat interval vs. beat number) in guinea pig isolated hearts to quantify the myogenic component of heart rate variability (HRV) unrelated to autonomic tone. Three groups (n=6 each) of guinea pig hearts were perfused at a constant pressure of 55 mmHg with 37°C Krebs-Ringers (KR) solution. After baseline (BL) stabilization, hearts were perfused continuously either with KR (CON), KR+ 1  $\mu$ M atropine (ATR; cholinergic blocker), or KR + 5  $\mu$ M esmolol (ESM; adrenergic blocker) for 30 min followed by 30 min global ischemia and 120 min reperfusion (REP). Bipolar electrograms were recorded from the right atrium and ventricle for 4 min at BL, 20 min after KR, ATR, or ESM perfusion, and after 0 min (REP00), 60 min (REP60), and 120 min (REP120) of reperfusion. From the resulting AA and VV tachograms, we computed a) total power (TP, 0.04-0.4 Hz), b) power in low frequency (LF, 0.04-0.15 Hz) and high frequency (HF, 0.15-0.4 Hz) bands normalized to TP (pLF and pHF in ms<sup>2</sup>/Hz), and c) pLF/pHF. Results showed: i) AA and VV TP increased at REP00 in all groups and stayed elevated at REP60 and REP120 in ATR, ii) VV pLF increased and pHF decreased at REP00,

REP60 in all groups , iii) VV pLF/pHF ratio increased at all REP in all groups. Hence, results from CON and ATR, but not ESM, agree with in vivo results suggesting that after ischemia i) denervated hearts exhibit attenuated parasympathetic vs. sympathetic response to residual neurotransmitters and ii) the changes in PSD may be myogenic.

**Nguyen, Luan**

October – December FY10

2009 Symposium on Chemical Physics

“Energy distribution in the triplet channels of ozone photodissociation”

Photodissociation of ozone in the Hartley band ( $4 \text{ eV} < h\nu < 6 \text{ eV}$ ) yields roughly 90% of its products in the  $\text{O}(1\text{D}) + \text{O}_2(1\text{a}\Delta)$  singlet channel, and most of the remainder in the  $\text{O}(1\text{P}) + \text{O}_2(\text{X}3\Sigma^- \text{g})$  triplet channel. The triplet products are produced by a transition between the initially excited B diabatic state and the repulsive R state of ozone, and have a broad distribution of kinetic energies centered around 2 eV. The translational energy distribution as measured by Brouard and coworkers at 226 nm shows reproducible structure with three distinct maxima corresponding to  $\text{O}_2(\text{X}3\Sigma^- \text{g})$  in vibrational levels near  $v = 7, 12$ , and 16; between these maxima the measured distributions fall by about 10%. The measured distributions at 248 nm are similar. The broad features of the distribution are reproduced by surface hopping calculations on new B and R potential surfaces, though the computed distribution is less structured. The maxima in the vibrational and translational energy distributions are clearly related to maxima in the distribution of the emerging  $\text{O}_2$  bond lengths at the time the B/R crossing is encountered. Explorations of the physical basis of the translational energy distribution will be presented.

**Persenaire, Kristina**

October – December FY10

Midwest Popular Culture Association

## “The Wisdom of Bumper Stickers: ‘Celebrate Diversity’ vs. ‘One World, One Love’; The Ramifications of an Ideological Paradigm Shift from the Universal to the Specific”

The establishment of the English literary canon is predicated on the belief of a universal ideology that was thought to be applicable to all civilized cultures. Supporting and propagating the canonical ideology was the ‘universal intellectual’. However, in the 1960s the universality of this ideology came under question and there arose an increased desire for specificity in the world of academia. The call for specificity was born, in part, by the disenfranchisement of the various sub-cultures of society. It became implausible to say that the white man in power spoke for everybody. For, what did this white privileged man know of the struggles of the poor, the black, the woman, the immigrant, and the homosexual? Michel Foucault with his 1977 article “Truth and Power” outlines the new trend toward specificity that means to give a voice to the voiceless by replacing the universal with the specific.

