Day 1

CSU 201

9:00 - 10:30 am
Communication Studies
Gender and Women’s Studies

10:30 - 11:30 am
English

1:00 - 2:00 pm
English
Theatre and Dance

CSU 202

9:00 – 9:45 am
Electrical and Computer Engineering and Technology

10:15 – 11:15 am
Mechanical Engineering
Information Technology
Physics

1:00 – 1:45 pm
Biology

2:15 – 3:15 pm
Biology
Mathematics

3:30 – 4:30 pm
Mathematics
Business

CSU 203

9:00 – 10:00 am
Counseling and Student Personnel

1:00 – 2:15 pm
Urban Studies
Philosophy

2:30 – 3:45 pm
Urban Studies
Educational Leadership

Poster Session: CSU 253/4/5

1:00 – 2:00 pm
Anthropology
Biological Sciences
Communication Studies
Geography
Health Science
Human Performance
Nursing
Psychology
Social Work
Urban Studies
Gender and Women’s Studies

**Negotiating Difference in the Mormon Context: A Reading of Two African American Mormon Women’s Autobiographies**  
Shannon L. Christopher

Communication Studies

**Pete Seeger to Pearl Jam: A Comparative Analysis of Protest Music from the Vietnam and Iraq Wars**  
Sarah Eckstein

**Surviving Abuse: Building Bridges between an Abusive Childhood and a Healthy Adulthood**  
Laura Pelletier

**Being a “Karaoke King” (or Queen): Aesthetic Communication in Karaoke Performance**  
Megan Orcholski

**If You Liked It, Then You Should’ve Put a Ring on It: A Corporeal Critique of Womanhood in Beyoncé’s Single Ladies Music Video.**  
Stephanie Schmidt

**Impacts of High School Athlete-Coach Interpersonal Relationships: Coach Favoritism, Ingroup/Outgroup Identification, and Adult Sport Participation**  
Stephanie Schmidt
Negotiating Difference in the Mormon Context: A Reading of Two African American Mormon Women’s Autobiographies

Shannon L. Christopher (Gender and Women’s Studies)

Dr. Jocelyn Fenton Stitt, Faculty Advisor, Gender and Women’s Studies

There exists a great deal of scholarly literature about both gender and race issues within the Church of Jesus Christ of Latter-day Saints, also known as the LDS or Mormon Church. However, very little of this scholarship studies the intersection of gender and race, particularly in the case of African American Mormon women. Thus, I raise the question of how an examination of the writings of Black Mormon women can reveal insights into the negotiation of this particular location. Using black feminist theory, womanist theology, and literature about gender and race in the Mormon Church to inform my process, I have studied two autobiographical accounts of Black Mormon women in an attempt to answer this question. The unique place where gender and race are constituted in and through one another in the context of Mormon doctrine causes African American Mormon women’s experience in the Church to be different from both white women and African American men. This research demonstrates that while these two particular Black Mormon women did indeed address many of the issues and experiences associated with racialization in the Mormon Church, they did not identify gender as important to their LDS experiences. Also, this research supports a hypothesis that in the absence of direct discrimination, misconceptions about race, racism, and prejudice help to support white hegemony in the LDS Church. Finally, this research has revealed a parallel to other African American literature and contributes to a tradition of literature that seeks to identify and address race issues.

Pete Seeger to Pearl Jam: A Comparative Analysis of Protest Music from the Vietnam and Iraq Wars

Sarah Eckstein (Communication Studies)

James Dimock, Faculty Advisor, Communication Studies

This study analyzes persuasive efforts of two social movements: the opposition to the Vietnam War and the opposition to the Iraq War. Specifically, I look at how these efforts are manifested in the music of each era. Drawing on Knupp (1981), Stewart, Smith and Denton (2001) and Sellnow and Sellnow (2001), I conduct a comparative analysis of songs from both eras studying not only the persuasive effects of the lyrics, but the music as well.

The purpose of this study is to understand how both music and lyrics create a persuasive argument to the audiences. Additionally, I will be examining protest songs from both the Vietnam and Iraq Wars to determine whether or not protest songs have changed in the past forty
years and if the rhetoric used within the protest music from each period has changed as the culture and the music industry have changed.

**Surviving Abuse: Building Bridges between an Abusive Childhood and a Healthy Adulthood**

Laura Pelletier (Communication Studies)

*James Dimock, Faculty Advisor, Communication Studies*

Family relationships can be both a source of well-being as well as a source of distress. Events that happen within our families during our formative years shape communication and behavior patterns over the life-span. With this in mind it would be reasonable to assume that healthy, reasonably functioning families will produce physically and emotionally healthy, reasonably well functioning offspring while abusive families will produce offspring who are less than physically and/or emotionally healthy and reasonably well functioning in society. While survivors of childhood abuse may escape the abuse when they leave their family, they may still unconsciously carry their families with them. Children will continue to carry the effects of their abusive family with them into adulthood in the forms of lower self-esteem, relationship problems, physical and emotional problems, trust issues, and more. Escaping the family does not mean escaping problems. This autoethnographic essay looked at the long-term effects of childhood abuse, with an emphasis on emotional and verbal abuse, on the adult survivors. I discussed the framework of an abusive family along with the effects abuse has on adult survivors of abuse along with examples from my own emotionally abusive family with the hope that other victims will be able to cross the bridge from an abusive family to a healthy adulthood.

**Being a “Karaoke King” (or Queen): Aesthetic Communication in Karaoke Performance**

Megan Orcholski (Communication Studies)

*Dr. Leah White, Faculty Advisor, Communication Studies*

Karaoke appeals to a wide variety of performers from the “average joe” who enjoys his country music but also to semi-professionals who use karaoke as an outlet to perform. Participant observations at a specific karaoke bar confirmed this range creates a variety of performances that have different types of values. Instead of looking at these performances as “good or “bad,” this analytic ethnography uses Pelias and VanOosting (1987) conception of aesthetic communication to analyze karaoke performance based on the observations. The application of the three main tenants of aesthetic communication resulted in producing three areas that affect the aesthetic value of a karaoke performance: musical aspects, performance qualities, and external factors. Additionally, the author also discusses these qualities coming together. When viewed as a performance, karaoke becomes something that each audience member process and reacts to individualistically. Even when there is an obvious change in aesthetic value, the community
If You Liked It, Then You Should’ve Put a Ring on It: A Corporeal Critique of Womanhood in Beyonce’s Single Ladies Music Video.

Stephanie Schmidt (Communication Studies)

Dr. Amy Pason, Faculty Advisor, Communication Studies

In an age of ever-increasing media influence, it is important to consider the impacts that specific aspects of pop culture have on our ideas of gender. This rhetorical critique examined ideas about womanhood prevalent in hip-hop singer Beyonce’s hit music video for Single Ladies. When viewed from a traditionally feminist perspective, this video seems to present contradictory messages of female power and submission, of women’s abilities to be independent and of their apparent desire to “put a ring on it.” In this light, the song’s lyrical message of empowerment and the video’s visual message of sex and bodily exploitation may present a problem. When viewed through a lens of corporeal rhetoric, however, this video allows us to see the body as, first and foremost, an object void of gendered history. If we focus on corporeality, we are able to redefine feminism in a way that allows the Single Ladies video’s multiple messages—of independence, power, sex appeal, and the desire to be in relationship—to work together. This essay examined how, through a corporeal critique, the body becomes no longer a necessary site of oppression, but a site of power—one in which women reclaim what womanhood means—and how this is expressed through the seemingly contradictory messages of the Single Ladies music video. The impact of this video’s widespread popularity and its messages about power in relationships were explored, and implications were discussed.

Impacts of High School Athlete-Coach Interpersonal Relationships: Coach Favoritism, Ingroup/Outgroup Identification, and Adult Sport Participation

Stephanie Schmidt (Communication Studies)

Dr. Kristen Cvancara, Faculty Advisor, Communication Studies

An influx in sport-based communication and relationship research has revealed the impacts of constructs such as perceived coach behaviors and team cohesion on athlete satisfaction and success. However, few studies discuss the development and maintenance of team cohesion, or the lack thereof, and particularly not through the lens of athlete perceptions of coach favoritism behaviors. The present study seeks to understand the impact of the high school coach-athlete interpersonal relationship on ingroup and outgroup construction in sport, and, consequently, on adult sport attrition rates. Existing literature on athlete satisfaction, ingroup/outgroup identification, and discrepancies in athlete preference and perception of coach communication
behaviors led to the modification and development of several self-report scales. Adult females who previously played a high school sport completed the questionnaire, which measured their past perceptions of coach favoritism, identification with an ingroup on their high school team, and their current identification as an athlete and desire to continue participation in sport. Correlation analyses between each of the variables revealed that coach favoritism behaviors and athlete ingroup identification in sport have no significant impact on adults’ continued participation in sport; however, coach favoritism behaviors were strongly correlated to ingroup identification in sport, and to athletes’ perceived ingroup status. Implications for the sport community, and specifically for coach-athlete relationships and for athlete satisfaction, were discussed.
English

The Transformative Power of Stories in Vikram Chandra’s *Red Earth and Pouring Rain*
Corinne Ehrfurth

Towards a Representation of the Maternal Other in Le Fanu’s *Carmilla*
Pauila Schevers

Using the Multi-Genre Projects in ESL and Mainstream Composition Courses: Data and Adjustments
Mariya Gyendina

The Impact of Changes in the TOEFL iBT on Instructors Who Teach TOEFL Preparation Courses in Turkey
Bekir Canli
The Transformative Power of Stories in Vikram Chandra’s *Red Earth and Pouring Rain*

Corinne Ehrfurth (English)

*Dr. Mary Sue Johnston, Faculty Advisor, English*

Vikram Chandra, a contemporary Indian author, constructs his novel as a frame narrative in order to demonstrate the vitality of Indian culture. Chandra depicts two protagonists who strive to understand their “dharma,” or duty, while facing personal anxieties and the impact of colonial power structures. My research suggested a correlation between the protagonists’ abilities to embrace traditional aspects of Hinduism and their success in integrating the past with the present. To further support this hypothesis, I analyzed how the entire novel incorporates mythology from Hinduism along with allusions to history and ancient literature. The two characters embrace oral tradition and learn about their own identities via the stories of others. Elements of Hinduism portrayed in the stories told throughout the novel exert an active role in how the characters accept and understand their complex identities.

Towards a Representation of The Maternal Other in Le Fanu’s *Carmilla*

Paula Schevers (English)

*Dr. Matthew Sewell, Faculty Advisor, English*

The roles of the feminine and feminine “other” in 19th-century gothic literature have often been portrayed as a female character, repressed by a patriarchal figure or system within the text. Yet, the role of the maternal has been limited, misrepresented and rarely addressed. In Le Fanu’s novella, *Carmilla*, the gendered roles between male and female, maternal and paternal have been reversed and in doing so, created a dominant maternal power structure. It is through this gendered reversal that a duality of identity in the roles of maternal and “other” are assigned to the leading female characters, Laura and Carmilla. The incorporation of theoretical frameworks addressed in Julia Kristeva’s *Powers of Horror*, brings into focus the role of the maternal and maternal “other” within gothic literature, thus has allowed for a new reading and representation of Sheridan Le Fanu’s text.

