

THE UNIVERSITY OF MINNESOTA MORRIS

presents:

The 2004

Undergraduate Research Symposium

Featuring student research and scholarship from across the campus

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**Presenters:** Adeola Adewola, Daniel Wespetal, Jon Quartforth

**Project Advisor:** Dian Lopez (Computer Science)

**Title:** Development of Test Bed to Determine the Performance of Scheduling Algorithms

**Type of presentation** (Oral / Poster): O

***Abstract:***

Our research is focused on an NP-hard parallel task-scheduling problem. Our problem involves taking a job that is divided into tasks and returning a way to schedule these tasks on a network of identical workstations. The goal of the scheduling is to have all the tasks and thus the job completed in the least amount of time, where time is saved through parallel processing. We use precedence graphs to model our problems. Since using a brute force method to find the optimal solution takes an unrealistic amount of time, we focus on coming up with an approximation algorithm that obtains a solution close to optimal in a polynomial time. Research at UMM on this problem has been on-going for several years. This year we have developed a test bed that is used to test new approximation algorithms. This test bed consists of graphs and an optimal and worst case solution for each graph. We also have designed and implemented a new graph generator that generates random graphs that model an instance of the type of problems we are working on. We are working on creating new approximation algorithms and also to improve existing approximation algorithms by using the test bed to compare performance results of these algorithms. All of our algorithms will be able to be tested quickly now that a test bed has been created.

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**Presenter:** Lonnie S. Bradford

**Project Advisor:** Eric Klinger (Psychology)

**Title:** Correlates of Perfectionism: Pessimism and Discouragement.

**Type of presentation** (Oral / Poster): P

***Abstract:***

The purpose of this study is to explore the relationship between perfectionism and pessimism in order to gain a better understanding of the perfectionism construct. Perfectionism research has been increasing exponentially in the last two decades. Numerous studies have suggested a relationship between perfectionism and pessimism, yet despite a sizeable amount of research in this area, there remains no published work that directly tests for this relationship. The current study becomes particularly important when taking into consideration the part perfectionism plays in many psychological disorders, and the part pessimism plays in maintaining them. Based on previous studies, the principal investigator hypothesized that because a perfectionist has extremely high expectations, and because these expectations are very difficult or sometimes impossible to meet (nothing is good enough for the perfectionist), perfectionists are likely to become pessimistic or discouraged about future efforts to reach their goals.

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**Presenter:** Katie H. Cannon  
**Project Advisor:** Julie Pelletier (Anthropology)  
**Title:** Native American Women and their Reproductive Issues  
**Type of presentation (Oral / Poster):** O

***Abstract:***

The situations faced by Native American women today cause great difficulties when it comes to making life choices, particularly choices about their children. They face disadvantages such as alcohol and chemical abuse running rampant in communities, pressures to participate in sexual acts, domestic violence, and the stigmas placed on Native American women by the society they are required to live with. These are the realities Native American women must face, recognize, and grapple with when making decisions for their children, their family, the community in which they live, and for themselves. In this paper, I explore Native American values surrounding reproduction, values that include sexual responsibility and respect for one's self and one's tribal community. I am also interested in the role of the dominant culture in Native American reproduction, including forced sterilization and limited access to abortion. The unique relationship between Native Americans and the federal government resulting from and expressed by the treaty process has placed Native American health, including reproductive health, under the influence of the government, in the form of the Indian Health Service. Unlike other American citizens, Native Americans are forced to negotiate with the federal government when making decisions like considering abortion, and they have faced instances in which the choice has been made for them, in the case of forced sterilization. The trauma that ensues when people for whom reproductive choice is a cultural norm have that freedom challenged or, worse, taken from them, is far-reaching and long-lasting. This paper touches upon these sensitive issues of Native American reproduction in an effort to enlighten and educate.

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**Presenter:** Anthony Cary  
**Project Advisor:** Neil Leroux (Speech Communication)  
**Title:** A Rhetorical Analysis of Galileo's Letter to the Grand Duchess Christina  
**Type of presentation (Oral / Poster):** O

***Abstract:***

This is an in-depth analysis of the arguments presented in a letter written by Galileo Galilei in defense of his astronomical observations. First, the structures of his letter and its sub-arguments are outlined using the models of Toulmin and Burke. Then the letter is examined with respect to the relationship between the scientific world and the religious world at that time, using the framework of Bitzer. The main body of the text is spent dissecting the composition of the individual arguments. The arguments are analyzed both in the abstract sense of scientific observation as a whole, as well as the specific case of his scientific observations. The paper ends with a critique of the validity of his arguments and a historical look at how this letter was received by his contemporaries.

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**Presenter:** Ami Chouravong  
**Project Advisor:** Barbara Burke, Rujira Rojjanaprapayon (Speech Communication)  
**Title:** Imperialistic Influences in a Filipino Game Show  
**Type of presentation (Oral / Poster):** O

***Abstract:***

The Philippines has a history of being colonized and occupied by various foreign influences, particularly the Spanish, the Americans, and the Japanese. When examining Filipino media, these foreign influences are prevalent in all forms – magazines, billboards, radio, and television. This study identifies and describes foreign influences as well as unique Filipino cultural values found in episodes of the popular Filipino game show, “Game Ka Na Ba (GKNB)?” Findings indicate a strong presence of colonial influences, predominantly American, found in the show.

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**Presenter:** Katrina Collins  
**Project Advisor:** Dwight Purdy (English)  
**Title:** Molly Bloom: A Creation Story  
**Type of presentation** (Oral / Poster): O

***Abstract:***

An analysis of Molly Bloom and the life that inspired her reveals a very complex relationship between art and autobiography in James Joyce's *Ulysses*. Joyce married a simple, sensual girl from Galway who then became the subject of many of the imaginative transformations that formed the basis of his fiction (Nichols, 336). In *Ulysses* he took a possible infidelity in his own life and created an unfaithful marriage between Molly and Bloom. The whole book is centered around Molly's infidelities and how both Bloom and the world see her because of them. The fact he was turning his life into fiction at the same time he was living it gave Joyce a certain sense of detachment from what was happening to him because he knew that he could redo it all for the purposes of his books. This paradox between the truly romantic notion of living for another person and Joyce's reality that he loved Nora but could not give himself up wholly to her was a problem he tried over and over again to resolve in his stories. Joyce acknowledged the "absurdity of sexual obsession" and was "at once fascinated and repelled by the Catholic doctrine of conjugal possession" (Nichols, 342). This helps to account for Bloom's acceptance of Molly's strangely faithful infidelity. Joyce used emotions and details from his relationship with Nora to create his most famous marriage in Molly and Leopold Bloom. For Joyce, art becomes one way of resolving life's many paradoxes.

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**Presenter:** Tim Connors  
**Project Advisor:** Gretchen Minton (English)  
**Title:** Commodification of Identity: Materialism in *Tamburlaine*, *Volpone*, and *Timon of Athens*  
**Type of presentation** (Oral / Poster): O

***Abstract:***

In *Tamburlaine*, *Volpone*, and *Timon of Athens* identity is never absolute but instead dependent upon the characters' material goods. These very different plays are bound together by their central materialistic drives, which work as an animating principle for many of their characters. In each of these plays human bonds are replaced with financial bonds. *Tamburlaine* replaces bonds of love and friendship with promises of future wealth. *Volpone* worships gold because of its power to disrupt social bonds. He has only two real interests, the acquisition of gold and the disrupting of human bonds. These interests become one in the person of Celia, a married woman who is deemed equal to gold. *Timon* uses exorbitant spending to throw parties in order to create himself as the social and economic center of Athens. When his wealth runs out the true character of his friends is revealed, ironically he then finds a large amount of gold but then uses it to buy the hatred of people rather than friendship. These plays are born of a culture of acquisition shown through *Tamburlaine*'s lightning quick rise to political and military power; *Volpone*'s scheming after gold, his sole desire; and the corrupt greed of Athens which seems to revere *Timon* for his wealth and promptly removes it from him.