It is the purpose of this argument to explore the impacts of the paradigm shift from ‘universal’ to ‘specific’ in the world of literary criticism and theory. Central to this argument will be a deconstruction of Michel Foucault’s assertion that the specificity of academics creates a bridge between the intellectuals and the masses. However, it can be argued that Foucault perpetuates the establishment of new hegemonies, based on an ideology of the specific, within academia that results in ideological divisions that further the distance between the ‘intellectuals’ who represent specific ideologies, the ideologies themselves and those who are not aligned specifically to those ideologies.

**Posner, Esther**

October – December FY10

Geological Society of America Annual Meeting

“Determination of Paleolatitude of the Mississippian Michigan Formation: Jackson, Michigan”



We measured detrital remanent magnetism induced by a past magnetic field(s) within shale units of the Mississippian Michigan Formation. One inch cubes were cut from a core from a borehole in Jackson, Michigan, and tested using a spinner magnetometer and alternating field demagnetization. We used a spinner magnetometer to infer paleolatitude and to test our hypothesis of detrital remanent magnetism (induced during deposition) as the carrier of remanent magnetism. Data collected from a suite of samples show a paleo-inclination (dip) of  $-11.9^\circ \pm 46^\circ$  which corresponds to a paleolatitude of approximately  $6^\circ$  south of the equator. A secondary overprint of magnetism shows an inclination of  $67.9^\circ$  which translates to a modern latitude of  $51^\circ$  North.

**Prominski, Patrick**

October – December FY10

Midwest Popular Culture Conference

"The Problem with Faith: Autism in Hope Leslie"

In Katherine Maria Sedgwick's novel, *Hope Leslie*, nearly every character mentioned by the author contributes a speaking-role to the novel. Even in seemingly minor characters like Antonio, silence is not a normal trait. However, Hope Leslie's sister, Faith, appears repeatedly throughout the novel, but rarely speaks. It is her lack of verbal communication, not what she says, that draws attention to her. While the other characters seem to attribute her silence to having been taken captive by Oneco, her silence and demeanor suggest something else. Faith exhibits many of the symptoms of autism, which would more readily define her actions than having been a Native American captive.

Using the DSM-IV-TR, this paper first makes an armchair diagnosis of Faith's ailment, followed by a discussion of the ramifications of this for both a settler in early America and how the disease functions within Sedgwick's narrative as an excuse for Faith's behavior. I also draw on criticism of the body in literature to make the case that the diagnosis, while it hobbles Faith within Colonial society, frees her as a voice against the status quo.

**Seaberg, Samantha**

October – December FY10

American Society for Cell Biology (ASCB) 49th Annual Meeting

“Characterizing the Cellular Regulation of the Diaphanous-related Formin, mDia3, by Expression of the Constitutively Active Full-length Protein”

A family of proteins known as Diaphanous-related Formins (DRFs) are important in the regulation of the cellular cytoskeleton. DRFs are regulated by autoinhibition, a mechanism which involves maintaining the DRF protein in an inactive state by the intramolecular binding of the Diaphanous-inhibitory domain (DID) to the Diaphanous-autoregulatory domain (DAD). Upon binding of an activated Rho GTPase to the DRF GTPase binding domain (GBD), the DID-DAD interaction is released, thereby activating the DRF protein. Possessing a very similar sequence homology to the well characterized mDia1 and mDia2 proteins, mDia3 (mouse) / hDia2 (human) is among the least studied DRF family members. While a past study has shown that mDia3 interacts with Cdc42 to regulate microtubule attachment to kinetochores1, the autoregulation and cellular localization of activated mDia3 has not been widely characterized. Therefore, our laboratory has been probing the similarities and/or differences in the regulation and cellular localization between mDia3 and other DRF proteins. Here, we show that M1053 in the DAD region of mDia3, much like the M1041 in mDia2 and the M1182 in mDia1, is involved in regulation by DID-DAD binding. By engineering full-length, constitutively active mDia3, we have been able to express mDia3 in three different cell lines (NIH3T3/mouse fibroblast, PC12/rat pheochromocytomas, N1E-115/mouse neuroblastomas). Constitutively activated mDia3 results in dramatically increased numbers of filopodia-like extensions in which mDia3 is significantly localized at the tips of the filopodia. This is similar to the expression pattern of mDia2, yet different from DAAM1, another DRF family member, which has been shown to be localized throughout the entire filopodia. Fluorescence anisotropy confirms that the M1053A mutation in DAD results in the complete inability to bind to the DID region of mDia3. In summary, these