Using the Multi-Genre Projects in ESL and Mainstream Composition Courses: Data and Adjustments

Mariya Gyendina (English)

*Dr. Karen Lybeck, Faculty Advisor, English*

Multi-genre projects, an approach to teaching research writing (Romano, 2004), are gaining popularity in colleges and high schools, especially in English writing courses. This presentation includes data on the topics, genres, and responses elicited from 36 students of native and non-native sections of ENG 101 using the same multi-genre assignment. Results showed that when
choosing from job-related, hobby-related and personal topics, the native speaker students were generally less inclined to choose job-related topics. Native speaker students experimented more with the genres, whereas the non-native speaker students usually selected genres they were already familiar and comfortable with. Student responses to the project also revealed important cultural distinctions – although both groups had approximately the same number of positive responses, the non-native speakers did not provide any negative ones, phrasing their concerns or displeasure with more hedging. Teaching implications and necessary adjustments will also be discussed.

The Impact of Changes in the TOEFL iBT on Instructors Who Teach TOEFL Preparation Courses in Turkey

Bekir Canli (English)

Stephen Stoynoff, Faculty Advisor, English

A new Internet-based version of the TOEFL was introduced worldwide in fall 2005, and assessment experts emphasize the need to document the impact of tests on test takers and test score users. Therefore, the test developer, Education Testing Service (ETS), has undertaken investigation of the impact of the TOEFL iBT on English teaching and learning worldwide. The aim of this study was to extend the research on the iBT and to consider its impact in the Turkish context. The study was exploratory and sought to determine the level of awareness of the TOEFL iBT among Turkish TOEFL preparation instructors, identify instructors’ teaching practices, and identify the kinds of classroom learning activities students perform. This study made an important contribution to research on the impact of high-stakes tests of second language (L2) ability. It also had implications for contributing to iBT test preparation in Turkey.
Richard as the New Westerner in *Half of a Yellow Sun*
Dana Bruhn

Theatre and Dance

Death of the Ingénue
Lauren Mikeal Parsons

What’s so funny? Examining the Popularity of Comedy of Manners
Deanne McDonald

Examining Language in Plays by Native American Writers
Sara Pillatzki-Warzeha
Richard as the New Westerner in *Half of a Yellow Sun*

Dana Bruhn (English)

*Dr. John Banschbach, Faculty Advisor, English*

The purpose of my project was to analyze the role of Chimamanda Ngozi Adichie's character Richard in the novel *Half of a Yellow Sun* in order to prove that he represents the new face of the West in novels of post-colonial nations. In my research, I pulled from the discourse around New Women literature to draw parallels between the ways in which Richard subverts Western hegemony just as New Women protagonists subvert Victorian gender norms. My research also involved reading traditional post-colonial literature which takes place in African nations, but focuses on a Western protagonist. The differences between the Western characters in these traditional novels are compared to Richard to show how he embodies a West which is not the focus nor a source of power within a text.

Death of the Ingénue

Lauren Mikeal Parsons (Theatre and Dance)

*Dr. Heather Hamilton, Faculty Advisor, Theatre and Dance*

The ingénue as we knew her is dead. Known for her virginial qualities of beauty, innocence and naivety, the ingénue was a young woman commonly found in the musical theatre genre. Traditionally, she represented the social ideal of the young female: non-threatening, passive and sexually pure. This character was dependent on others and usually relies on guidance from a parental figure. The ingénue was traditionally sung in a classical or classical-legitimate placement, was a soprano and was the lead romantic interest of the play. Jan Sullivan’s book *The Phenomenon of the Belt/Pop Voice* was briefly explained and then applied to determine vocal placement. As society’s views changed to fit our evolving ideas of womanhood and virtue, so the ingénue progressed. The evolution of this character was discussed with examples given throughout the decades. This paper focused on new musicals being written and how these new musicals rarely included the archetype of the ingénue. It then demonstrated recent female characters and explained why they should not be considered ingénues: but rather representations of the new female ideal: independent, strong and confident in her own agency.

What’s so funny? Examining the Popularity of Comedy of Manners

Deanne McDonald (Theatre and Dance)

*Dr. Heather Hamilton, Faculty Advisor, Theatre and Dance*

Frequent revivals of comedy of manners plays across a variety of periods attest to their enduring popularity with the modern American audience. The genre adheres to mannerly conventions intrinsic to their original time unfamiliar to the general population. David Hirst identifies three
necessary ingredients of a true comedy of manners: characters use manners employed in a social context, their main concerns are sex and money, and they control their emotions using wit and disguise. Modern audiences respond to the third ingredient because they recognize the dichotomy between what a character really thinks and feels and the forced composure due to societal requirements. Noel Coward’s *Private Lives* and Oscar Wilde’s *The Importance of Being Earnest* include genre defining illustrations of this dichotomy.

**Examining Language in Plays by Native American Writers**

Sara Pillatzki-Warzeha (Theatre and Dance)

*Dr. Heather Hamilton, Faculty Advisor, Theatre and Dance*

Abstract: There are similar linguistic characteristics in the writings of several Native American playwrights from different geographical areas. The purpose of this paper was to examine the source of these similarities, and why they exist despite the differences in tribal affiliation or geographical location. One of the most prevalent similarities discovered was the incorporation of tribal tongue in the writing. Tribal language is the tool that each tribe uses to communicate and is a very important part of native culture. The word language is used here to encompass both the expression of these Native playwrights as an art form (non-verbal) as well as the use of specific tribal languages (verbal). The playwrights examined in this paper all appear to use their writing as a catalyst for reminding Native Americans of the value of certain important aspects of Indian culture. This paper examines how several Native American playwrights use tribal language in their dialogue and brings focus to the importance of continuing to make use of these languages. It also explores how the nature of written dialogue gives the audience important clues about the characters. By using text analysis, this paper shows how these playwrights use language as both a verbal and non-verbal tool to remind Native audiences about the importance of Native culture, often specifically tribal language. Playwrights that were examined for this paper include Hanay Geiogamah, William S. Yellow Robe and Drew Hayden Taylor, among others.
Spectral Analysis: Optical Signal to Noise Ratio (OSNR) vs. $E_b/N_0$ in Optical Communications
Sujit Shrestha

A New Numerical Method for the Parallel Simulation of Pulse Propagation in the Single Mode Optical Fiber
Dinesh Manandhar

Margin Measurement Method for Optical Differential Phase Shift Keying (DPSK) Systems
Ram Man Bajracharya
**Spectral Analysis: Optical Signal to Noise Ratio (OSNR) vs. $E_b/N_0$ in Optical Communications**

Sujit Shrestha (Electrical and Computer Engineering and Technology)

*Dr. Qun (Vincent) Zhang, Faculty Advisor, Electrical and Computer Engineering and Technology*

One traditional performance measure, the optical signal to noise ratio (OSNR), was used extensively for the purpose of performance evaluation and system design in fiber optical communications. In this research we applied rigorous spectral analysis theory to the concept of OSNR, and we gave the details that how OSNR could be modeled, simulated, and measured. Based on numerical simulations, we gave detailed results of system performance based on different OSNR definitions, including the OSNR defined with 0.1 nm bandwidth, 0.2 nm bandwidth and 0.5 nm bandwidth, as well as the OSNR values obtained with/without polarization discrimination (i.e., whether or not the optical signal and noise passed a polarization controller and a polarization beam splitter before measurement). We showed that for modern ultra-broadband optical wavelength domain multiplexing systems which employed a variety of modulation formats, traditional OSNR concept failed as a consistent measure of system performance. After explaining the concept of another performance measure i.e., $E_b/N_0$ (type it using math type) which was used in other traditional communications disciplines such as telephony and wireless communications, we showed that $E_b/N_0$ could represent a more consistent performance measure for modern optical communication systems. To facilitate our discussions, the relation between the discussed performance measure (OSNR and $E_b/N_0$) and the system bit error rate (BER) was illustrated.

**A New Numerical Method for the Parallel Simulation of Pulse Propagation in the Single Mode Optical Fiber**

Dinesh Manandhar (Electrical & Computer Engineering Technology)

*Dr. Qun (Vincent) Zhang, Faculty Advisor, Electrical & Computer Engineering Technology*

Performance evaluation and system design of fiber optical communications rely heavily on the simulation of optical pulses propagating in optical fiber. As a result, efficient and accurate numerical solution to the nonlinear Schrödinger equation, which governs the optical pulse propagation, is highly desirable in the field of optical communications. We studied several mathematical methods including the split-step Fourier method, the third order Volterra series method, the first order regular perturbation method, and a parallel simulation method recently proposed by Lushnikov, that could solve the nonlinear Schrödinger equation. And we derived a new parallel numerical method to simulate optical pulse propagation in the nonlinear, dispersive, and single mode optical fiber. We also gave a detailed description on the step-by-step implementation of the algorithm. The new parallel algorithm had higher computational efficiency compared to Lushnikov’s parallel algorithm. The derived parallel algorithm used $M$ central processing units (CPUs) to simulate the $M$ simulation steps in one span of the optical fiber that was approximately 100 km long, with computational complexity of $N \log_2 N$ per CPU.
(\(N\) being the number of time samples in the simulated pulse train which represents the transmitted bit sequence i.e., the sequences of transmitted ones and zeros). In contrast, the computational burden was \(MN \log_2 N\) when using the standard Split-Step Fourier (SSF) simulation method, and was \(MN^2\) for the third order Volterra series method, for which only one CPU was used. The derived parallel algorithm was significant and could find applications for time-critical system simulation/design tasks in fiber optical communications.

**Margin Measurement Method for Optical Differential Phase Shift Keying (DPSK) Systems**

Ram Man Bajracharya (Electrical & Computer Engineering & Technology)

*Dr. Qun Zhang, Faculty Advisor, Electrical & Computer Engineering & Technology*

The ultimate performance measure for any communications systems is the bit error rate (BER), the ratio of the number of received binary bits that have been altered due to noise and interference to the total number of transferred bits during a studied time interval. Reliable and efficient estimate of BER is particularly important in fiber optic communications due to the high data rate of the system. Based on the computed exact probability density functions (PDFs), Gaussian approximation method for bit error rate (BER) estimation was analyzed for back to back optical differential phase shift keying (DPSK) systems with balanced detection. Contrary to its success in on-off keyed (OOK) systems, Gaussian approximation method failed for DPSK because the two \(\chi^2\)-like PDFs are almost symmetrical to the optimal decision point; the slopes of the inner rails of the exact PDFs were larger than that of the outer rails, resulting in a higher cross point on the two rails obtained by using Gaussian approximation and thus leading to a higher BER estimate. Since Gaussian approximation underestimated the system performance for optical DPSK systems, it should not be used as a margin measurement method. We then investigated another margin measurement method i.e., the thresholding method which had been extensively used for OOK systems. We found that, though based on the Gaussian approximation method, the thresholding method was still reliable for optical DPSK systems, and could efficiently measure large performance margins.
Mechanical Engineering

**The Model of Micro-Fluidic Pump with Vibrating Boundaries**  
MD Shakhawath Hossain

**Computational Flow of Moisture in Porous Media for Space Applications**  
Rakesh Chandra Pyaram

Information Technology

**Predicting Patient Recovery during Physical Therapy for a Total Knee Replacement Using Data Mining**  
Robert Azarbod

Physics

**Superconductivity of LaFeAsO**  
Jing Han Soh
The Model of Micro-Fluidic Pump with Vibrating Boundaries

MD Shakhawath Hossain (Mechanical Engineering)

Dr. Nihad Daidzic, Faculty Advisor, Aviation

A mathematical model and numerical simulations of the new shear-driven micro-fluidic pump concept is presented. The flow of the Newtonian and shear-thinning non-Newtonian fluid in plane 2D geometry, micro-channel, or pipe is achieved by oscillatory motion of the channel walls. A 2nd Stokes problem was used as motivation. However, in our model, the oscillatory flow for finite 2D geometry and ramp quasi-periodic boundary conditions is presented resulting in positive flow rate for Newtonian and some rheological fluids. Among the rheological fluid models Power-Law Model and Casson Model are considered. Various velocity layouts of the oscillatory motive plates can be achieved for these rheological fluid models and also for the Newtonian fluids. Temperature distributions are also obtained. Such micro-fluidic pumps can be easily arranged in a serial or parallel layout to deliver desired flow rates and/or efforts. Proposed shear-driven micro-fluidic pump can find variety of applications in supporting blood flow in vascular channels, MEMS fluidic systems, nanotechnology, food processing, automotive industry, etc.