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**Presenter:** John J. Determan

**Project Advisor:** Jane Johnson; Nancy Carpenter (USDA Soils Lab; Chemistry)

**Title:** Optimizing Trace Gas Storage Methods in Agroecosystem Studies

**Type of presentation** (Oral / Poster): P

***Abstract:***

In the early years of agricultural research, much of the research focused on maximizing crop yields. Dramatic increases in production have occurred and the research focus has shifted to minimizing environmental impacts of agriculture, while maintaining food production and profitability. The trace gas of nitrous oxide (N<sub>2</sub>O) has been linked to important environmental concerns, the depletion of stratospheric ozone and global climate change. Nitrous oxide is an undesirable by-product of nitrogen fertilization of crops. Currently, studies are in place to determine which farm management system results in the least amount of N<sub>2</sub>O emission and thus minimize environmental, while still allowing for farming to remain a viable source of income. One such study is located on the USDA-ARS Morris research farm. Trace gases (Carbon Dioxide, methane and N<sub>2</sub>O) are being collected with closed vented chambers. Currently, these gases are stored in syringes until they can be measured for N<sub>2</sub>O, methane and carbon dioxide using GC-flame ionization detection, GC-electron capture detection and GC-thermal conductivity detection spectrometry, respectively. The concentration of methane and N<sub>2</sub>O can be near the detection limits of the GC, therefore it is critical to optimize storage and transport conditions, especially since it is difficult to store gases without leakage. Studies are need to measure the amount of trace gas loss over the storage period and what amount of storage time can elapse before the leakage makes the measurements irrelevant. The report will discuss tests used to determine maximum storage time and optimum storage conditions.

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**Presenter:** Marcques Justin Domask

**Project Advisor:** J. Wendel Cox (History)

**Title:** Lewis & Clark and the Daily Grind: Routine and Boredom During the Expedition

**Type of presentation** (Oral / Poster): O

***Abstract:***

The Lewis and Clark Expedition is oft thought of as a grand adventure, with danger and excitement a part of everyday life. Indeed, the travels of the Corps of Discovery were a true American epic: a band of intrepid adventurers crossing uncharted wilderness in the name of exploration. But exciting deeds of daring-do only served to punctuate the everyday routine of the Corps. This paper examines what occurred in that daily grind, since those events comprise the majority of the Corps' experience. Specifically, I examine the Corps while they wintered with the Mandan tribe. Daily life quickly fell into patterns necessary for survival on the northern plains. Shelter needed to be built. There was hunting to be done. A steady stream of visitors from surrounding tribes demanded attention: trading food for weapons, requesting aid against Sioux raiders, or just seeking society. There was always something to do, even if it was only to keep watch on a cold night. Despite the grind and drudgery, the Corps nevertheless found ways to entertain itself. The men interacted with the neighboring people, participating in rituals, sharing in merriment. Nights at Fort Mandan were filled with singing, drinking, and fiddling. Lewis and Clark proved themselves as leaders here, too, constantly finding ways to keep the men occupied, working against the lethargy and ill-temper bred by confinement during a long, harsh winter. Everyday events may not make for a gripping story, but they are indispensable for painting a complete picture of this epic.

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**Presenter:** Melissa Dvorak

**Project Advisor:** James Cotter (Geology)

**Title:** Implications of Microfossils in Varves from Sao Paulo State, Brazil

**Type of presentation** (Oral / Poster): P

***Abstract:***

Varves are sediment couplets deposited during a one-year period and consist of a winter (fine grained) and summer (coarse grained) layer. Because of the unique requirements of varve formation, varves form only in lakes in glacial or near glacial environments. The 300 million year old, rhythmic sedimentary rocks ("varvites") exposed in the Parque do Varvito, Itu, Sao Paulo State have been interpreted as varves. This interpretation is based on sedimentary data. However, "varvoides" (varve-like rocks) exposed elsewhere in Brazil (Santa Catarina state) have recently been interpreted as a glacial marine sediment rather than a glacial lake sediment. The goal of this research is to determine if the rocks of Itu formed in glacial lake conditions and are therefore true varves. My study will determine what types of microfossils are present in Itu varves. If these microfossils are the remains of fresh water organisms then it is likely these are true varves. This study is part of a long-term study of the glacial history of Sao Paulo State, Brazil.

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**Presenter:** Kate Ellis

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** Evaluating the Feasibility of a Rural Resotration and Revitalization Organization

**Type of presentation** (Oral / Poster): P

***Abstract:***

Little, if any, research has been done concerning gender and homelessness in rural areas or the availability of affordable housing for these populations. These problems are compounded by the increasing decline in rural population and resources available to rural communities. While previous research and literature presents these issues as separate, inexorable problems in rural policy studies, I cross levels of analysis and connect them. This research investigates a possible solution to these problems in west central Minnesota by combining three main public policy goals: low income housing, rural development, and historical preservation. By investigation of existing research in these areas combined with in-depth qualitative interviews of policy makers, this research suggests an innovative solution to the aforementioned public policy issues. The project examines the feasibility of an organization whose purpose would be fourfold: 1) Contribute to the revitalization of rural communities, which are currently suffering from a decline in population and economic vitality; 2) Help to alleviate the lack of affordable housing in rural areas; 3) Provide an environment where struggling women and families can become reestablished, learn usable work skills and eventually help others in need to do the same; 4) Restore turn-of-the-century, settler-era farmhouses, thus providing an historical contribution to the area and removing eyesores.

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**Presenter:** Kevin Ely

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** Egalitarianism in Citizenship Education in the Post Civil Rights Movement Era

**Type of presentation** (Oral / Poster): O

***Abstract:***

The question underlying this paper is how civic education in the post civil rights movement era might impact current discussions surrounding declining levels of participation, interest, and trust in the political process. This paper probes the many aspects of civic education to ask the question of how the current educational structure surrounding citizenship education is constructed. A content analysis of civics and history textbooks is employed in the paper. Textbooks and their emphasis of the liberal dimension of citizenship are probed in detail to determine the extent to which they could affect participation. The conceptions of Social Studies Educators are also discussed to show how teachers' conceptions of citizenship could possibly differ from that of the textbooks they are using. Discussing teachers' conceptions of citizenship further qualifies the complex picture of what actually goes into citizenship education curricula. Finally, high school community service programs and the dimensions of citizenship underlying them are surveyed. The paper concludes by showing how civic education would become more egalitarian through utilizing Dewey's principle of interaction. Our modern dilemma of citizenship points to the need for both the community and students to be able to connect to civic education and utilize it to order society together. If we do this, we can create the sort of civic capacity and social capital needed to help both communities and individuals grow and flourish together.

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**Presenter:** Tim B Finnegan

**Project Advisor:** Gretchen Minton (English)

**Title:** The Revelation of Madness: Madness, The Apocalypse, and its Presence in The Spanish Tragedy, The Revenger's Tragedy, and King Lear

**Type of presentation** (Oral / Poster): O

***Abstract:***

The paper expounds Michel Foucault's notion of madness and how it was viewed in 17th century England. My thesis is that the plays The Spanish Tragedy, The Revenger's Tragedy, and King Lear present mad characters who are surrounded by apocalyptic events and use apocalyptic language. The reason the characters do this lies in the fact that they are, themselves, mad and trying to deal with the emptiness that madness entails. Through explicit textual reference from the plays themselves, the book of Revelation, and Foucault's book Madness & Civilization I show the metaphoric apocalypse played out in the theatrical world and offer suggestions as to why playwrights of the time were utterly obsessed with this notion of madness.