results demonstrate the critical contribution of M1053 to mDia3 autoregulation, as well as shed some light on the cellular effects and localization of full-length constitutively activated mDia3.

### **Tyler Smith**

October – December FY10

Performance: Le poisson Rouge

“In C Remixed”

Le Poisson Rouge presents a concert celebrating the release of the Grand Valley State University New Music Ensemble's much-anticipated new double-CD set, "In C Remixed". The ensemble performs Terry Riley's classic work "In C", which will be remixed live by composer/sound designer Dennis DeSantis. Michael Lowenstern, all-star bass clarinetist/composer and "In C" remixer, opens the show with electro-acoustic-nostalgia-funk from all four of his CD's, including one new tune from his upcoming fifth release. Le Poisson Rouge is a multimedia art cabaret founded by musicians on the site of the historic Village Gate. Dedicated to the fusion of popular and art cultures in music, film, theater, dance, and fine art, the venue's mission is to revive the symbiotic relationship between art and revelry; to establish a creative asylum for both artists and audiences. LPR prides itself in offering the highest quality eclectic programming, impeccable acoustics, and bold design. The state-of-the art performance space, engineered by the legendary John Storyk/WSDG, offers full flexibility in multiple configurations: seated, standing, in-the-round, and numerous alternative arrangements. A work of art itself, the physical facilities are the embodiment of the experimental philosophy that drives the venue.

### **Starr, Devin**

October – December FY10

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**Vegter, Melissa**

October – December FY10

2009 Annual Meeting of the North American Case Research Assoc.

**“Capital Vehicle Systems: An Exploration in Lean Manufacturing”**

Capital Vehicle Systems is a supplier of vehicle instrumentation systems, including gauges, system controllers, sensors, and display products. In 2008, the firm faced several challenges as the economy weakened and the cost of plant returns and warranties remained high. What can the firm do to meet the strategic goals in the most cost effective manner? The case examines various ways in which Lean Manufacturing has been implemented. In analyzing the case, examine a variety of production-related documents, applying the principles of lean manufacturing to determine which aspects of lean have been applied well and which aspects have not.

**Waeiss, Charla**

October – December FY10

ISA-Midwest (Central Slavic Conference)

“Transitional Justice: The Russian Problem and German Solutions”

Since World War II, transitional justice has played an increasing role in democratization. The Nuremberg Trials in postwar Germany exemplify transitional justice as imposed by external actors. The release of the Stasi files in East Germany after 1989 show how internal actors can implement transitional justice. This paper examines the factors that led to transitional justice implementation and why similar policies have not been implemented in post-Soviet Russia, despite the Soviet Union’s imposition of transitional justice on postwar Germany. Such external factors did not exist for post-Soviet Russia, which leads one to question why internal factors, such as civil society or a leader initiating the policies were not existent either. Understanding the absence of such factors also helps us to trace why Russia’s democratization process essentially was stalled and failed.

**William Willits**

October – December FY10

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## **ACF 2010 July – September Presentations**

### **Biegalle, Neil**

July – September FY10

MathFest 2009

“The Extremality of Bernstein Polynomials”

Extremal problems in the geometry of polynomials concern which polynomials possess certain maximal or minimal geometric properties. We seek to employ results related to polynomial root dragging and root motion to further understand such problems. Of special interest is our investigation into why Bernstein polynomials frequently arise as maximizers.