Computational Flow of Moisture in Porous Media for Space Applications

Rakesh Chandra Pyaram (Mechanical Engineering)

Dr. Nihad Daidzic, Thesis Advisor, Aviation

In order to maintain ambient conditions in the space shuttle cabin for deep space missions there has to be a perfect heat exchanger system. Porous materials are well known for its use in heat exchanger for space systems due to the absence of gravity in the outer space. Various mathematical models are analytically derived for one dimensional and two dimensional moisture transport problems using Richard’s equation, which is simplified for the zero-gravity conditions. Finite difference models for linear sorption and de-sorption diffusion dynamics are solved and compared to the analytical solutions. Further these finite difference schemes are used for non-linear sorption and de-sorption diffusion dynamics in microgravity conditions. Linear and exponential models are solved for wetting and de-wetting process for the cold porous plate. Effects of bio-fouling and clogging are also studied which hinder (or change the diffusivity of the porous media) the performance of porous media are also studied. Evaporation and condensation in the porous median has also been studied in the absence of gravity.
Predicting Patient Recovery during Physical Therapy for a Total Knee Replacement Using Data Mining

Robert Azarbod (Information Technology)

Dr. Mahbubur Syed, Faculty Advisor, Information Technology

Dr. Cyrus Azarbod, Faculty Advisor, Information Technology

The purpose of this research was to develop a model that can predict the patient recovery during physical therapy after a total knee replacement. During a patient’s recovery, he/she will go through many exercises that can determine the rate a patient will heal. These exercises consist of various physical activities that are prescribed and monitored by a physical therapist. In this study, data mining (more specifically fuzzy logic and intelligent databases) were used to analyze the activities and other related information about the patient to predict his/her recovery. This model will identify the factors that impede the process of patient recovery. This will set up alerts for the therapist to adjust the activities that will maximize the therapy for the patient. This web-based data mining will develop the results into three different phases: The first phase consists of what the therapist can do for the beginning portion of a patient’s physical therapy; the second phase is an incremental learning process that will provide a easy-to-use visualization tool to improve the “fuzzy” components of the data, thus increasing the accuracy of the conclusion made by the system; finally, the mining process will start, which provides the final recommendation to the therapist. Once this model has been created, it will be verified by seasoned physical therapists. After this initial verification, this model will be tested using observational data from local and regional clinics.

Superconductivity of LaFeAsO

Jing Han Soh (Physics)

Dr. Youwen Xu, Faculty Advisor, Physics and Astronomy

Phase formation and superconductivity of La-Fe-As-O compound were studied. LaFeAsO compounds doped with Fluorine (F) and Rhodium (Rh) were synthesized. Powder X-ray Diffraction was used to monitor the phases formed and the change in structure while the doping level changed. Magnetic measurements over a wide range of temperature and magnetic field were used to probe the superconductivity and magnetism of the materials. Superconductivity was observed at temperature as high as 26 K for nominal composition of LaFeAsO$_{1.3}F_x$ ($x = 0.075 - 0.15$) and 12.5 K for LaFe$_{1.3}$Rh$_x$AsO$_{0.86}$ ($x = 0.05 - 0.10$).
Biological Sciences

An Examination of the Hybridization amongst *Typha* taxa in Minnesota
Shanna Hiniker

Identifying Stressors Causing Fish Community Impairments in the High Island Creek Watershed
Jonathan Lore

Spatiotemporal Changes in Macrophyte Diversity and Nutrient Uptake along a Phosphorus Gradient on the Jefferson German Chain of Five Lakes in South-Central Minnesota
Joe Pallardy
An Examination of the Hybridization amongst Typha taxa in Minnesota

Shanna Hiniker (Biology)

Dr. Robert Sorensen, Faculty Advisor, Biology

Within North America, a hybrid between a native cattail species (Typha latifolia; wide leaved cattail) and an invasive species (Typha angustifolia; narrow leaved cattail) has been identified where the ranges of the two species are sympatric. The fertility of the resulting hybrid (Typha x glauca) has been widely debated. Fertile hybrids that are capable of backcrossing to one or both parental species can significantly affect local biodiversity via introgression. Introgression can result in the loss of native genotypes and cause local genetic extinction of one or both parental species. Microsatellite techniques developed by Tsyusko et al. (2003) were used to determine allelic diversity within southern Minnesota Typha (cattail) stands, and the resulting genotypic data was used to infer the presence or absence of introgression. All genotyped T. latifolia were homozygous at all 4 primer loci, while heterozygous individuals of T. angustifolia were common with two of the four primers. The majority of T. x glauca individuals contained both a T. latifolia and a T. angustifolia band indicating an F1 hybrid status. A few individuals of T. x glauca contained both a T. latifolia and a T. angustifolia band for 3 of the primers, and contained the band for only one parental contributor for the remaining primer, suggesting that these individuals were the result of a backcross. Research is still ongoing; however current data suggests that introgression is present but rather uncommon, and that backcrossed individuals do not constitute a significant portion of Minnesota cattail stands.

Identifying Stressors Causing Fish Community Impairments in the High Island Creek Watershed

Jonathan Lore (Biology)

Dr. Shannon Fisher, Faculty Advisor, Biology

Since the settlement of Europeans in the Midwestern United States, human-perturbations have caused many water quality issues. The United States Clean Water Act (CWA) of 1972 caused scientists to begin taking action to restore the integrity of our water resources. High Island Creek Watershed comprises 62,007 hectares in south-central Minnesota and reaches its confluence with the Minnesota River near Henderson, Minnesota. Approximately 85% of High Island Creek’s Watershed is used for row crop agriculture, resulting in poor water quality. Historical fish sampling of High Island Creek has lead to a 303 (d) listing for fish community impairment in 2004. Recently, the Minnesota Pollution Control Agency developed a regional stressor identification tool derived from the Environmental Protection Agency’s original tool. The first step of the stressor identification process is to verify and define the impairment. Our first year of fish and habitat sampling has verified the fish community impairment and given insight on some causes for impairment. Our second year of sampling will replicate the first year of samples and include sites with similar water quality and habitat situations in the Rush River watershed, located just south of High Island Creek watershed. This will help further our analysis of which stressors are causing the fish community impairment in High Island Creek.
Spatiotemporal Changes in Macrophyte Diversity and Nutrient Uptake along a Phosphorus Gradient on the Jefferson German Chain of Five Lakes in South-Central Minnesota

Joe Pallardy (Biology)

Dr. Shannon Fisher, Faculty Advisor, Biology

As of 2010, Minnesota’s impaired waters list contained 1,774 impairments on 388 rivers and 647 lakes. Twenty-four percent of those impairments were a result of excess nutrients that severely limited aquatic recreation [Minnesota Pollution Control Agency (MPCA), 2010)]. The Jefferson German Chain (JGC) is located in the Cannon River Watershed (CRW) in southern Minnesota. The JGC represents one of the water bodies listed under section 303 (d) by the Environmental Protection Agency (EPA) as being impaired (MPCA 2010b). This chain of five lakes represents a microcosm for studying the multitude of excess nutrient impairments currently present both within the CRW and the state of Minnesota. As reductions in external nutrient loading fail to improve water quality, concomitant research on reductions of sources of internal nutrients becomes increasingly essential. Therefore, the purpose of this study will be to document the role macrophytes play in reducing and/or contributing to internal loading. Sampling methods will include the use of a point-intercept survey (Madsen, 1999), a biomass estimate using a simple rake method (Crowell and Asmus, 2008; Kenow et al, 2007), and total phosphorus analysis using a Kjedahl digestion (Rattray et al, 1991).
Biological Sciences

Modeling Methyl Mercury Production Hotspots in Peatlands
Anton J. Dittrich

Living on the edge: Genetic diversity of peripheral populations of Five-Lined Skinks
(Plestiodon fasciatus)
Zachary Bateson

Mathematical Modeling and Analysis for Minnesota’s Fisher Population
Lucas Wandrie, Mohammad Rahman

Mathematics

Application of Cox’s Semi-Parametric Proportional Hazards Regression Model in Biomedical Science
Mohammad Rahman
Modeling Methyl Mercury Production Hotspots in Peatlands

Anton J. Dittrich (Biology)

*Dr. Anne-Marie Hoskinson, Faculty Advisor, Biology*

*Dr. Bradley J. Cook, Faculty Advisor, Biology*

Human activities account for 70-80% of atmospheric deposition of mercury to terrestrial surfaces. As much as 25% of atmospheric mercury deposited on upland terrestrial surfaces reaches aquatic systems; in some cases representing 75% of the total mercury load found in these systems. Within the anaerobic soils associated with aquatic systems, much of the deposited mercury is naturally converted to the potent neurotoxin methyl mercury. Methyl mercury is known to bioaccumulate in the tissue of higher order consumers resulting in health concerns to humans and other consumers of aquatic organisms. Methyl mercury concentrations have been found to be 4-15 times higher in aquatic catch basins containing peatlands than those without, with production rates varying both temporally and spatially. Sampling and detection of methyl mercury production hotspots are difficult, are prone to error, and are expensive. However, indicators associated with the rate of methyl mercury production have been observed. I am attempting to relate these indicators of methyl mercury production to determine if hotspots can be modeled and predicted. Sensitivity analysis of indicator variables (i.e. pH, sulfate, and dissolved organic carbon levels, as well as upland catch basin structure) will be conducted to determine the effects on modeled rates of methyl mercury production compared to actual samples. The development of a clear understanding of if, where, and when mercury is disproportionately converted to methyl mercury is critical to improving strategies for managing the impacts of mercury pollution on ecosystems and human populations. Subsequent field validation will be needed.

Living on the edge: Genetic diversity of peripheral populations of Five-Lined Skinks (*Plestiodon fasciatus)*

Zachary Bateson (Biology)

*Dr. John Krenz, Faculty Advisor, Biological Sciences*

*Dr. Robert Sorensen, Faculty Advisor, Biological Sciences*

*Dr. Daniel Toma, Faculty Advisor, Biological Sciences*

Five-Lined Skinks are the most broadly distributed lizard in eastern North America. However, populations within Wisconsin and Minnesota are considered to be the extreme northwestern limit of its geographical range. In this study we used microsatellite loci to examine the neutral genetic diversity within three peripheral populations and compared the observed variation to another more centralized population. We determined that all of the peripheral populations contain significantly less genetic diversity than the central population. Additionally, we observed a
strong degree of genetic differentiation among all populations. Possible historical processes that have influenced current population structure are discussed.