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**Presenters:** Vaughn Ginnett, Isiaka Barrow, Fumiko Kato, Tom Morton, Stephanie Pulver

**Project Advisor:** Farah Gilanshah (Sociology)

**Title:** The Study of Body Weight and Weight Management

**Type of presentation** (Oral / Poster): O

***Abstract:***

Compared with other countries, America has the largest population of obese people. According to Martha Coventry (2004) in "Supersizing America," six out of every ten Americans are overweight and one in three is obese. The study of weight management, in general, is important since it is directly related to the health and well being of individuals. The purpose of this study is to examine the relationship between body weight and weight management. The theoretical framework here is based on the social construction of reality theory. The hypothesis is whether there is a relationship between body weight and weight management. According to the most recent literature research, the concept of weight management is examined under three sub-concepts: physical activity, lifestyle, and diet. In order to examine the above concepts and their relationship to body weight, the Likert Scale is constructed in the questionnaire along with demographic variables such as age, gender, and race. This study intends to explore the relationship between weight management and body weight of UMM students. For this purpose, two-hundred and forty UMM students are selected by simple random sampling technique using computer generated numbers. The collected data will be analyzed using the SPSS program. The findings of this study should confirm the above hypothesis. In the near future, this study will be combined with qualitative interviewing techniques.

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**Presenter:** Jacob Grussing

**Project Advisor:** Dwight Purdy (English)

**Title:** Writing under the Influence: James Joyce and Vladimir Nabokov

**Type of presentation** (Oral / Poster): O

***Abstract:***

James Joyce (1882-1941), the Irish-born author who wrote *Ulysses*, was known for his experimental use of language, structure, and narrative techniques. Vladimir Nabokov (1899-1977), the Russian émigré author who wrote *Lolita*, was noted for his playfulness with style and language. Both of these men helped shape the novel as a literary form, and together they have been the center of intriguing critical debate. Critics have often found likenesses in the work of Joyce and Nabokov. Difficulties arise, however, when critics broach the subject of whether Joyce directly influenced Nabokov, who vehemently denied accusations of external influence. Some critics side with Nabokov, while others continue the pursuit for evidence of influence, but the truth lies somewhere in between. Researching the topic leads to the discovery of a brief, yet curious, history between the authors that sheds light on the influence debate.

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**Presenter:** Joleen Hadrich

**Project Advisor:** Margot Rudstrom, Arne Kildegaard (WROC, Economics)

**Title:** Economic Feasibility of Alternative Calving Strategies on Small-scale Grazing Dairy Operations

**Type of presentation** (Oral / Poster): P

***Abstract:***

Since the mid 1980's the dairy industry has been experiencing volatile milk prices due to the decoupling of the milk support price. In order to maintain a profit margin many farmers have decided to employ cost controls through such methods as low input dairy systems, management intensive rotational grazing, and alternative calving strategies. This research will incorporate these cost control methods while putting emphasis on the semi-seasonal calving strategy. A model herd will be composed of 100 cows to be split into 50 cows calving in the spring and 50 cows calving in the fall. Capital budgeting techniques, such as the net present value will be used to determine economic feasibility with the incorporation of risk due to the volatility of the milk price and the random variables in the model. The Monte Carlo simulation is a statistical tool that will perform a series of what-if analyses incorporating risk, random variables, and defined probability distributions. The results of this model will later be compared to a herd employing a strategy of 100 cows calving in the spring and another model with 100 cows calving in the fall to determine differences between the varying calving strategies.

**Presenter:** Monica Haynes

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** Local Consumer Choices: Rational Choice vs Social Connections

**Type of presentation (Oral / Poster):** O

***Abstract:***

This study uses theories of rational choice to analyze why people do or don't buy locally. Rational choice theory assumes that any rational action involves utility maximization (the choice made is the best one that serves the agent's objectives). One of the major flaws of the theory regards transitivity. The transitivity assumption of rational choice is that choice reveals preference (if A is chosen over B, it is assumed that A is preferred over B, also). Between the restrictive nature of the theory's requirements and its major flaw of transitivity, it is difficult to apply it in real life situations. An alternative explanation of behavior argues that cooperative cultures benefit economically and militarily, and, therefore, persist longer than non-cooperative cultures. Human behavior represents a compromise between genetically selfish impulses and learned cooperative behavior (Boyd and Richerson 1990). Putnam's research on social capital is related and suggests that people gain from the linkages they have with others (Putnam 1999). This study presents the results of a survey experiment that asks the citizens of Morris, Minnesota and the surrounding area why they do or don't buy locally, and what would influence their decision in the future. The results are analyzed to see why consumers make the spending decisions they do.

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**Presenters:** Vincent Henning, Jonathan Janssen

**Project Advisor:** Eric Klinger (Psychology)

**Title:** Examination of a Scale for Fantasy-Proneness

**Type of presentation (Oral / Poster):** P

***Abstract:***

We intend to clarify what a measure of "fantasy proneness," the Inventory of Childhood Memories and Imaginings (ICMI), actually measures. Research Questions: 1. How many underlying dimensions (different kinds of phenomena) do the questions on the ICMI represent? 2. To what extent does its total score reflect dissociative experiences and other experiences associated with psychological disorder? 3. In what ways, if any, are the various dimensions of the ICMI associated with utilization of mental health services? Hypotheses 1. The ICMI is a multidimensional instrument. 2. Some ICMI dimensions will be related to dimensions of normal daydreaming. 3. Other ICMI dimensions will be related to measures of dissociative experiences, perceptual aberration, and magical ideation. 4. The latter ICMI dimensions will also be related to elevated utilization of mental health services and to measures of psychological disorder, whereas those ICMI dimensions unrelated to dissociation, perceptual aberration, and magical ideation will also be unrelated to utilization of mental health services and measures of psychological disorder.

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**Presenter:** Lori Hill

**Project Advisor:** M. E. Bezanson (Speech Communication)

**Title:** The Rhetoric of Social Movements: Mormon Polygamy 1843-1890

**Type of presentation (Oral / Poster):** O

***Abstract:***

This is a study of social movement theory as promulgated by Leland Griffin. This study will use the rhetoric of the leadership of the Church of Jesus Christ of Latter-Day Saints (Mormon) in the advancement of the polygamy movement of 1843-1890 to analyze Leland Griffin's notion that social movement theory should be based on Kenneth Burke's dramatist theory. More specifically, can the notion of Order, Crisis, Consummation and Stasis as described by Griffin be found in the Mormon polygamy movement of the 1800's and is Burke's dramatist theory useful in identifying the stages of this social movement?

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**Presenter:** Chandra Hutchens  
**Project Advisor:** Peter Wyckoff (Biology)  
**Title:** <No title given>  
**Type of presentation** (Oral / Poster): P

***Abstract:***

Buckthorn (*Rhamnus cathartica*) is an invasive tree species that grows successfully in competition with native trees in Minnesota. Despite much public interest and concern about its invasiveness, buckthorn is largely unstudied, particularly in association with its non-native habitat. We hypothesize that buckthorn is tolerant of low light environments. High tolerance of low light could explain its high invasiveness even in well-established forests. Pomme de Terre Park and Lake Crystal by Morris, Minnesota were selected as study sites. The light exposure, the height and diameter were recorded for buckthorn saplings grown at these sites, and approximately eighty five individuals were sacrificed for tree ring based growth analysis in the lab. Light was measured by a digital hemispherical photo, which was analyzed using Gap Light Analysis software. This software calculates light availability over a growing season. Growth was estimated by measuring the width of annual growth rings using a Velmex measuring system and Measure J2X software. We characterize buckthorn's light tolerance by regressing growth rate versus light availability. This gives insight into the species' success as an invasive species to Minnesota's forests and may help to control the spread of buckthorn.