### **Brege, Wyatt**

July – September FY10

MathFest 2009

“Symmetry Analysis of the Lane-Emden Equation”

We will focus on Lie theory and how it can be used to find symmetries of the Lane-Emden equation. This equation has provided a simple, physical description of the density distribution in many a stellar structure. Symmetry results of the equation will be presented.

**Cohan, J.P.**

July – September FY10

2009 PRSSA National Conference

“Change in Economic System Leads to a New Hope”

China has been in a state of reform and change since December 1978 when the Third Plenum of the Eleventh National Party’s Congress of the Chinese Communist Party (CCP) changed the main party focus from class struggle to economic development. In turn, this leads to a complex relationship between the private and the public sector. As a result, “The CCP is increasingly integrating itself with the private sector, both by co-opting entrepreneurs into the Party and encouraging current Party members to go into business” (Dickson 2007, 852). Therefore, a relationship is built between the wealthy class and the party as well as the private sector. With economic development, the middle class in China has just recently emerged. However, the creation of a middle class leaves the people wanting a greater involvement in their own government. Global organizations such as the World Bank and the World Trade Organization help China loosen its government’s control. Considering all points in mind with privatization, can China move forward with political reform? Or will the government command the economy with partnerships between private and public? My argument is that with the complex relationship between the public and private sector, the elite business owners and party members, a creation of the “new bourgeoisie class” or middle class, and the influence from the World Bank and the WTO; influences political change in China. It fits the entrepreneurs, party members, and the middle class growing into a more democratic China.

**Dahlberg, Samantha**

July – September FY10

MathFest 2009

“On Proofs of Summation Identities”

The problem of finding closed-form expressions for various sums and proving identities among them is among ancient and attractive mathematical problems. One of the most exciting discoveries in the early nineties, due to H. Wilf and D. Zeilberger, was that finding close-form expressions for various sums and proofs for special class of summation identities can be efficiently and elegantly handled by the computer. In this talk we explore and highlight the Wilf-Zeilberger (WZ) method and show various practical applications of Zeilberger's algorithm. This work was done at the 2009 REU program at Grand Valley State University.

**Ferre, Matt**

July – September FY10

Midwestern Criminal Justice Association

“Mediating in the Streets: Exploring the Intersections of Common Policing and Common Mediation Practices”

Managing and resolving interpersonal conflict reflect a common and recurring responsibility for police officers. Research suggests that resolving these responsibilities through traditional policing methods may have situational limitations (Cooper, 1999). Other policing philosophies, including community policing and problem-oriented policing, have also been implemented in law enforcement, but evaluations into their effectiveness has produced mixed results.

Notwithstanding attempts to transform policing through these approaches, mediation has been proffered as a viable skill set beneficial to police officers. However, minimal research exists exploring the compatibility of traditional policing practices and the management of conflict through mediation in the field. This research recommends exploratory case study protocol that will assess both the formal and “natural” mediation and conflict resolution practices of officers in the field.

**Gallaway, Meghan**

July – September FY10



## The 14th European Conference on Developmental Psychology

### “Societal and Personal Views of Criteria for Adulthood: A Cross-National Comparison”

This poster aims to investigate how university students from modernized nations view criteria for adulthood from both a societal and personal perspective. Three countries were included in this study: Slovenia, Austria, and the United States. The facts that individuals in the late teens and early twenties in such nations tend to put off some criteria until later in life (e.g., marriage, start of career) and that there is a lack of clear markers of adulthood, the transition into adulthood has become of increasing interest to developmental psychology. Three central questions were asked here: (1) Which personal criteria of adulthood are most important? (2) How well defined are students' conceptions of societal norms regarding adulthood? (3) Does the importance of these criteria vary across the three countries and/or between societal and personal perspectives?

N = 636 participants (210 in Austria, 201 in Slovenia, 225 in USA) ( $M = 21$  years,  $SD = 1.8$ ) completed the Conception of the Transition to Adulthood (Arnett, 1998). In this instrument they rated 38 specific criteria as personally important to becoming an adult or not, and also how important these same criteria were to the society that each participant lived in. These specific criteria comprised six larger categories, e.g., Role Transitions and Independence.