**Mathematical Modeling and Analysis for Minnesota’s Fisher Population**

Lucas Wandrie (Biology), Mohammad Rahman (Mathematics and Statistics)

*Dr. Anne-Marie Hoskinson, Faculty Advisor, Biological Sciences*

*Dr. Namyong Lee, Faculty Advisor, Mathematics and Statistics*

*Dr. John D. Krenz, Faculty Advisor, Biological Sciences*

The fisher (*Martes pennanti*) was nearly extirpated from Minnesota due to habitat loss and overharvest. The intentional trapping of fisher was prohibited in Minnesota from 1933-1977 in response to the decline in population size. Closing the season allowed the population to reach levels that permitted trapping to resume. Even under the existing restrictive regulations, it is believed some fisher populations are susceptible to overharvest because they are relatively easy to trap and their reproductive rates are low. Consequently, we developed a theoretical stochastic population model to: 1) evaluate the probability of population declines and even extirpation, and 2) to conduct elasticity analyses for assessing important population parameters which will improve management and research efforts of Minnesota’s fisher population in the future.

Stochastic growth models incorporate the variability of survival and reproductive rates found in nature. Model output suggested that Minnesota’s fisher population could remain stable when a low proportion of the population was harvested annually. Elasticity analysis determined that harvest had the greatest impact on population growth. Harvesting at rates above the stabilizing threshold led to a decline in projected population size estimates.

**Application of Cox’s Semi-Parametric Proportional Hazards Regression Model in Biomedical Science**

Mohammad Lutfur Rahman (Mathematics and Statistics)

*Dr. Deepak Sanjel, Faculty Advisor, Mathematics and Statistics*

Models for analyzing complete or censored lifetime data with covariates in engineering and the physical sciences are usually parametric. There are ways to check the assumptions in the models but in many of these applications, these checks do not reject the models. In the biomedical sciences, the situation is very different. Especially when we are dealing with humans, every population has its own characteristics, different from other groups. There are likely to be other variables that have not been measures or cannot be measured (such as genetic factors) and at least with humans there is rarely the opportunity to conduct a controlled experiment. Cox (1972) semi parametric regression model, which overcomes the difficulty of choosing a baseline function, has become the standard means of analyzing lifetime data in the biomedical science that retains the richness of the modeling. The main purpose of this study is to fit Cox model to
describe factors associated with trends over time in the incidence and survival rates following hospital admission for acute Myocardial Infarction (MI). Data have been collected during the thirteen 1-year periods beginning in 1975 and extending through 2001 on all MI patients admitted to hospitals in the Worcester, Massachusetts. Twenty two variables were considered and tested whether there were any significant impacts of selected factors on survival of heart diseases patients using the Statistical Analysis Software (SAS). Proportional hazard assumption of the model was also tested. Using the Cox proportional hazards model, it was found that the relative risk of heart attack for female was 1.74 times that of the male. The male have 74% higher risk than the female and for each unit increase in age the risk of heart attack goes up by an estimated 4.8%.
Mathematics

A Model of Optimal Control: Prevention and Recovery of Populations of Endangered Species
Ashley Smith, Jill Smith, Dan Moldaschel

Survival Analysis of Carcinoma of the Oropharynx
Bo Liu

Competing Risk Model in Cardiovascular Disease Data
Kuldeep Sen

Business

Investing in Clean Energy Markets and the Use of Comparative Cost Analytics
Prince C. Gideon
A Model of Optimal Control: Prevention and Recovery of Populations of Endangered Species

Ashley Smith (Mathematics and Statistics), Jill Smith (Mathematics and Statistics), Dan Moldaschel (Mathematics and Statistics)

Dr. Namyong Lee, Faculty Advisor, Mathematics and Statistics

Because there is a set budget for wildlife conservation, it is important that the resources available be used to maximum effect, either by preventing a species from becoming endangered or aiding the species in recovering from endangerment. Through construction of an accurate system to model the dynamics of endangered species, an optimal allocation of funds can be yielded using optimal control theory. Applying Pontryagin’s Maximum Principle allows in-depth analysis resulting in an optimal spending plan. The effects on the optimal solution caused by changes in various parameters are discussed.

Survival Analysis of Carcinoma of the Oropharynx

Bo Liu (Mathematics and Statistics)

Dr. Deepak Sanjel, Faculty Advisor, Mathematics and Statistics

Survival analysis methods are most often applied to the study of deaths or failure times. Nowadays, nonparametric methods such as Kaplan-Meier estimate or semi-parametric method such as Cox-proportional hazard models are most common in analyzing survival data but when the data follow normal distribution, the parametric regression is more powerful than the nonparametric models. In this study, the patients who have Carcinoma of the Oropharynx are assigned to two different treatment groups. With a left censored data (195 observations), parametric regression model is used to estimate the survival rate of the patients. It was found that three factors have significant effect and two factors have interaction impact for survival of the patients. In addition, goodness-of-fit on the final model was tested by graphical and likelihood-ratio statistic methods.

Competing Risk Model in Cardiovascular Disease Data

Kuldeep Sen (Mathematics and Statistics)

Dr. Deepak Sanjel, Faculty Advisor, Mathematics and Statistics

The analysis of time to failure (or event) data is fundamental in medical science, engineering and social science. However, there are several different ways an event of interest can occur which defines time to event data (survival data in medical research and reliability data in engineering). In many situations, there are several possible risks of failures, such as a patient diagnosed with cardiovascular disease can die of other diseases and other causes. When the several risks are considered in the data, prior studies have shown that standard method of survival analysis such as Kaplan Meier estimator produces biased results. This paper presents method to estimate
cause-specific hazard and cumulative incidence functions which can specify the joint distribution associated with competing risk dataset. The competing risk model is developed using the cardiovascular data found in University of Massachusetts webpage. Comparisons of the results from competing risk model with other standard method have been done using various procedures available in Statistical Analysis Software (SAS). The effects of covariates in presence of competing risk are analyzed and interpretations of the parameter estimates are also reported.

Investing in Clean Energy Markets and the Use of Comparative Cost Analytics

Prince C. Gideon (Business Administration)

Dr. Brenda Flannery, Faculty Advisor, Management

Due to the uncertainty of the continuous abundance of fossil fuels and the certainty of its’ polluting effects thereof, humankind has increasingly sought methods by which it can guarantee its future security via alternate energy sources. Recently under the Obama administration, summits and bills have been introduced with the intent of curbing our enthusiasm for fossil energy and exploring the potential for breakthroughs in clean energy. However, these breakthroughs require support and investment. To understand investment incentives, this research focused on whether there is a reasonable rate of return in clean energy investments that would attract the attention of angel investors. Comparative analytical tools evaluated included net present value, accounting rate of return, and payback period.
Counseling and Student Personnel

**Empathic Development for Difficult Clients through Film and Narrative**  
Kristin Matson

**Outcomes of Diversity Experiences on College Campus and Student Development**  
Oleksandr Komarenko

**Supporting Student Veterans in Transition: Becoming Veteran Friendly**  
Casey Baker, Staci Born, Kristin Matson, Katelyn Romsa, Barbara Skodje-Mack, Audie Willis

**The Thin Ideal and its Impact on Body Image across Cultures**  
Kerry Diekmann
Empathic Development for Difficult Clients through Film and Narrative

Kristin Matson (Counseling and Student Personnel)

Dr. Diane Coursol, Faculty Advisor, Counseling and Student Personnel

Empathy has been an integral component of counselor education programs since Carl Rogers deemed it a necessary and sufficient aspect of the therapeutic relationship (Duan & Hill, 1996; Rogers, 1975). In the past decade, research has indicated that multicultural empathy can and needs to be developed, as the counselor may not have similar experiences of which to guide the empathic understanding of the client (Cook, Juhnke, Peters, Marbach, Day, Choucroun & Baker, 2006/2007; Willow, 2008). This paper postulates that, similar to cross-cultural counseling relationships, counselor trainees should be exposed to life experiences of various clients, especially those deemed difficult and which counselor trainees indicate no desire to work. Because it is impractical to expect counselors to experience every type of client, learning about populations through narrative or film may be an option (Gladstein & Feldstein, 1983; Kurkijan & Banks, 1978; Pearson, 2003). This presentation will review empathy and empathic development, in counselor trainees. This presentation will provide information about the impact of empathy development in counselor trainees when exposed to film and narrative as adjunctive instructional tools. Specifically, empathy in masters level counselor trainees both pre and post exposure to narrative and film depictions of violent juvenile offenders will be explored.

Outcomes of Diversity Experiences on College Campus and Student Development

Oleksandr Komarenko (Counseling and Student Personnel)

Dr. Jacqueline Lewis, Faculty Advisor, Counseling and Student Personnel

Today American colleges and universities reflect the diversity of the society much more so than several decades ago. Consequently, there is great attention to the issues of diversity in the field of college student affairs. This review of current research explored the state of the science of student development outcomes of diversity experiences on college campuses. Various definitions of diversity and configurations of diversity-experiences are discussed, along with their most frequently cited outcomes and implications.

Current research showed that a wide range of diversity related experiences lead to a variety of student outcomes. However, there was no consensus about what constituted the most beneficial diversity related campus experiences. Although there was agreement that White students benefit the most from diversity experiences, this finding may be attributed to a disproportionate focus of outcome research on White students. In addition, the lack of consistency in the definition of “diversity” suggests a potential need to clarify and broaden it for the purposes of outcome research. For instance, one study’s (Pascarella et al., 2001) found that greater improvements in critical thinking resulted from exposure to a wider range of “diversity,” including diversity of religions and cultures, but also social and political viewpoints. The implications of the findings for student affairs practice include the need for institutional commitment to diversity and the
importance of facilitating a variety of diversity experiences in order to take advantage of their potential benefits.

Supporting Student Veterans in Transition: Becoming Veteran Friendly

Casey Baker (Counseling and Student Personnel), Staci Born (Counseling and Student Personnel), Kristin Matson (Counseling and Student Personnel), Katelyn Romsa (Counseling and Student Personnel), Barbara Skodje-Mack (Counseling and Student Personnel), Audie Willis (Counseling and Student Personnel)

Dr. Diane Coursol, Faculty Advisor, Counseling and Student Personnel

Dr. Karin Lindstrom Bremer, Faculty Advisor, Counseling and Student Personnel

As the number of veterans increases on university campuses, there is a need for faculty and campus personnel to address the needs of veterans on campus, to provide awareness training for working with veterans, and implement services to ease the transition from military to campus life (DiRamio, Ackerman & Mitchell, 2008; Field, 2008; Vance & Miller, 2009). Many veterans join the military to earn educational benefits available to them through higher education, but they often experience difficulties when they enroll into colleges and become students (Ackerman, DiRamio, & Mitchell, 2009).

Deployments may have represented disruptive and life-altering transitions (Schlossberg, Waters, & Goodman, 1995). Moreover, many returning veterans experience mental health issues such as depression, PTSD, and a host of psychosocial issues (Ackerman et al., 2009). Presentation of these symptoms can be delayed from 4 months or even years after the veteran’s return (Bleise, Wright, Adler, & Thomas, 2004; Soloman & Mikulincer, 2006). Furthermore, female veterans face these and additional challenges (Cohen, 2006; Corbett, 2007).