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**Presenter:** Tami Jensen  
**Project Advisor:** Julie Pelletier (Anthropology)  
**Title:** Where Are the Women of AIM?  
**Type of presentation** (Oral / Poster): P

***Abstract:***

While women have historically played an essential and important role in Native American society and culture, they seem to have been overlooked in more recent times. One such period in which women are inexplicably missing is the volatile American Indian Movement (AIM) of the 1960s through the 1980s. Although the American Indian Movement was a highly publicized and well-documented episode in Native American and U.S. history, the literature and news reports written about the time mysteriously lack evidence of any female leadership involvement. For my poster presentation, I will present a timeline of the major social events during the most active period of AIM. Leadership in each event has been historically portrayed as dominantly male, so I will show the leadership roles played by women in each event. My poster will present theories for why women have been neglected from the history of the movement even though they were such a vital part of its success and a comparative analysis of the gender bias within the literature of the AIM movement, examining how women's contributions to the AIM movement are downplayed to sound less significant and why women are written about or discussed only if they were martyred and not for their behind-the-scenes leadership or active roles in the movement. This poster will use a multimedia approach to answer these questions as well as provide examples of women whose leadership roles in the AIM movement should no longer be ignored.

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**Presenters:** Becky Johnson, Tara Marquardt

**Project Advisor:** Leslie Meek (Psychology)

**Title:** Effects of Acute Paternal Alcohol Intake Immediately Before Conception on the Growth and Development of Young Mice.

**Type of presentation** (Oral / Poster): P

***Abstract:***

The effect of acute paternal alcohol intake immediately before conception on the growth and development of young Swiss-Webster mice was investigated in this study. Adult mice were paired for 72 hours, 24 hours following injection of ethanol solution or saline solution. Every third day following birth pups were assessed on physiological maturation, locomotor development and reflexes. Pups were also measured on weight and length every week. Pups of sires exposed to alcohol showed significant developmental delays in the areas of linear movement, startle response, tooth eruption, clinging, and tail pull when compared to pups of sires not exposed to alcohol. Pups of sires exposed to alcohol performed exploration and climbing behaviors significantly earlier than pups of sires not exposed to alcohol. No differences were found on tests of surface righting, eye opening, or rotation. This study supports previous findings that paternal alcohol exposure can cause developmental delays in young mice.

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**Presenter:** Ashley Laliberte

**Project Advisor:** James Wojtaszek (Spanish)

**Title:** The SpanGLISH Phenomemnon

**Type of presentation** (Oral / Poster): O

***Abstract:***

I am interested in investigating the Spanglish phenomenon in the United States. Spanglish has become a popular mode of communication for many and in some cases the only manner of expression. In Texas, for example, there are some school children that are unable to master either English or Spanish. As a result, they speak Spanglish and have even created their own verbs and vocabulary words. Although Spanglish can create a language barrier and confusion, it also can be a point of clarity. Due to the fact that translations can change the meaning of a written work, Spanglish is prevalent in much Chicano literature, allowing the author to better express him/herself. Thus, I will present information on benefits and downfalls of the Spanglish language.

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**Presenter:** Timothy Lindberg

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** Some Deaths Are More Equal Than Others: A Content Analysis of Media Framing Effects

**Type of presentation** (Oral / Poster): P

***Abstract:***

Media news services carry a multitude of stories about the deaths of civilians, soldiers, political leaders, and especially Americans. As earlier scholars have noted, sheer quantity of deaths is not a strong predictor of news coverage. This paper addresses the question of what makes one life worth more than another in news coverage. Despite our founding ideals, a content analysis of news coverage suggests that some deaths (and thus lives) are more significant. Using content analysis to analyze the coverage of unnatural deaths in major American news papers over the course of a three month span, I identify several distinctive characteristics which separate the coverage of significant and insignificant deaths. The paper ends with a discussion of the significance of these distinctions for public opinion and policy-making decisions.

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**Presenter:** Emily Loehr

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** Agenda Staying Power? Media Coverage of Three Non-Redistributive Policy Questions

**Type of presentation** (Oral / Poster): O

***Abstract:***

In looking at the lifespan of an issue in the media, many researchers such as Anthony Downs, Barbara Nelson, and Itzhak Yanovitsky, among others, have shown that the amount time an issue stays salient to the public depends most on the issue's inevitable solution. According to the phenomenon of the issue-attention cycle, most issues brought to the public by the media result in demand for quick resolutions, and media attention is acute. Gradually, when people realize the inherent solution may require timely, costly redistribution of wealth or power, they lose interest, and the media moves on to a new issue with new demands. What, then, is the force behind issues that do not involve redistribution? What determines these issues' staying power? Does the issue-attention cycle still apply in modified terms? In my research, I intend to explore such issues, looking at past as well as current issues. Through content analysis, I plan on finding patterns in past instances and applying them to a selected present-day issue, looking for a common pattern that applies not only to issues whose solutions require economic redistribution.

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**Presenter:** Kevin Logan

**Project Advisor:** Andy Lopez (Computer Science)

**Title:** The Performance of IEEE 802.11b in an Outside Environment

**Type of presentation** (Oral / Poster): O

***Abstract:***

I will be presenting the results from experiments done during the fall of 2003 for a MAP (Morris Academic Partnership) with Professor Andy Lopez. These experiments were conducted using the popular IEEE 802.11b wireless data communication protocol. 802.11b is widely used for home and office wireless networks. The purpose was to observe the effect of the ground and of increasing distance between the sender and receiver. The experiments were conducted in an outside environment; both sender and receiver were outside. These outside experiments were compared to a similar experiment with the sender pointing out a window. Different combinations heights for the sender and receiver were used to create variations. The data was analyzed using multiple linear regression techniques and show some distinct, and sometimes unexpected, results. The variations in the overall speed show the variability of wireless performance in any environment.

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**Presenter:** Stephanie Looney

**Project Advisor:** Rujira Rojjanaprayon (Speech Communication)

**Title:** A Study of Conflict Coping Strategies in Contemporary US Interethnic Intimate Relationships

**Type of presentation (Oral / Poster):** O

***Abstract:***

This research project stemmed from historical problems happening among African-Americans and European-Americans in the United States whereby they interacted under highly destructive tensions of enslavement and oppression creating a legacy of discrimination and racism, which has led to communication barriers. Therefore, this interpretive study examined interethnic dating discourse, particularly related to conflict coping strategies, of African-Americans and European-Americans in the United States context. By using two interethnic intimate pairs, as a sample of discourse, each drawn from two selected movies, "Monster's Ball" and "Jungle Fever," this study attempted to answer two research questions: (1) What are the conflicts in this interethnic dating discourse? and (2) What are the conflict coping strategies employed in this interethnic dating discourse? Concepts of interethnic relationships (Witteman, 1998; Lloyd & Cate, 1985) and conflict coping strategies (Rusbult et al., 1992; Kurdek, 1994b) were employed to construct a theoretical framework for analyzing this discourse. Findings include a description of the discourse of these two pairs and the strategies they employed for coping with their conflicts. The implications of this study, as a qualitative endeavor, include: (1) promoting interethnic/intercultural sensitivity in better understanding relational discourse in interpersonal/intercultural communication and (2) serving as a pilot study for future research on this issue, especially for development of a research tool to map out characteristics of this relational discourse.

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**Presenter:** Jennifer Mages

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** How Rural Area Schools Help Facilitate Physically Disabled Students

**Type of presentation (Oral / Poster):** O

***Abstract:***

Physically disabled students in rural areas may be few, but it is important for the schools to keep the schools up to standards so that when disabled students come, their duration in the school will be as comfortable as possible. The object of this research is to help discover if rural area high schools in Minnesota are being "left behind" in keeping up with the new laws and regulations for physically disabled students. This research will also look at and discover how rural area schools make possible or aid the physically disabled students through various measures, such as equipment available or the assistance they receive, even if there are budget constraints. This study is inductive and is being conducted through interviews of three rural area schools and through the research of various disability laws, regulations, and standards. Findings are hypothesized to be that the rural area schools are following standards as closely as they can, but there are budget constraints that may be preventing them from adding the latest technological programs that would further help the physically disabled students. This research will help rural area high schools understand what rights the physically disabled students have in terms of their comfort in receiving their education, and what challenges the schools face in implementing for the students.