Nationality was found to be a significant factor for personal image of adulthood in four out of the six categories and for societal image of adulthood in three out of the six categories. To evaluate the strength of shared social norms, the standard deviations of societal and personal importance were compared. With one exception, there were no differences; this rather supports the claim that the societal criteria seem to be vague. In addition, the means of societal importance of criteria are higher than personal views, except in the case of the Independence category.

Sean Townshend, Meghan Gallaway, Wolfgang Friedlmeier Ph.D.,

\*Ulrike Sirsch Ph.D., & \*\*Melita Puklek-Levpuscek Ph.D.

Department of Psychology, Grand Valley State University, Grand Rapids, MI, USA

\*Faculty of Psychology, University of Vienna, Austria

\*\*Department of Psychology, University of Ljubljana, Slovenia

**Gardner, Sharon**

July – September FY10

Lilly Conference on Teaching and Learning

“Student Conference Attendance: Bridging the Gap between School and the Professional World”

Session Type: Round Table

Abstract: Upon graduation, Public Administration students are often unaware of the struggles they will face in their profession. Public administration educators have a vested interest in encouraging their students to attend or present at academic conferences in order to help their students make connections between school and the professional world. Conferences serve as an arena for students to meet and mingle with experienced professionals who can provide valuable insight about the interworkings of the field of PA.

Objectives: The School of Public and Nonprofit Administration at Grand Valley State University is developing a program which will encourage students to present at academic conferences. The three major goals of this program are: 1) Improve students’ abilities to communicate by presenting research they have performed on a topic relating to public administration, 2) Have students gain greater insight into field of public and non-profit administration by attending conference presentations, 3) Facilitate networking between students and public administrators at academic conferences.

**Golenbiewski, Kyle**

July – September FY10

MathFest 2009

“Modeling Nonseparable Preferences in Referendum Elections”

Referendum Elections often require voters to cast ballots simultaneously on multiple proposals, some of which may be interrelated. When a voter's preferences on one proposal depend on the known or predicted outcomes of other proposals, the voter's preferences are said to be nonseparable. In this talk, we will explore ways to mathematically model and analyze various forms of nonseparability. This work was completed as part of the 2009 REU program at Grand Valley State University.

**Jensen, Tarah**

July – September FY10

MathFest 2009

“Extreme Curvature of Polynomials”

Let  $P$  be a real polynomial of degree  $n$ . We are interested in the number of points of extreme curvature. Curvature is defined by:

1

and to find the points of extreme curvature we look at  $k' = 0$ . We will discuss our progress in showing that the number of points of extreme curvature is at most  $n - 1$ . This problem is reminiscent of the  $P^2 + P'$  problem.

**Kelch, Timothy**

July – September FY10

Globalization and the Challenge of the Humanities and Social Sciences

“Change in Economic System Leads to a New Hope”

China has been in a state of reform and change since December 1978 when the Third Plenum of the Eleventh National Party’s Congress of the Chinese Communist Party (CCP) changed the main party focus from class struggle to economic development. In turn, this leads to a complex relationship between the private and the public sector. As a result, “The CCP is increasingly integrating itself with the private sector, both by co-opting entrepreneurs into the Party and encouraging current Party members to go into business” (Dickson 2007, 852). Therefore, a relationship is built between the wealthy class and the party as well as the private sector. With economic development, the middle class in China has just recently emerged. However, the creation of a middle class leaves the people wanting a greater involvement in their own government. Global organizations such as the World Bank and the World Trade Organization help China loosen its government’s control. Considering all points in mind with privatization, can China move forward with political reform? Or will the government command the economy with partnerships between private and public? My argument is that with the complex relationship between the public and private sector, the elite business owners and party members, a creation of the “new bourgeoisie class” or middle class, and the influence from the World Bank and the WTO; influences political change in China. It fits the entrepreneurs, party members, and the middle class growing into a more democratic China.