Therefore, college campuses must be prepared to meet the needs of veterans. This presentation explores the current literature regarding transitional, psychosocial, and mental health issues experienced by both male and female returning student veterans. In addition, the presentation will provide recommendations for future research, as well as address how faculty and campus personnel can meet the challenge of becoming veteran friendly through the development of action plans to meet the needs of veterans.

The Thin Ideal and its Impact on Body Image across Cultures

Kerry Diekmann (Counselor Education and Supervision)

Dr. Diane Coursol, Faculty Advisor, Counseling and Student Personnel

In American culture, the idealized thin body is depicted everywhere: in magazines, television, films, advertisements, and various other forms of media. Some researchers have examined the influence the media has on body dissatisfaction and body image in girls (Clark & Tiggemann,
While some of the research on body image has been conducted with men, the majority of the research has focused on girls and women. First, this presentation will highlight studies that examined media influence and body image in Hispanic (Pompper & Koenig, 2004), Black, and White (Schooler, Ward, Merriwether, & Caruthers, 2004) women in the United States. Idolizing such a thin ideal is not limited to girls and women in the United States; in fact, it has become a widespread problem throughout the world. It has been hypothesized that the thin ideal and its corresponding body image problems are due to the western media influence. Accordingly, this presentation will also discuss research studies conducted regarding body dissatisfaction among women in various countries including China, South Korea (Jung & Lee, 2006), and Guatemala (Wal, Gibbons, & Grazioso, 2008). Implications that will be addressed include how helping professionals can work with women with body image concerns and a healthy body image can be promoted through education and advocacy efforts.
Urban and Regional Studies Institute

South Central Minnesota Rural Transit Needs Assessment
Frank Adarkwa, Mark Andrews

Evaluating the Socio-economic Impacts of Rural Road Improvement: A Case Study of the Three Northern Regions of Ghana, West Africa
Frank Adarkwa

Is the Toolbox Being Used: An Analysis of Economic Development in Minnesota
Isaac Kerry

Assessment of Local Government Human Resource Needs in Minnesota
Isaac Kerry

Philosophy

A Comprehensive Treatment of the German Philosopher G.W.F. Hegel
Dr. Craig Matarrese, Nadine B. Andreas Scholar
South Central Minnesota Rural Transit Needs Assessment

Frank Adarkwa (Urban and Regional Studies Institute), Mark Andrews (Urban and Regional Studies Institute)

**Dr. David Laverny-Rafter, Urban and Regional Studies Institute**

This study examined the alternative strategies for implementing and improving existing transit services in order to address transit-related problems in rural Minnesota, specifically the counties of Blue Earth, Le Sueur, Nicollet and Waseca. These are four (4) of seven (7) Minnesota counties lacking countywide public transit service and comprise a large portion of the Region 9.

The methodology used for this study involved the application of statewide averages of likely transit users such as low auto ownership households, percentage of population below poverty level and the population of elderly and young, to the quantity of each county. This was complemented with average daily traffic counts as well as labor and commute shed analysis. Also, existing transit systems in Minnesota were examined to identify if these systems would serve as examples of how to address the transportation needs of the counties under study, and see if there is the possibility of incorporating certain aspects of these existing transit systems.

After an in-depth analysis of transit needs and demand, operating costs of implementing transit services in the four counties based on current public and private transit systems in the area, and comparable transit systems statewide, three alternative transit systems were identified. These systems were based on population density, traffic patterns and accessibility to the Regional Center (Mankato). The selected transit system was based on cost efficiency, optimal service to citizens, and the potential for service expansion in the future.

Evaluating the Socio-economic Impacts of Rural Road Improvement: A Case Study of the Three Northern Regions of Ghana, West Africa

Frank Adarkwa (Urban and Regional Studies Institute)

**Dr. Raymond Asomani-Boateng, Faculty Advisor, Urban and Regional Studies Institute**

Poverty in majority of Ghana’s rural communities is caused by isolation. This is a problem caused by insufficient road network and lack of maintenance which can be reduced or eliminated with improved accessibility. The Government of Ghana with the assistance of donor agencies has pursued poverty reduction through the improvement of socio-economic conditions of rural communities. Many of these efforts have focused on to the improvement of existing feeder roads as well as the construction of new ones, without any emphasis being placed on evaluating the impacts of these interventions. This study however evaluates the socio-economic impacts of some of these road improvement interventions and how their positive impacts can be sustained over a longer period. The approach used for the study was based on a ‘before’ and ‘after’ comparative analysis of the outcomes of the project interventions over a five year period. In order to ascertain the impact of the road improvement on beneficiary communities, baseline data
were collected on set indicators to be used as benchmark data for monitoring to determine the socio-economic impact of the improvement of the selected feeder roads. Some of the major findings of the study include increased average daily traffic volumes for market and non-market days, decreased pedestrian volumes, significant increases in income and expenditure levels of selected communities, decreased average travel time to market centers, and significant increase in the unit cost of transportation for both passengers and freight.

Is the Toolbox Being Used: An Analysis of Economic Development in Minnesota

Isaac Kerry (Urban and Regional Studies Institute)

*Dr. Beth Heidelberg, Faculty Advisor, Urban and Regional Studies Institute*

There is a broad academic consensus as to what the "best practices" are for municipalities to follow to achieve economic growth. This study attempts to discover whether or not the consensus of academics is shared by actual practitioners in the field. Several Minnesota cities' economic development plans are analyzed to see if they put into practice these best practices. Implications for further study are discussed.

Assessment of Local Government Human Resource Needs in Minnesota

Isaac Kerry (Urban and Regional Studies Institute)

*Dr. Tony Filipovitch, Faculty Advisor, Urban and Regional Studies Institute*

Using Minnesota as a case study, this research attempts to assess the demands at both ends of the local government employment pipeline: the timing, numbers, qualifications and experiences of local government managers and planners in Minnesota who will be retiring out over the next 10 years; and the number and qualifications for internships and entry-level planning and management positions anticipated for the next 5 years. Implications for students entering the profession are discussed.

A Comprehensive Treatment of the German Philosopher G.W.F. Hegel

Dr. Craig Matarrese (Philosophy), *Nadine B. Andreas Scholar*

While Hegel’s importance in the intellectual history of the past two centuries is beyond doubt, and while he regularly appears on the reading lists of any number of university courses taught every semester, his work is notoriously difficult (especially for undergraduates) and commonly misunderstood and maligned. The book attempts to move beyond common caricatures of and myths about Hegel’s philosophy, and explain what he really said, which is wonderfully rich and
exciting, and something of a master key to unlocking almost every major trend of the Western intellectual tradition since the middle of the 19th Century.

The book shows how the questions that guided Hegel’s early writings in fact shaped his entire career and thereby offers a more thorough understanding of the roots of his philosophical concerns. Providing coverage of the full range of Hegel’s ideas, the book offers detailed examinations of all his key texts, including *The Phenomenology of Spirit* and *The Philosophy of Right*. Crucially, the book also introduces the major thinkers and events that proved influential in the development of Hegel’s thought, including Kant, Schiller, Fichte, Schelling, the French Revolution, the Enlightenment, and romanticism.
Urban and Regional Studies Institute

**Application of New Urbanist Principles in a Small Town Development, Case Study:**
**University Square, Mankato, MN.**
Pragyaratna Rai

Educational Leadership

**An Empirical Study of the Factors Influencing Sophomore Attrition and Retention at Minnesota State University, Mankato**
Maria Baxter-Nuamah, Mary Dowd, Kelly Meier

**Secondary Principal Mobility in Southwest Minnesota**
Lori Bird, Randy Haley, Paul Peterson, Anthony VonBank

**Undergraduate Perceptions of their Instructor's Credentials**
Samuel Steiger, Jamie Parkin

**Research Findings of First Generation and Low Income Student Engagement, Belonging and Persistence at Minnesota State University**
Kimberly W. Allison, Mymique Y. Baxter
Application of New Urbanist Principles in a Small Town Development, Case Study: University Square, Mankato, MN.

Pragyaratna Rai (Urban and Regional Studies Institute)

Dr. Raymond Asomani-Boateng, Faculty Advisor, Urban and Regional Studies Institute

Sustainability in different forms has taken root in our society as a new trend that is here to stay. Small towns are the backbone of our society and sustainability needs to be implemented at these levels if it is to be a part of our culture in the future. New urbanism is a movement to create sustainable towns using traditional neighborhood design concepts and strategies. This study examined the University Square, which is a mixed-use redevelopment project within walking distance from Minnesota State University, Mankato. The objective is to study the site design of University Square and determine how well it had implemented New Urbanist principles. SmartCode v9, developed by Duany Plater-Zyberk and Company, was used for the analysis.

An Empirical Study of the Factors Influencing Sophomore Attrition and Retention at Minnesota State University, Mankato

Maria Baxter-Nuamah (Educational Leadership), Mary Dowd (Educational Leadership), Kelly Meier (Educational Leadership)

Dr. Courtney Stewart, Faculty Advisor, Educational Leadership

Understanding and preventing sophomore attrition is an essential aspect of effective enrollment strategy. Consistent with national studies, most students (67.7%) who leave Minnesota State University, Mankato drop out or transfer within the first two years of matriculation. Retaining students is receiving increased national attention due to the recession and the resulting impact on institutional budgets. Like many other schools, Minnesota State has developed comprehensive programs tailored to first year acclimation. An unintended consequence of front-loaded programming results when the first-year student enters sophomore year with comparatively little support or structure. Extant research has found that sophomores at both private and public institutions feel invisible and abandoned which exacerbates the “sophomore slump” first described by Freedman in 1956. Until recently, little research had been done to study the phenomena of sophomore attrition, particularly with regard to underrepresented students. In an attempt to fill the gap in the literature, this project surveyed all Minnesota State students enrolled Spring 2010 with 30-60 completed credits. The study identified all sophomore needs, concerns, perceptions, and levels of satisfaction with the college experience. Statistical comparisons of sophomore sub-groups were made by gender, ethnicity, major, international student status, and on or off-campus residency. Classic and contemporary multivariate models of student retention provided the theoretical framework of inquiry. The study has potential implications for increasing the graduation rate of Minnesota State Mankato students, including diverse student populations.
Secondary Principal Mobility in Southwest Minnesota

Lori Bird (Educational Leadership), Randy Haley (Educational Leadership), Paul Peterson (Educational Leadership), Anthony VonBank (Educational Leadership)

Dr. Courtney Stewart, Faculty Advisor, Educational Leadership

This presentation reports on the results of a quantitative research study regarding secondary principal mobility in Southwest Minnesota. The goal of the study was to determine if a correlation exist between secondary principal mobility and other variables identified for the study including principal salary, district size, student demographics and free and reduced lunch. Data was obtained from a survey sent to members of the Southwest Minnesota Association of Secondary School Principals (SWMASSP). The survey results were analyzed to identify the level of mobility in school districts in the area and correlations between mobility and each of the other variables. Implications of these results and their impact on school leadership are discussed.