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**Presenter:** Emily Mathews  
**Project Advisor:** Jessica Larson (Studio Art)  
**Title:** Design for "The Hobbit"  
**Type of presentation** (Oral / Poster): P

***Abstract:***

J.R.R. Tolkien's "The Hobbit", adapted by Markland Taylor is the basis for my design. I explored the different descriptions within the text to get a visual sense of what the different images should look like. The Hobbit (Bilbo Baggins) is described as being a short, well fed little person with hair covered feet. For Bilbo's outfit, he was to be dressed in bright golds and greens. With Smaug the dragon I wanted to convey a sense of an older dragon that had been around a long time and was very powerful and mean. I then began to consider the different aspects that go along with these two characters such as treasure and fire. Next I researched different images of the Hobbit and the dragon, to see what was out there and to get a feel of what Bilbo and Smaug should look like. Once I found some images to go off of I began to draft up some rough sketches of Smaug and Bilbo. Once I had my final drawings done I outlined them in permanent marker and scanned the images into Photoshop. Once in Photoshop I began to clean up the images and add textures and color. In the initial design, Smaug's whole body was going to be used in the poster, however this made for too much clutter and his body was taken off and left to be implied by making Smaug's head and wing look like they were ripping through the paper. Bilbo was given a noisy shadow to convey a sense of invisibility due to the fact that he was wearing the ring. Later the treasure was added as well as the flames to complete the composition and tie everything together. I will be presenting the different stages of the process to show how the composition changed from beginning to the finished product. Also I will be showing the different by products of the poster such as the table tents, program cover, packet cover, and coloring book pages. Throughout the different compositions I paid close attention to the clarity and aesthetics of the designs.

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**Presenter:** Emily Mathews  
**Project Advisor:** Jon Anderson, Steve Gross (Statistics; History)  
**Title:** Ethnicity, Gender, and Agricultural Production; Historical Analysis 1880's  
**Type of presentation** (Oral / Poster): P

***Abstract:***

Historians of rural America have long been interested in ethnic differences in the countryside. Typically they have focused on issues such as crop choices and live stock selection. Unfortunately they have been slow to examine these issues comparably. More importantly historians have failed to address the issue of female farm labor and how it cuts across ethnic lines. This project utilizes census material (both agricultural and population schedules) from 7 townships in Stearns County from 1880. Through the employment of various regression techniques I will examine the relationship of ethnicity, agricultural production, and gendered labor.

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**Presenter:** Jill McDonald  
**Project Advisor:** Peh Ng (Mathematics)  
**Title:** Game Theory: So Much More than Playing Games  
**Type of presentation** (Oral / Poster): O

***Abstract:***

Game Theory has applications in many different fields of study, including mathematics, economics, computer science, military, sports, and biology. In this presentation, we will explore the foundations of game theory in relation to two-person and n-person games. In addition, we will show an application of this analysis by designing and analyzing a two-person game and an n-person game.

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**Presenter:** Jennifer Montgomery

**Project Advisor:** Timna Wyckoff (Biology)

**Title:** The Role of Lipopolysaccharide in Pseudomonas Aeruginosa Biofilms

**Type of presentation** (Oral / Poster): P

***Abstract:***

Pseudomonas aeruginosa is an opportunistic, Gram-negative bacterium that commonly infects cystic fibrosis patients and burn victims. This organism often develops biofilms, which are collections of bacteria growing on a surface encased by a protective matrix. Gram-negative bacteria produce a large molecule on the outer membrane called lipopolysaccharide (LPS). The purpose of this research is to determine if varying the level of expression of LPS will have an effect on biofilm formation. In order to vary the levels of LPS we need to replace two genes responsible for early steps in the synthesis of LPS with regulatable copies. Regulation of these genes will occur through an arabinose promoter. To this end we have constructed plasmids containing the regulatable copies of these two genes which will be used to perform the replacement. Before doing the replacement, I am in the process of testing the ability of the constructed plasmids to regulate LPS production in LPS mutants of the standard lab strain, Escherichia coli. Varied levels of LPS should lead to varied levels of antibiotic resistance. Consequently, I am testing for the levels of LPS expression through the regulatable genes by comparing the relative antibiotic susceptibility of these LPS mutants. The next step is to replace the wild type P. aeruginosa genes with the regulatable copies and test the ability of the resulting strains to form biofilms.

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**Presenter:** Brandie L Nelson

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** Circle of Friendships: An Assessment of a Service Learning Partnership and the Social Benefits of the Participants

**Type of presentation** (Oral / Poster): O

***Abstract:***

My research study is an assessment of the partnership between UMM's service learning program and West Wind Village, a long term care facility. The importance of social interaction and creating social bonds is the essential focus of this study. I conducted three case studies that showed the effectiveness of the service learning program with West Wind Village residents. Through eleven interviews, I collected data, relating to how the program is run and improvements to be made to better meet the needs of residents and students. This is an important study because it addressed many new issues in our society, for example caring and interacting with elderly persons and college students. First it provides information to both of the institutions involved. It also addressed how partnerships can be developed and how social bonds are created within various generations. Due to recent growth of service learning, this study is valuable because it provides evaluations of a program, which is a critical part of the overall service learning experience, and shows the importance of intergenerational interaction and social bonds.

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**Presenter:** Meredith Noetzel

**Project Advisor:** Timna Wyckoff (Biology)

**Title:** Neuronal Expression Patterns of Bursicon, the Insect Tanning Hormone

**Type of presentation** (Oral / Poster): P

***Abstract:***

Bursicon is an important neurohormone in insects that functions in cuticular hardening and tanning. It is the last hormone released in the hormonal cascade preceding ecdysis (shedding of the old cuticle). Although this is an important hormone, the sequence has remained uncharacterized for many years. The sequence of bursicon, however, was recently obtained from purified bursicon from the cockroach nervous system. A new antibody, raised against a partial 20 amino acid sequence, was used here to examine bursicon immunoreactivity in the moth *Manduca sexta* and the American medicinal leech *Macrobdella decora*. Three bilaterally paired cells in the abdominal ganglia of *Manduca* were bursicon-immunoreactive. Studies to control for possible non-specific staining from the secondary rabbit anti-chicken antibody resulted in no positive staining of the abdominal lateral cells. The bursicon antibody also recognized an immunoglobulin-like antigen contained in neurons identified as the "27" cells. These cells were previously observed to express an endogenous IgG-like epitope. A bursicon-like epitope was also observed in the leech nervous system. The peripherally induced central (PIC) cells were immunostained as well as neurons in positions similar to the dorsal lateral octopamine (DLO) cells. These neurons were specifically labeled when the primary antibody was present, but not when absent. Because both cell groups are known to contain octopamine, this suggests that these cells might contain both the peptide and the amine. Perhaps, in the leech, bursicon plays a role in cocoon hardening. This comparative study may shed light on the evolutionary origins of bursicon and its multiple functions.

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**Presenter:** Christopher Orth

**Project Advisor:** Chris Reese (Physics)

**Title:** Magmatic Resurfacing on Venus

**Type of presentation** (Oral / Poster): P

***Abstract:***

The focus of this project is the unique magmatic evolution of Venus. NASA's Magellan mission to Venus revealed a global resurfacing event which took place ~500 million years ago. According to analysis of the impact crater record the age of the surface of Venus is between 300 – 1000 million years. A variety of theoretical models have been proposed to explain this global resurfacing event. One possibility is that the resurfacing was caused by widespread volcanism due to a late onset of mantle convection beneath an immobile surface. This hypothesis is explored using physical models with constraints from observational data to calculate thermal evolution scenarios for Venus.