**Larsen, Angela**

July – September FY10

The Annual Wildlife Society Conference

“Impacts of Savannah Restoration on Small Mammal Density and Diversity in West Michigan”

Savannah and other grassland ecosystems are one of the most endangered ecosystems in Michigan and much of North America. Consequently, species which rely on habitat found in this ecosystem are frequently species of concern for management agencies. The US Forest Service is currently beginning a program to restore areas of mixed deciduous forest that were traditionally savannahs. The impetus for this effort is to provide habitat for the federally endangered Karner Blue butterfly (*Lycaeides melissa samuelis*). Our objective is to monitor and analyze the impacts of the restoration project on small mammal diversity and density. A control and three treatment plots (shearcutter, bulldozer, and masticator) were monitored. Small mammals were trapped in a grid of 36 Sherman live traps within each replicate. Trapping results indicated that White-footed mice (*Peromyscus leucopus*) had the highest number of captures in all replicates. Other small mammal species present included Short-tailed shrew (*Blarina brevicauda*), Masked shrew (*Sorex cinereus*), Eastern chipmunk (*Tamias striatus*), Southern flying squirrel (*Glaucomys volans*), Thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), and Meadow vole (*Microtus pennsylvanicus*). The intent is to continue monitoring for the foreseeable future to determine the long-term impacts of the restoration effort.

**Lechy, Jennifer**

July – September FY10

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### **Lincoln, Jesse**

July – September FY10

Botany & Mycology 2009 (Botanical Society of America)

"*Ailanthus altissima* increases nodulation in *Trifolium pratense*: A novel weapon for an invasive species"

*Ailanthus altissima* (Simaroubaceae) is an invasive tree from China that has spread over much of North America. A number of characteristics contribute to its success, notably tolerance of poor soils, rapid growth rates and production of allelopathic compounds. A mechanism increasing soil nitrogen would facilitate rapid growth on poor soils and previous studies indicate sites invaded by *A. altissima* have increased soil nitrogen levels. Increased soil nitrogen may be achieved through an alleochemical impact on legumes which solicit nitrogen-fixing rhizobia by emitting flavonoids into the rhizosphere under low nitrogen conditions. We investigated if and how *A. altissima* root exudates impact nodulation and growth in *Trifolium pratense* (Fabaceae). The experiment included a factorial design with the following treatments: soil leachate source (presence / absence of *A. altissima*), leachate source fertilization, and *T. pratense* fertilization. Treatment effects on *T. pratense* total biomass and shoot:root ratio were complex. *Trifolium pratense* treated with *A. altissima* leachates had a significantly increased nodule biomass to total biomass ratio and were twice as likely to be nodulated compared to control groups. We are currently monitoring changes in transcript abundance for *T. pratense* genes encoding enzymes

chalcone synthase and chalcone isomerase in response to *A. altissima* leachates. These genes are involved in the production of the flavonoid released by *T. pratense* to solicit rhizobia for nodulation. Flavonoid signaling molecules are analogous to early responsive defense genes, suggesting increased nodulation results from an upregulation along a defense pathway. This previously unreported plant-plant interaction potentially facilitates rapid growth of *A. altissima* in poor soils via increased nitrogen fixation in neighboring legumes.

### **Miara, Sheila**

July – September FY10

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**Norris, Rebecca**

July – September FY10

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**Stockero, Nick**

July – September FY10

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### **Townshend, Sean**

July – September FY10

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\*\*Department of Psychology, University of Ljubljana, Slovenia

**Xhumari, Sandi**

July – September FY10

MathFest

“Generating Functions and their applications”

A lot of problems turn into Recurrence Relations, where the next term depends on the previous ones. For example, every term in the Fibonacci sequence is defined as the sum of the two previous terms, which is a Recurrence Relation. One of the most powerful tools to solve Recurrence Relations is Generating Functions. In this presentation, I will introduce you to Generating Functions and apply them to some specific problems. Next time you are faced with a Recurrence Relation, you will have a brand new secret weapon up your sleeve!