Undergraduate Perceptions of their Instructor's Credentials

Samuel Steiger (Educational Leadership), Jamie Parkin (Educational Leadership)

Dr. Courtney Stewart, Faculty Advisor, Educational Leadership

When future professionals in education seek doctoral training, the decision to pursue a Doctorate of Philosophy (PhD) or a Doctorate of Education (EdD) must be made. There have historically existed general philosophical differences between the EdD and the PhD that been clearly documented (Mayhew & Ford, 1974), but these differences in philosophy haven't always led to real differences in the degree program requirements (see Andersen, 1983 and Dill & Morrison, 1985). Despite this general program equality, educational professionals (Spurr, 1970) and incoming graduate students (Carpenter, 1987) have developed a bias in favor of the PhD over the EdD. Sadly, little, if any published research has focused on a population of significant importance to the recipients of a doctorate degree: undergraduate students. Although few doctorate-level professionals will enter higher education as instructors, the perceptions of the students receiving an education from the recipients of these degrees is valuable. Thus the purpose of the present study is to examine whether undergraduate students evaluate their instructors with completed PhDs more favorably than those instructors with completed EdDs. Specifically, we will examine whether students have more respect for their PhD instructors and determine whether they further believe instructors with PhD's have more content knowledge than instructors with EdDs. To accomplish this, we will identify individual instructors within the College of Education at Minnesota State University Mankato that hold either the PhD or the EdD and request their cooperation with the study. From those instructors willing to participate, we will select individual courses to evaluate. Students will be invited to complete a short online survey designed to assess their awareness of their instructor's credentials (PhD or EdD) along with the dependent variables previously outlined (respect for instructor and perceived content knowledge of instructor). Statistical analyses will be run to determine whether students with an
awareness of their instructors’ credentials hold different perceptions of that instructor than students not aware of the credentials in addition to analyses examining whether PhD instructors are viewed more favorably with regard to respect and content knowledge than EdD instructors. Research Findings of First Generation and Low Income Student Engagement, Belonging and Persistence at Minnesota State University

Kimberly W. Allison (Educational Leadership), Mymique Y. Baxter (Educational Leadership)

Dr. Courtney Stewart, Faculty Advisor, Educational Leadership

Positive college experiences are critical to the sense of inclusion and well-being of all students. Inclusion overcomes a feeling of isolation and separateness that students may experience, and gives the student a sense of endorsement to belong and succeed in foreign and challenging new environments. For first generation and low income students, the sense of isolation is underscored and intensified, as their future pursuits in higher education can often be in conflict with familial, cultural and community ties. Closer examination is needed to understand the predictors of academic persistence for first generation and low income students; and the prevailing stressors that impede persistence. Research studies have demonstrated the importance of sense of belonging as a basic human need and the correlation of student engagement to attrition. Our research study sought to provide insight into the significance of student engagement and sense of belonging for first generation and low income students to persistence at Minnesota State University Mankato (MNSU) by posing two central questions: Does student engagement influence a sense of belonging among first generation student populations at Minnesota State University? How do these findings impact student persistence in first generation and low income students? Findings from this inquiry might inform and improve existing higher education support intervention strategies that increase retention, degree attainment and overall student satisfaction.

As a tool of research investigation, we conducted a survey targeting first generation and low income students at MNSU. Our analysis used predictors focusing on student engagement, belonging and persistence.
1. Two Truths and a Lie: Inferring an Evolutionary Basis for Strategic Language Use through Deception and Deception Detection
Sarah Monson (Anthropology)

2. Field-Scale Evaluation of Escherichia Coli and Nutrient Transport through Subsurface Tile Drainage Water
Kyle Jarcho (Environmental Sciences)

3. High School Coaches' Use of and Attitudes toward Sport Psychology Consulting
Jeff Thomae (Human Performance), Amy Fedora (Human Performance), Becky Knutson (Human Performance)

4. A Pilot Study to Explore Factors Underlying the Increased Impact of Depression on Health-Related Quality of Life in Women with Chronic Obstructive Pulmonary Disease as Compared to Men
Heidi Bednarchuk, RN (Nursing)

5. Relationship between Commitment to Learning and Conduct Problems in Children and Adolescents
Dana N. Shea (Clinical Psychology)

6. Optimization of Nucleic Acid Extraction from Soil for the Purpose of Determining Bacterial Phylotypes
Josh Gilpin (Biological Sciences)

7. Emotional Intelligence and Cognitive Ability as Predictors of Criminal Investigator Performance
Masakatsu Ono (Psychology), Michael Taylor (Psychology)

8. Transportation Planning Issues as Identified in 2009 MATAPS Survey
Pragyaratna Rai (Urban and Regional Studies Institute), Chandra Gurung (Urban and Regional Studies Institute)
9. Periglacial Landform Mapping in the White Mountains of California using GIS and GPS
Nicole D. Rietz (Geography)

10. Animosity Amongst World of Warcraft Players: An Analysis of The Instance Podcast
Thomas J. Redig (Communication Studies)

11. Gender Representation on the Cover of ESPN the Magazine, 1998-Present
Kelly R. Fallon (Human Performance)

12. The Relationship between Motivation and Applicant Withdrawal in Online Employee Selection Testing
Joseph Wohkittel (Psychology)

13. Managing Change: Just for the Health of It
Suneel Parvathareddy (Health Science), Srinivas Rao Mallela (Health Science)

Lynn Hartmann (Psychology)
Two Truths and a Lie: Inferring an Evolutionary Basis for Strategic Language Use through Deception and Deception Detection

Sarah Monson (Anthropology)

Dr. Paul Brown, Faculty Advisor, Anthropology

Language makes us human, but its evolutionary origins continue to puzzle researchers. For language to have been selected for, it must have had a reproductive advantage. Specifically, the strategic use of language would have helped our ancestors navigate social relationships—to ally with those who would increase their social status, to secure mates, and to avoid enemies and cheaters or those who would have impeded survival. As a way to infer why language may have evolved, the researcher designed an experiment to examine how language is used strategically today in the context of deception and deception detection. Using the game Two Truths and a Lie and two surveys, the researcher investigated the differences between males and females in deception and deception detection. Implications of gender differences in deception, deception detection, and strategic language use are discussed against the backdrop of evolutionary theory.

Field-Scale Evaluation of Escherichia Coli and Nutrient Transport through Subsurface Tile Drainage Water

Kyle Jarcho (Environmental Sciences)

Dr. Shannon Fisher, Faculty Advisor, Biological Sciences

Water quality is a global issue, and anthropogenic actions contribute substantially to the detriment of aquatic systems. Microbial contamination and eutrophication of freshwater systems continue to be an important issue. To gain a better understanding of how subsurface tile and manure applications influence water quality, we analyzed differences in *Escherichia coli* and nutrient movement in subsurface drainage water from manured and non-manured agricultural fields with and without surface tile intakes. The Water Resources Center at Minnesota State University - Mankato maintains five field-scale monitoring stations and partners with the Cannon River Watershed Partnership, Minnesota Department of Agriculture and the University of Minnesota to collect samples at an additional seven sites across southern Minnesota. Preliminary findings show that open intakes were the primary source for sediment and *E. coli* losses through tile drainage. *E. coli* concentrations were the highest immediately following an increase in stage or velocity due to rain events, but elevated concentrations decreased quickly depending on storm intensity. Another factor in *E. coli* concentrations during rain events was soil temperature. As soil temperatures increased, *E. coli* concentrations in samples from rain events increased. The purpose of this project was to use agriculture field-scale settings to gain insight about the movement of *E. coli* and nutrients into subsurface tile drainage systems; therefore, providing knowledge and ability to improve best management practices in agricultural production of crops.
High School Coaches' Use of and Attitudes toward Sport Psychology Consulting

Jeff Thomae (Human Performance), Amy Fedora (Human Performance), Becky Knutson (Human Performance)

Dr. Cindra S. Kamphoff, Faculty Advisor, Human Performance

Research has investigated high school and college athletes’ attitudes (Martin, 2005), as well as college Athletic Directors’ perceptions (Wilson et al., 2009) of sport psychology consulting. Wilson and colleagues (2009) concluded that outreach to and understanding of new markets are critical for the continued growth of sport psychology consulting. High school athletes vastly outnumber college athletes (Coakley, 2009), and high school coaches are gatekeepers to this large population who could benefit from services offered by sport psychology consultants (SPCs). Coaches from large Minnesota high schools were asked to participate in an online survey regarding their exposure to and current use of sport psychology, as well as their attitude towards consulting. Respondents (N=289) were predominantly male (73.8%), White (95.6%), well-educated and averaged 41.8 years. These coaches did not use a SPC (95.6%), had no direct access to SPCs (86.4%), and 14 of 19 of those with direct access required no funding. The mental skills used most often by the high school coaches were: goal setting (91.8%), team building (87.4%), imagery (73.8%), routines (68.4%), anxiety management (54.1%), self-talk (50.0%). Commonly reported barriers were: lack of funding (63.3%), lack of access (43.9%), lack of knowledge of sport psychology (28.9%), and lack of time (27.9%). While coaches generally indicated positive attitudes toward and use of mental skills, financial, access, knowledge, and time barriers played important roles in few coaches using a SPC. More detailed results and implications for the field will be shared.

A Pilot Study to Explore Factors underlying the Increased Impact of Depression on Health-Related Quality of Life in Women with Chronic Obstructive Pulmonary Disease as Compared to Men

Heidi Bednarchuk, RN (Nursing)

Dr. Karen Willette-Murphy, Faculty Advisor, Nursing

Problem: Chronic Obstructive Pulmonary Disease [COPD], the 4th leading cause of death in the US, is associated with an estimated annual cost of 42.6 billion dollars. The death rate for women with COPD tripled from 1980 to 2000 and now surpasses the rate in men. Research links depression with impaired health related quality of life [HRQoL] in patients with COPD. In addition, research indicates that women suffer more depression and greater impairment to HRQoL than men when controlled for disease severity.

Purpose: The purpose of this pilot study is to explore factors that could provide explanation for the increased incidence of depression and greater impact on HRQoL in women versus men with COPD
**Methodology:** Following IRB approval, a sample of 10 women and 10 men with COPD will be recruited. The Theory of Unpleasant Symptoms (TOUS) is the organizing framework for the study. The Beck Depression Inventory-II, Rand 36-iten Health Survey, and Memorial Symptom Scale will be administered to all subjects. In addition, demographic information and disease specific measures will be collected. Data will be analyzed using descriptive statistics, t-tests, and Pearson product moment correlation.

**Practice Implications:** Depression is correlated with COPD and negatively impacts HRQoL in this patient population and should be viewed as a treatable comorbidity rather than as a necessary consequence of the disease process. Further nursing focused research in women with COPD is indicated. Utilizing the Theory of Unpleasant Symptoms as a framework could facilitate research that moves findings from the explanatory to the clinical application level.

**Relationship between Commitment to Learning and Conduct Problems in Children and Adolescents**

Dana N. Shea (Clinical Psychology)

*Dr. Sarah Sifers, Faculty Advisor, Psychology*

Children and adolescents with conduct problems exhibit many problem behaviors, which may negatively affect their performance in school. This study examines whether the poor school performance by children and adolescents with conduct problems is related to their commitment to learning. A small portion of the data collected for a larger, community-based study was utilized to examine the relationship between self-reports of commitment to learning and conduct problems in adolescents. Eighty-five sixth graders and one hundred eleven ninth graders participated in the data collection. The sample consisted of 45.4% boys and 54.6% girls and the adolescents were mainly of Caucasian decent. A correlation found that commitment to learning was significantly negatively related to the report of conduct problems by children and adolescents. Children with conduct problems, who may be less devoted to learning, may need more assistance and encouragement by school officials in order to succeed.