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**Presenter:** Doug Paulson

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** Drug and Alcohol Abuse in a Rural Minnesota Farm Community

**Type of presentation (Oral / Poster):** O

**Abstract:**

Americans tend to view the drug addiction problem in the U.S. as a poverty stricken, big city, and ghetto problem. Today the rate of drug and alcohol use is highest in rural communities, especially among teens (National Center on Addiction and Drug Abuse 2000). The NADA and CASA have research data available that examines drug and/or alcohol abuse in rural communities, but by their own admission the definitions of large metropolitan, small metropolitan, and rural areas as to population limits was unclear. Furthermore, it was stated that rural America is very diverse in its ethnic and cultural makeup as well as economic structure, economic dispersal, geographical isolation, and geographical proximity to large cities or major freeways. All these factors that can have an effect on drug availability and use. Because there is no research on this specific geographical area, namely a rural Minnesota farm community, this project will investigate the possible connection between this community and drug and/or alcohol abuse risk factors that may be linked to it. The research will consist of eight case studies done on men and women who have had a history of drug and/or alcohol abuse and have been through some type of treatment. I will be looking for similarities, differences and patterns of causes for drug abuse. While eight case studies is a small sample, this is a qualitative project, which focuses on exploring the possible relationships between a person's environment, a Minnesota farm community, and risk factors for drug/alcohol abuse.

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**Presenter:** Michael Petersen

**Project Advisor:** Paul Z. Myers (Biology)

**Title:** Behavioral Investigations of Two Strains of Zebrafish (*Danio Rerio*)

**Type of presentation (Oral / Poster):** P

**Abstract:**

Two different strains of the zebrafish, *Danio rerio*, were examined. The first strain, Nadia, was originally imported from asia and then obtained by Kimmel Lab in Oregon. The other strain, WIK, also originate from asia, and has been used for many years in developmental biology and genetic mapping experiments. The Nadia line seems to exhibit behaviors much like fish would in the wild, where as the WIK strain of *Danio* appears to exhibit behaviors that are associated with life in the lab. Behaviors examined include feeding, startle response, and the presence of cover. The design of the experiment, using digital cameras and Cytos software, allowed the quantification of such behavioral data. Further research in crossing these two strains of zebrafish would be instrumental in the project, but was not available due to time restraints. Combined with molecular biological methods, future research into this field will provide valuable insights towards understanding the genetics of behavior. It will also allow us to draw parallels to natural human behaviors and behavioral conditions, such as depression.

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**Presenter:** Leland Potter

**Project Advisor:** Eric Klinger (Psychology)

**Title:** A Study of Relationships between Extrinsic/Intrinsic Religiousness and Conscientiousness

**Type of presentation (Oral / Poster):** P

**Abstract:**

To resolve contradictory findings about the relationships between conscientiousness and religious orientation (Saroglou, 2001; Taylor & MacDonald, 1999), the present study gave 60 adjectives drawn from Parish's (2002) comprehensive analysis of the Conscientiousness trait and the 12-question revised Religious Orientation Scale (Maltby, 1999) to 264 UMM students, 201 females and 63 males. The questionnaire also contained 113 adjectives measuring openness, extraversion, agreeableness, and neuroticism. Among other findings, the Socialization facet of Conscientiousness correlated with Intrinsic Religiousness ( $r = .74, p < .001$ ). This indicates that a facet level analysis of Conscientiousness provided the Big Five framework with the specificity necessary to explicate theist relationship to Religious Orientation.

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**Presenter:** Samuel Redman

**Project Advisor:** Julie Pelletier (Anthropology)

**Title:** The Old World in the Midwest: Museum Collections and Their Meaning

**Type of presentation (Oral / Poster):** O

***Abstract:***

This project intends to examine museum collections housed in two institutions of the midwestern United States, describing the formation of their Old World collections. The "Old World" or what is considered to be the geographic realm of "Classical Archaeology" consisting of Mesopotamia, Egypt, Greece and Rome has maintained a fascination among modern western nations for over a century and a half. This fascination has much to do not only with the pleasing aesthetics of ancient art but also with Biblical interests of the Christian scholars who studied the ancient cultures. Outlining the histories of the collections housed at the Science Museum of Minnesota in St. Paul and Beloit College's Logan Museum of Anthropology in Beloit, Wisconsin the project will demonstrate the roles of looters, middlemen, private collectors and curators in the development of these collections. In examining what we collect and why, we can come to a better understanding of who we are and how we view the world in which we live.

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**Presenters:** Jamie Richert, Amanda Kirkpatrick

**Project Advisor:** Dennis Stewart (Psychology)

**Title:** Political Perception: Gender and Military Experience

**Type of presentation (Oral / Poster):** P

***Abstract:***

We are currently running a study on political perception. We will be examining how the sex of the political candidate and the previous military experience of the candidate affect the perception of potential voters. We feel that women are perceived as less capable than men to hold the office of president, especially when defense is a main issue. We think that this will hold true regardless of past military experience. Therefore, we predict that a man with military experience will be most accepted and most likely to be voted for followed by a man without military experience, a woman with military experience and finally a woman without military experience. We will have a 2(sex of candidate: male vs. female) x 2(military experience: yes vs. no) x 3(political issue: defense vs. health care vs. education) mixed factorial design. Political issue is a repeated measures variable. If sample size permits we will also look at participant's sex and participant's political affiliation.

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**Presenter:** Dave Robbin

**Project Advisor:** Bart Finzel (Economics)

**Title:** The Effect of Fleet Composition on Airline Capacity Utilization

**Type of presentation (Oral / Poster):** P

***Abstract:***

In recent years we have witnessed several major U.S. airlines go from recording record profits to hemorrhaging money and declaring bankruptcy. There are a number of explanations for these losses posed in the literature: high fixed-cost structures that have only increased since September 11, decreased demand for air travel, and increased competition from regional and low-cost carriers. An additional explanation, as suggested by Morrison and Winston, is that excess passenger capacity is a factor that contributes to airline losses. Contributing to the excess capacity problem for major carriers is an aging fleet of aircraft that were selected for a specific route structure. This makes the fleets of many major airlines less flexible than the newer jets used by Southwest Airlines and JetBlue Airways, who have remained profitable. My research examines the linkage between airline fleet composition and capacity utilization over time.

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**Presenter:** Teresa Sayles  
**Project Advisor:** Anna Dronzek (History)  
**Title:** Robin Hood: Prince of the Box Office  
**Type of presentation (Oral / Poster):** O

***Abstract:***

Perhaps no outlaw tale in the history of western culture has had as much influence and fame as the tale of Robin Hood. Today's American culture has been highly influenced by Robin Hood and continues to celebrate him and what he has come to stand for. American movies and books triumphantly tell the stories of those who, like Robin Hood, stand up against oppressive forces and fight for the good of the common man. He is not so much an outlaw to our current culture as he is a hero and an ideal. However, this is not how he began. The Robin of the early medieval ballads was basically a witty outlaw and thug, but, due to changes in society and ideas over the years, his legend has evolved and become a representation of social protest against corrupt government. Popular characters such as Maid Marian and Friar Tuck were not even created until many years after Robin supposedly reigned in Sherwood Forest. Since his origins in medieval England, Robin Hood has impacted our way of thinking, our values and morals, and even the way we look at the medieval period. Robin Hood has been a popular figure throughout history and no doubt will continue to be so for many more generations. The importance of keeping his original legend intact while also maintaining and understanding our current view of him is pivotal to how these future generations will view the hero of the greenwood.

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**Presenter:** Erin Scherbring  
**Project Advisor:** Timna Wyckoff (Biology)  
**Title:** Lincomycin Soluble Mixture as a Control for Porcine Proliferated Enteropathies  
**Type of presentation (Oral / Poster):** P

***Abstract:***

Porcine Proliferated Enteritis, commonly referred to as Ileitis, is a disease affecting the intestinal tract of swine through the thickening of the mucosa and the formation of necrotic debris. Common symptoms of the disease are diarrhea, loss of appetite, weight loss, depression, and sluff necrosis. Ileitis is caused by a contagious bacterium known as *Lawsonia intracellularis*. The bacteria are passed through fecal shedding, and thus can lead to the infection of entire herds. Various treatments for the disease are frequently being tested in order to find an effective method of treatment. It is important to study the disease because of the effect it has on farms and the economy. One treatment that is thought to be effective is Lincomycin Soluble, a water soluble powder developed by Pharmacia. Lincomycin Soluble was studied in an experiment in 2001 to evaluate the effectiveness at levels of 125 mg/gal and 250mg/gal. The results show Linco 250 to reduce the number of abnormal abdominal, abnormal demeanor, and abnormal diarrhea days, as well as mortality versus the controlled groups. Linco 250 also increased the average daily weight gain over the controlled groups. Linco 125 reduced all variables except mortality and was less effective than Linco 250. Overall, Linco 250 and 125 are both effective treatments for Ileitis in swine.