**Optimization of Nucleic Acid Extraction from Soil for the Purpose of Determining Bacterial Phylotypes**

Josh Gilpin (Biology)

*Dr. Tim Secott, Faculty Advisor, Biological Sciences*

Invasive success can be attributed to the production and secretion allelochemicals by exotic plants into the surrounding environment, which may benefit the exotic plant species directly or indirectly. One method for demonstrating allelopathy is to amend soils with activated carbon to absorb any potential allelochemicals. Activated carbon is a nonspecific adsorbent and has been shown to alter biotic and abiotic soil properties that may have unintended effects on allelopathic effects and the relationship to overall biomass of the exotic plant. The purpose of this project is
to determine the extent to which activated carbon affects the soil microbial community structure of wetland soils from monocultures of *Phalaris arundinacea*. DNA extraction and Polymerase Chain Reaction protocols have been developed to amplify bacterial nucleic acids from soil for generating phylotype profiles of microorganisms associated with *Phalaris arundinacea*. Results for future experiments with activated carbon will be discussed.

**Emotional Intelligence and Cognitive Ability as Predictors of Criminal Investigator Performance**

Masakatsu Ono (Psychology), Michael Taylor (Psychology)

*Dr. Daniel Sachau, Faculty Advisor, Psychology*

This study examines the degree to which cognitive ability and emotional intelligence are related to job performance of U.S. federal criminal investigators. Predictor measures were collected in the beginning of a 17-week training program. Job performance measures were collected one year after the investigators completed the training program. Cognitive ability and emotional intelligence were positively correlated with job performance. Emotional intelligence explained additional variance over cognitive ability. The relative benefits of using the emotional intelligence measure to select law enforcement agents are discussed.

**Transportation Planning Issues as Identified in 2009 MATAPS Survey**

Pragyaratna Rai (Urban and Regional Studies Institute), Chandra Gurung (Urban and Regional Studies Institute)

*Dr. David Laverny-Rafter, Faculty Advisor, Urban and Regional Studies Institute*

The Mankato Area Transportation and Planning Study (MATAPS) was carried out in 2009. The survey responses from Minnesota State University (MSU), Mankato, were analyzed to determine the efficacy of the current transportation plan for MSU transit riders and what their concerns were. It was found that though the transportation services were adequate, it needed to expand its hours of operation and routes. Though there was in increase in ridership, there was also room for improvement in safety of transportation and transportation related facilities. The responders were also open to creative solutions such as car-sharing programs at the university and light rail for travelling to the Twin Cities Area. Safety for pedestrians was also a concern and there was room for improvement in terms of road conditions, speed limit reduction, bike lanes and sidewalk conditions.
Periglacial Landform Mapping in the White Mountains of California using GIS and GPS

Nicole D. Rietz (Geography)

Dr. Forrest Wilkerson, Faculty Advisor, Geography

Various types of periglacial landforms exist in the White Mountains above 3000 meters, however the types of landforms and their distribution has not yet been delineated. This exploratory study identified and mapped the periglacial landforms of the upper alpine zone using field mapping techniques in conjunction with GIS and Remote Sensing. The field data was collected with GPS and added to a GIS application (ArcMap) and the final result is a geodatabase containing visible layers (maps) and tables including data collected on landform characteristics. The detailed field mapping survey was completed on sorted periglacial patterned ground types including various scales of nets, stripes, polygons, felsenmeer and undifferentiated landforms. The mapping project helped fill a gap in the understanding of the spatial distribution of periglacial landforms surrounding the University of California White Mountain Research Station Mount Barcroft research lab. In addition, it contributed to the regional documentation of periglacial landforms by being placed in the White Mountain Research Station GIS Resource database and the Eastern Sierra Geospatial Data Clearinghouse.

Animosity Amongst World of Warcraft Players: An Analysis of The Instance Podcast

Thomas J Redig (Communication Studies)

Dr. Daniel Cronn-Mills, Faculty Advisor, Communication Studies

The huge popularity of World of Warcraft has led to increased attention by the academic community, but the player community has been the subject of little study. The Instance, a popular fan-created podcast about World of Warcraft, was perceived an accurate representation of the fan community. Episodes were randomly listened to and notes were taken regarding any instances of disagreements from the player community with Blizzard Entertainment (the creators of the game) or discrimination amongst players towards other players. Notes were analyzed following the data collection and numerous themes became evident: race, faction, class, sex, guild, age, realm, and other. The vast majority of the discriminatory comments made by hosts of The Instance were clearly done so in jest, but issues with class balance compromised the majority of authentic disagreement towards Blizzard Entertainment. One clear limitation of the study was the inability to listen to every episode of The Instance.

Gender Representation on the Cover of ESPN the Magazine, 1998-Present

Kelly R. Fallon (Human Performance)

Dr. Suzannah Armentrout, Faculty Advisor, Human Performance

Dr. Cindra Kamphoff, Faculty Advisor, Human Performance
Female athletes are considerably underrepresented in sport media and are only featured approximately 6-8% of the time (Fink & Kensicki, 2002; Kane, 1996; Kane & LaVoi, 2001). Kane and Buysse (2005) found that when the female athletes are featured in media, they are portrayed differently than male athletes. Femininity and attractiveness are typically emphasized when the media features female athletes (Kane & Buysse, 2005). Moreover, females tend to be shown in more gender appropriate sports that are individual in nature (i.e. tennis) and are more likely to be shown off the court, out of uniform and in sexualized poses (Kane & Buysse, 2005).

The purpose of this study was to examine the covers of *ESPN the Magazine* for gender representation. A content analysis was conducted on the photographic images contained in 13 years (369 issues) of *ESPN the Magazine* from 1998 to February 2010. All covers were analyzed to determine gender representation, clothing coverage, type of sport, and action or posed representation. Codes were determined based on previous research (Armentrout & Kamphoff, under review). The content analysis revealed that females were substantially underrepresented on the covers of *ESPN the Magazine*. In fact, males outnumbered females 14-to-1. When females were featured (7%), the majority were depicted wearing tighter and less clothing, in feminine appropriate individual sports, and photographs that were posed. Since the magazine started, only 13 different female athletes have appeared on the cover. The presentation will expand on these findings and discuss the importance of more representative media coverage.

### The Relationship between Motivation and Applicant Withdrawal in Online Employee Selection Testing

Joseph Wohkittel (Psychology)

*Dr. Andrea Lassiter, Faculty Advisor, Psychology*

There are many unanswered questions regarding how job applicants react to online employee selection assessments. Specifically, little is known about why some applicants choose to withdraw during the process. This line of research will use Expectancy Theory to examine motivation as a key driver of applicant withdrawal. This study is currently in progress. It is hypothesized that the three components of expectancy theory, valence, instrumentality, and expectancy, will be significant predictors on an individual’s intention to withdraw.

### Managing Change: Just for the Health of It

Suneel Parvathareddy (Health Science), Srinivas Rao Mallela (Health Science)

*Dr. John. A. Romas, Faculty Advisor, Health Science: Community Health.*

Present day life is more complex than ever before and this complexity is leading to Stress. Stress is emerging as a major health concern in current times. This study investigates the factors contributing to Stress, eastern and western perspectives of Stress and coping strategies for managing Stress. The review of literature of health science articles is the method used for this study. The review of literature interprets that disorganized time management, our attitude and
expectations play a major role in the development of Stress. Literature review also investigates that the increased prevalence of Stress parallels the prevalence of complex life. Hence the coping measures in managing Stress focuses on decreasing the risk factors leading to stress through relaxation, efficient time management, effective communication, managing anger and resolving conflicts. The importance of coping anxiety and behavior change in managing stress is also emphasized in this study.

**Predicting Cheating in Unproctored Personnel Selection Testing: An Application of Rest’s Component Model of Morality and the Theory of Planned Behavior**

Lynn Hartmann (Psychology)

*Dr. Kristie Campana, Faculty Advisor, Psychology*

In order to explore a new predictor of cheating on unproctored selection testing, this study utilizes a modified theory of planned behavior. The theory of planned behavior states intention to cheat influences actual cheating behavior. Using this theory, this study examines morality as a predictor of intentions to cheat on unproctored selection testing. Morality is defined in terms of Rest’s Component Model, sensitivity, judgment, motivation, and character.
Day 2

GRIC
GRADUATE RESEARCH CONFERENCE
MINNESOTA STATE UNIVERSITY, MANKATO

Tuesday, April 13, 2010
Day 2

Performance Sessions: CSU 201

9:00 - 10:00 am
Communication Studies

10:00 - 11:00 am
Communication Studies

11:00 - 12:00 pm
English

CSU 202

9:00 – 10:15 am
Health Science
Human Performance
Biological Sciences

10:30 – 11:15 am: Nadine B. Andreas Scholar Presentations
Scandinavian Studies
Modern Languages
Communication Studies
Bridging Identities: An Exploration of Identity Portrayal in Performance

Megan Orcholski (Communication Studies)

Dr. Leah White, Faculty Advisor, Communication Studies

The question of staying true to a text in performance has been a longstanding debate. For years, we have been a literary society focused on the intent of the author, but critics like Barthes (1977) argue that “writing is that neutral, composite, oblique space where our subject slips away, the negative where all identity is lost, starting with the very identity of the body of writing” (p.142). This debate has been traditionally situated among fictional texts and plays, putting the author as the creator. But what happens when the author is not simply the creator, but also the one who experienced the story? Does the “starting” still happen in the “negative where all identity is lost,” even when it is the author’s identity that is lost? This critical, one-woman thesis performance delves into the question, “Is it possible to effectively portray someone else’s experiences and identity?” The artist takes you between her own identity and the identity of others in an attempt to understand the responsibility and power of a performer of “reality.” This performance weaves in extensive performance theory through the juxtaposition of the author’s stories and experiences with monologues of non-fiction narratives by other people. The author will perform selections from the show, with discussion about the process.
I’m so Proud of Myself: An Identity Performance

Laura Pelletier (Communication Studies)

Dr. Leah White, Faculty Advisor, Communication Studies

Identities are anchored around a set of moral propositions that regulate values and behavior, so that identity construction necessarily involves ideas of right and wrong, desirable/undesirable, unpolluted/polluted etc. These norms are not absolute and are not fixed definitively and therefore make identities fluid and changeable. In this personal identity performance I demonstrated a significant awakening within my own identity in which I realized that my identity had been transformed through significant events that overrode my prior identity that was constructed throughout my childhood. Through the use of performance I demonstrated how significant moments in a person’s life can alter a person’s identity and gave audience members an opportunity to reflect on their own significant moments.
Conflict and Desire: Women Writing in the 21st Century

Rhea Davison-Edwards (English), Kara Garbe (English), Melody Heide (English), Sarah Johnson (English), Caitlin O’Sullivan (English)

Richard Robbins, Faculty Advisor, English

The presentation will begin with a brief introduction announcing the writers’ names and the titles of their pieces, along with the major themes of conflict and desire that run throughout the works. Next, five women writers, all MFA candidates at MSU, will present readings from their own essays or fiction pieces. Each will read for ten minutes. The total performance will last roughly one hour.
Health Science

**Barriers and Benefits of Colorectal Cancer Screening Among American Indians in Minnesota**
Kazi Rahman

**Knowledge and Awareness about H1N1Influenza (Swine Flu) Among University Students**
Suneel Parvathareddy

Human Performance

**How is Mental Toughness Developed in Swimming? The Perceptions of Elite Swimming Coaches**
Andrew P. Driska

**VO_{2max} Protocol Duration**
Jill Kirkeberg

Biological Sciences

**Analysis of the Genetic Structure of *Bithynia tentaculata* Snail Populations in the Upper Mississippi River and the Upper Midwest**
Sarah Whalen
Barriers and Benefits of Colorectal Cancer Screening Among American Indians in Minnesota

Kazi Rahman (Health Science: Community Health)

Dr. Marge Murray-Davis, Faculty Advisor, Health Science

Purpose: Although colorectal cancer incidence and mortality rate are declining in Minnesota, it was found that American Indian men had the highest incidence and mortality rate of cancer of the colon and rectum. Despite national recommendation and positive evidence, colorectal cancer screening adherence might be lower among American Indians as it was found in other research study in other minority population.