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**Presenter:** Melissa Schweiss

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** A Sociological Perspective of Women's Self-Defense

**Type of presentation** (Oral / Poster): P

***Abstract:***

Informed by both the feminist theory and the labeling theory, this study examines the relationship between women's self-defense and gender roles. Gender roles are shaped by society and, therefore, have a significant impact on both sexes because these expectations influence their behaviors. Women have been taught to be passive and submissive, while men have been taught to be aggressive and dominating. Women in self-defense classes challenge the traditional gender role of passivity of women as they learn to be aggressive. To better understand this relationship, I surveyed 13 women enrolled in a self-defense course. I also conducted in-depth interviews with a scholar of gender roles and the director of the self-defense course. I expect the women in self-defense to report feeling more comfortable with aggressive behavior and, therefore, challenge the conventional gender roles. I also expect the subjects to describe feeling labeled. Statements may include being viewed as aggressive, different, or maybe even "unladylike." Feminist theory challenges traditional societal expectations by offering a different outlook on a specific situation, particularly by not oppressing either sex, especially women. This study will contribute to the study of feminism because these women in this study sample redefine how a "lady should act" and set new standards for future generations.

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**Presenter:** Geoffrey Sheagley

**Project Advisor:** Paula O'Loughlin (Political Science)

**Title:** From Jesse to Arnold: The Framing of America's Movie Star Governors

**Type of presentation** (Oral / Poster): P

***Abstract:***

A great deal of previous political science research indicates that the nature of media coverage in political campaigns can play a large role in making or breaking a candidate. Much less clear is whether this same research holds true for celebrity candidates. This paper uses content analysis of a Minnesota and California major newspaper over a 3 month period to examine the framing of Jesse Ventura and Arnold Schwarzenegger during their campaigns for governor in their respective states. The questions addressed by this study are three fold. First, what were the dominant frames used in the coverage of each of these candidates? Second, what if any relationship exists between the frames used by the media in their portrayal of these two candidates? Third, how do the frames media used to present these candidates compare with the ways previous literature indicates non-incumbents are portrayed?

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**Presenter:** Brandi Smith

**Project Advisor:** Katherine Benson (Psychology)

**Title:** Portrayals of Disability in Children's Magazines: Invisibility, Negative Stereotypes or Positive Inclusions?

**Type of presentation** (Oral / Poster): P

***Abstract:***

Do children's magazines portray people with disabilities in a positive light? Overall, literature has a profound effect on attitudes. Positive role models need to be available to children with disabilities as well as others. Goldman's (1975) research showed that portrayals of disabilities in children's literature had poor literary quality and negative representation of characters. The present study had three goals: To sample one children's magazine of excellent literary quality to see if people with disabilities are included in positive ways; to see if negative stereotyping of people with disabilities decreased after the Public Law 94-142 of 1975, the Equal Education for All Handicapped Children Act. The methods used analyzed all the stories, articles, poems, and features in a systematic sample of issues from Cricket: The Magazine for Children. Data were collected from every two years from 1976-1988, noting every mention, story, theme or illustration that dealt with disabilities including the number of pages. Each disability's mention was marked under categories, such as central or peripheral character and illustrations. In addition, inclusions were evaluated for stereotypes by using the taxonomy developed by Biklen & Bogdan (Carlisle, M.). My project focused on those years given the availability of the sample in Briggs' library. In addition, knowing the past concerns and exactly what contributed to improving awareness of disabilities in literature can guide readers today as well as further research to better solutions.

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**Presenter:** Katie Sullivan

**Project Advisor:** Peh Ng (Mathematics)

**Title:** The Minimum Sum Vertex Cover Problem

**Type of presentation** (Oral / Poster): P

***Abstract:***

Given a graph  $G=(V,E)$ , the goal of the minimum sum vertex cover problem (MSVC) is to find a bijection  $f$  from the vertex set  $V$  to  $\{1,2,\dots,|V|\}$  such that the sum over all edges of the weights  $w(i,j)$  of each edge is minimized, where  $w(i,j) = \min\{f(i), f(j)\}$ . Even though this problem is of a highly theoretical nature, MSCV has applications in designing manufacturing systems and computer science. It is known that for a general graph  $G$ , the MSVC problem is NP-Hard meaning that there is currently no efficient way to solve it and there probably never will be. However, in the case when  $G$  is connected and acyclic, i.e. a "tree", it is not known if the problem is NP-Hard nor is there an efficient way to solve it. We have exclusively studied trees in relation to finding a time efficient way to solve the MSVC problem, and will present our results on how to solve MSCV for a few classes of trees.

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**Presenters:** Melissa Swenson, Tim Trometer

**Project Advisor:** Jennifer Ropp (Chemistry)

**Title:** Method for Determining Correlation Times for Water/Salt Mixtures Using NMR

**Type of presentation** (Oral / Poster): P

***Abstract:***

The structure and properties of the liquid phase for many significant molecules, including water, are due to hydrogen bonding. Understanding the nature of hydrogen bonding is crucial to understanding the chemical and biological behavior of water. The study of hydrogen-bonded liquids is difficult because neither pure experimental nor pure theoretical methods give clear answers. Our research uses a hybrid method which combines experimental NMR measurements (chemical shifts and spin lattice relaxation times) and theoretical quantum mechanics calculations. From this approach the correlation time, which provides information about the dynamics and structure of the solution, can be determined. This hybrid method has been used mainly for pure liquid solutions; however, the water/salt mixtures we studied are essential to understand since water rarely exists in nature without some salt present. Our research measured correlation times to quantify the changes in water's hydrogen bonding that occur upon the addition of salt. The correlation time also serves as a benchmark for molecular dynamics simulations. The mixture of calcium chloride and water was studied as a function of concentration and temperature. Results indicate that the addition of salt has disrupted the hydrogen bond network of water and that water continues to move anisotropically.

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**Presenter:** Sarah Thompson

**Project Advisor:** J. Wendel Cox (History)

**Title:** A History of Animal Familiars: Pets, Owners, and the History of Pet Ownership

**Type of presentation** (Oral / Poster): O

***Abstract:***

Have you ever wondered how your beloved pet came to be attached to his current social position? The idea of a pet being a treasured member of the family is only a recent development that deserves consideration. The power that humans hold over animals has, however, not changed over time. Pets are often the victims of abuse and are easily disposed of upon inconvenience. Contradictions in the way humans behave towards pets may be due to human expression of both dominance and affection. A History of Pet Familiars will seek to examine the changing roles of pets and pet owners over time in various cultures. The power that humans have over their pets is tremendous. Owners decide what sorts of food to feed their animals, what role that animal will play in their life, and even when and where the animal will be allowed to relieve himself. With all this power, pets may still have their owners "right where they want them". Pets are supplied with all their necessities and rarely are required to earn their keep. They may be said to be social parasites. These relationships and more will be examined in A History of Pet Familiars. If you possibly think that the history of pets is irrelevant, you can not dispute the expanding, worldwide, multi-billion dollar pet industry, which provides proof that pets are a large part of society.