Method: Computer literature search were performed using Medline, CINAHL Plus and CQ Researcher from 1985 to 2008. Review of literature were accomplished by prioritizing criteria to find the relevant studies, compiling and reviewing full articles, developing evidence tables to summarizing these articles findings and facts.

Analysis: Analysis was done based on literature findings and facts. Descriptive statistics through frequency distributions, analysis of variance, and cross tabulations were discussed. Logistic regressions conducted to assess perceived benefits or perceived barriers to each screening procedure were also discussed and established relationship among the fact findings among these studies.

Results: Facts and findings suggested the multiple mechanisms involved to the perception of colorectal cancer screening behavior with some suggestions for improving rates of CRC screening in this minority population.

Knowledge and Awareness about H1N1Influenza (Swine Flu) Among University Students

Suneel Parvathareddy (Health Science: Community Health)

Dr. John. A. Romas, Faculty Advisor, Health Science

H1N1 influenza (swine influenza or swine flu) is a respiratory disease of pigs caused by type A influenza virus that regularly causes outbreaks of influenza in pigs. As of October 17, 2009, worldwide there have been more than 414,000 laboratory confirmed cases of pandemic influenza H1N1 2009 and nearly 5000 deaths. The 2009 flu pandemic is a global outbreak of a new strain of influenza A virus subtype H1N1, was first identified in April 2009. The outbreak was first observed in Mexico. On June 11, 2009, WHO declared the outbreak to be a pandemic. The purpose of the study was to find out if the Minnesota State, Mankato University students have adequate knowledge of the disease and whether or not the students viewed H1N1 influenza as a threat to their health. This study also investigated knowledge about possible preventive measures that can be taken among the students including vaccination against H1N1 influenza.
How is Mental Toughness Developed in Swimming? The Perceptions of Elite Swimming Coaches

Andrew P. Driska (Human Performance: Sport & Exercise Psychology)

Dr. Cindra S. Kamphoff, Faculty Advisor, Human Performance

Research on the construct of mental toughness has identified a four-dimensional model of mentally tough athletes (Jones, Hanton, & Connaughton, 2007), and has called for further research on how mental toughness can be developed and enhanced in sport-specific contexts (Jones et al., 2007; Connaughton & Hanton, 2009). Given the lack of research on mental toughness in swimming, a qualitative study was conducted with elite swimming coaches to determine how the attributes of mentally tough swimmers were developed and enhanced. Semi-structured interviews were conducted with ten coaches (M = 31.6 years experience, SD = 9.9). The interviews were transcribed and analyzed using methods outlined by Creswell (2007). The findings of this study indicated that mentally tough swimmers exhibited a balance between swimming and life. They were intrinsically motivated and relentless in their physical training. During competition, mentally tough swimmers had a well-prepared race strategy, knew their unique strengths, showed a high level of focus, wanted to win more than they feared failing, and used pre-competition routines for each race. Post-competition, mentally tough swimmers treated all races as learning experiences, and after poor races they exhibited a belief that they could come back to swim fast in their next race. Mental toughness was developed by coaches when they challenged swimmers physically and emotionally in training, and when they helped swimmers understand the link between deliberate, maximum-effort practice and competing well. Implications for swimming coaches, sport psychology consultants, and parents will be discussed.

VO$_{2\text{max}}$ Protocol Duration

Jill Kirkeberg (Human Performance: Clinical Exercise Physiology)

Dr. Robert Pettitt, Faculty Advisor, Human Performance

The maximal volume of oxygen (VO$_{2\text{max}}$) obtained during a graded exercise test (GXT) is the gold standard for measuring functional aerobic capacity. Controversy still exists over protocol duration for a GXT. A test too short of duration will cause muscular fatigue, whereas too long of duration is not only mentally draining, but may deplete the body of important substrates: thereby not evoking a valid VO$_{2\text{max}}$. This research study evaluated the VO$_{2\text{max}}$ in 12 recreationally active males ages 20-40 who were tested on 3 separate occasions using the following protocol durations on the treadmill: 8 minutes, 10 minutes, and 14 minutes. The treadmill protocol was based on the subject’s physical activity level. Physical activity level was assessed by their demographic information (age, gender, height, and weight), followed by a PA-R questionnaire assessing physical activity on a weekly basis. All 3 protocol durations used a constant 3% grade throughout the entire test. Each protocol was immediately followed by a 3 minute recovery period based on 50% of the ending speed. Right after the recovery period, the subject did a verification bout which was based on 2 stages lower than the ending speed. This presentation will examine the comparisons of VO$_{2\text{max}}$ yielded from three GXT durations.
Analysis of the Genetic Structure of *Bithynia tentaculata* Snail Populations in the Upper Mississippi River and the Upper Midwest

Sarah Whalen (Biological Sciences)

_Dr. Robert Sorensen, Faculty Advisor, Biological Sciences_

Since 2002, two trematode parasite species have been responsible for the deaths of over 30 thousand waterfowl in Pool 7 of Lake Onalaska in western Wisconsin. These parasites, *Sphaeridiotrema globulus* and *Cyathocotyle bushiensis*, both use the same species of snail, *Bithynia tentaculata*, as an intermediate host in their life cycles. *B. tentaculata* is an invasive species of snail that is native to Europe. Exactly how *B. tentaculata* was able to spread to the United States remains unknown. The use of microsatellite DNA fragments, otherwise referred to as simple sequence repeats (SSRs), short tandem repeats (STRs) or variable number tandem repeats (VNTRs), is a well-accepted means of studying the geographic structure of genetic populations. DNA from a *B. tentaculata* snail collected from Pool 7 of the upper Mississippi River was used to isolate microsatellite DNA fragments. Primers were then designed to amplify these short, repetitive DNA sequences. Seven of the designed primer sets were found to amplify polymorphic regions of DNA (resulting in the amplification of more than one allele at the given locus). These primer sets will be used to analyze the genetic structure of *B. tentaculata* populations in the upper Mississippi River and the upper Midwest, with the goal of understanding how these populations are genetically related to each other. An understanding of the genetic relationships between different populations of this invasive species of snail will reveal how it has spread through different bodies of water in the United States.
Nadine B. Andreas Scholar Presentations

**Medieval Orkney: Cultural Center of the Northern Periphery**
Dr. Maria-Claudia Tomany (Scandinavian Studies)

**Fantasy and Realism in Contemporary Ecuadorian Theatre**
Dr. Kimberly Contag (Modern Languages)

**The Rhetorical Public Intellectual: Argumentation in Chomsky’s “Responsibility of Intellectuals”**
James Dimock (Communication Studies)

**Nadine B. Andreas Summer Creative Proposal**
Brian Frink (Art)
Medieval Orkney: Cultural Center of the Northern Periphery
Dr. Maria-Claudia Tomany (Scandinavian Studies)

In the Middle Ages, the Viking settlers in Orkney, Shetland, and parts of Northern Scotland formed a political unit that maintained complex familial, economic and political relationships both with Scotland, their powerful neighbor to the south, and with Norway, which claimed the island empire was a Norwegian feoff given to loyal retainers as earldom.

In my presentation, I want to examine the textual evidence in Norse historiography (The Saga of the Earls of Orkney, Snorri’s History of the Norwegian Kings) and contrast it with other historical indicators of the earldom’s political agency and status. I want to show how the application of modern definitions of statehood and sovereignty to medieval conditions complicates our understanding of Orkney’s medieval status.

In a last step, I plan to outline how the question of Orkney’s medieval political status continues to play a role for Orkney’s political and cultural self-definition even today. Is Orkney indeed, as the Orkney historian William P. L. Thompson asserted, “one of the sub-merged subnations of Europe”, or is it merely “a remote corner of Great Britain”? Medieval Orkney: Cultural Center of the Northern Periphery

In the Middle Ages, the Viking settlers in Orkney, Shetland, and parts of Northern Scotland formed a political unit that maintained complex familial, economic and political relationships both with Scotland, their powerful neighbor to the south, and with Norway, which claimed the island empire was a Norwegian feoff given to loyal retainers as earldom.

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Dr. Kimberly Contag (Modern Languages)

In the past twenty years Ecuadorian playwrights like Arístides Vargas, Cristian Cortez, Viviana Cordero and Peky Andino, to name a few, have sought international avenues for globalizing Ecuadorian theatre. Like their counterpart writers of poetry, short story and novel, this has meant an attempt to globalize and to jump across national borders through intimism and exploration of the Ecuadorian “identity.” However, playwrights in Ecuador have had an additional challenge to take this national topic to the global stage. As contemporary playwright
Luis Campos explains, an unstable political and economic environment and an unusual social environment truncates stage production of plays in Ecuador at every turn. The situation is so restrictive that contemporary Ecuadorian actors, not writers or directors, have been the motor behind all aspects of staged theatrical production. As a result, the majority of plays produced in the past 20 years are monologues, interludes, one-acts plays with one actor playing many roles, or plays with a cast of no more than three actors.

What is common to these theatrical plays and interludes is social and emotional paralysis and truncation associated with all aspects of what it means to be Ecuadorian. Characters appear indifferent to their surroundings or are completely out of touch with their environment, their history, and their future. This lack of awareness of the past or the issues facing contemporary Ecuadorians (i.e. corruption, poverty, emigration, oppression, lack of education, social rigidity, global economic and political influences) makes real communication impossible as these issues are distorted through sordid realism and bizarre fantasy. To make these plays palatable for a theatre-going public, actor-playwrights explore the disjuncture between fantasy and realism that leads to comicality and the absurd.

**The Rhetorical Public Intellectual: Argumentation in Chomsky’s “Responsibility of Intellectuals”**

James Dimock (Communication Studies)

Regardless of the definition used or criteria applied, Chomsky is the most significant public intellectual of our age and his ability to function as such is, in part, a reflection of his ability to make compelling arguments in the public sphere. This paper looks at Chomsky’s essay “The Responsibility of Intellectuals,” a work which marks a turning point in Chomsky’s intellectual life, his transition from preeminent linguistics scholar to public intellectual and subsequent hero of the New Left. Specifically, this paper analyzes Chomsky’s argument, concluding that the strength of his argument comes from its reflexivity; that his argument relative to what intellectuals should be doing is supported by his performance of that ideal.

**Nadine B. Andreas Summer Creative Proposal**

Brian Frink (Art)

I intend to create a new body artwork that will be based on a poem by the Minnesota poet Richard Robbins. This body of work will include several drawings, watercolors, small paintings and one large painting. The imagery and thus the content will be based on the poem. I do not see this work as illustrating the poem. Rather, I will seek to express a sensibility that the poem suggests.