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**Presenters:** Jackie Thorvaldson, Rebecca Steffen  
**Project Advisor:** Jeffrey Ratliff-Crain (Psychology)  
**Title:** Body Satisfaction, Perspectives of Self, and Alcohol Use  
**Type of presentation** (Oral / Poster): P

***Abstract:***

The purpose of this study is to assess the extent to which perfectionism, self-consciousness, and social concerns predict the relationship between body dissatisfaction and problematic alcohol use. A second concern is to examine the effect that social influences have on body image and behaviors seen as desirable or undesirable (alcohol use). A third concern is to assess inter-correlations among the four variables (perfectionism, self-consciousness, body dissatisfaction, and problematic alcohol use) in order to get a better view of how these various perspectives of self, expectations of self, and behaviors may interrelate. A sample of approximately 120 male and female college students from the University of Minnesota, Morris completed the Body Esteem Scale, the Self-Consciousness Scale, and the Multidimensional Perfectionism Scale. In addition to these scales, those participants who had consumed some amount of alcohol within the past six months also completed the Drinking Motives Scale, the Alcohol Expectancy Questionnaire, and the Rutgers Alcohol Problem Index.

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**Presenter:** Phoebe Trepp  
**Project Advisor:** Jon Anderson (Statistics)  
**Title:** Evaluating Indicators of Malnourishment among Guatemalan Children  
**Type of presentation** (Oral / Poster): O

***Abstract:***

In the winter months of 2002-2003 I worked for a nutrition program in a rural Guatemalan community. I gathered data on over 100 children enrolled in the program, charted their growth progress, and recorded other indicators of protein deficient malnourishment. After returning to UMM, I analyzed the data to determine which indicators of malnourishment are more or less likely to predict the severity of malnourishment among children. The grade of malnourishment ranges from zero to three, with three being the most severe, and all rankings based off a child's age and height. Some of the other indicators that are reportedly connected to malnourishment are the swelling of the abdomen, change of texture and color of the hair, bitot spots in the eyes, increased frequency of colds and diarrhea, a sore tongue, and general apathy. My statistical analysis showed which indicators are the most reliable in determining malnourishment. They included age, arm-circumference, weight, height, the red-tint of hair and a decrease in appetite. Interestingly, some indicators that were intended to imply more severe malnourishment actually showed the opposite, as was the case with the swelling of the abdomen. My study also included an analysis of which purely visual indicators are helpful in determining the grade of malnourishment in children. The results of the analysis can be used by the nutrition program to more efficiently evaluate the malnourishment of children within the program, and will also serve as a guide in the selection of new program participants.

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**Presenter:** Margaret E. Uttke

**Project Advisor:** Anna Dronzek (History)

**Title:** "Herein May Be Seen Noble Chyvalrye" : Sir Thomas Malory's Morte Darthur and Fifteenth-Century Chivalric Ideals

**Type of presentation** (Oral / Poster): O

***Abstract:***

In 1470 Sir Thomas Malory synthesized centuries of storytelling to produce the great Arthurian work, Morte Darthur. This massive, tragic romance depicts some of the greatest acts of "humanyte, gentylnesse, and chyvalryes," according to its publisher William Caxton, and provides the modern scholar with a window into not only the medieval world of heroic knights, but also the fifteenth-century chivalric ideals to which English readers were exposed. Yet, exactly whose chivalric ideal does this work depict—Malory's? Caxton's? And how did the fifteenth-century English readership react to these fictional feats of arms? To answer these questions, this paper first examines the depiction of Malory's favorite knight, Sir Lancelot, in comparison to Malory's French sources. This reveals Malory's emphasis on a narrative created from character dialogue rather than narrator description, on more vivid language used for Lancelot's chivalric deeds and combat, and ultimately on Malory's choice in adventures to produce Lancelot the great chivalric knight rather than the lover of Guinevere. Next, this paper examines Caxton's editorial and publishing choices for possible effects they had on readership reception; it also compares the chivalry depicted in Malory's work with other chivalric manuals printed by Caxton to determine any marked preference or influence the publisher had on the chivalric ideal presented to English readers. Finally, this paper presents these findings in light of fifteenth-century realities of chivalry, as well as evidence gathered from a physical examination of one of the existing Malory manuscripts at the British Library.

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**Presenter:** Stephanie Vlaminc

**Project Advisor:** Jane Johnson; Nancy Carpenter (USDA Soils Lab; Chemistry)

**Title:** Development of a Method for Testing Nitrous Oxide Flux

**Type of presentation** (Oral / Poster): P

***Abstract:***

Nitrous oxide (N<sub>2</sub>O) is an important trace gas, which contributes to the greenhouse effect and is linked to the depletion of the stratospheric ozone layer. The atmospheric concentration of N<sub>2</sub>O is about one tenth the concentration of carbon dioxide (CO<sub>2</sub>), but its radiative force is at least 200 times that of CO<sub>2</sub>. Agriculture is a major contributor to the recent increase in atmospheric N<sub>2</sub>O, mainly through nitrogen fertilization. Nitrous oxide production is affected by temperature, water availability, aeration, nitrogen form and concentration. The experimental goal was to test a chamber design and sampling protocols (sample collection time) for collecting field samples of trace gases, including N<sub>2</sub>O. Chambers and collars were designed using polyvinylchloride. Vented chambers were notched to fit snugly over the collars (25.6 cm diameter by 7 cm height) and had a volume of 969 cm<sup>3</sup>. Gas samples were taken in small field plots that were either 1) not watered and not fertilized, 2) not watered but fertilized, 3) watered only and 4) watered and fertilized. The fertilizer had 3.75% ammonium phosphate, 5.2% nitrate and 11.05% urea nitrogen and was applied at a rate of 1 L of 200 mg N L<sup>-1</sup>. After fertilizing, N<sub>2</sub>O production was monitored by collecting gas every 15 minutes for 90 minutes from the chamber with a 3-mL polypropylene syringe through a stopcock on the chamber. The concentration of N<sub>2</sub>O was measured by GC-electron capture chromatography. Nitrous oxide flux is calculated by determining the change in concentration over time.

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**Presenter:** Aaron Volker

**Project Advisor:** Keith Brugger (Geology)

**Title:** The Establishment of a Detailed Survey Grid on the East Beckwith Rock Glacier in Colorado.

**Type of presentation** (Oral / Poster): P

***Abstract:***

Rock glaciers are lobate or tongue shaped bodies of frozen rock debris held together by either an ice core or ice in the interstitial spaces of the debris. Rock glaciers occur in environments where temperatures are cold enough to allow for the formation and persistence of permafrost. Movements of rock glaciers are the result of deforming internal ice and periods of stability and instability can be correlated to changing climates. By studying rock glacier movements, past climates can be interpreted. In June, 2003, a survey was conducted on the East Beckwith rock glacier in Gunnison County, Colorado using the differential global positioning system. 19 survey points were established, and 4 survey points established in 2002 were resurveyed. This collection of survey points will be used in future surveys to measure the activity of the rock glacier. Results from the 4 resurveyed points indicate horizontal changes ranging from  $1.7 \pm 2.1$  cm to  $9.7 \pm 2.3$  cm. These survey results indicate that the rock glacier is currently active. More surveys will be conducted in the future as part of a UMM study of the response of the East Beckwith rock glacier to changing climate.

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**Presenter:** Lynn Weyer

**Project Advisor:** Nancy Carpenter (Chemistry)

**Title:** The Addition of Acetyl Chloride to Acetylferrocene

**Type of presentation** (Oral / Poster): P

***Abstract:***

Acylferrocenes are used in the preparation of many catalysts and materials. Reactions using ferrocenes characteristically have high yields, are easy to purify, and have enantiomeric selectivity, which means that a reaction will proceed in a certain way when more than one product can form. The purpose of this research is to study the relative acidities of the hydrogen atoms contained in acetylferrocene. This is accomplished by removing one or more hydrogen atoms from acetylferrocene with the base lithium diisopropylamide. After the hydrogen atoms have been removed, acetyl chloride is added and attaches to acetylferrocene wherever a hydrogen atom has been taken off. Nuclear Magnetic Resonance and Infrared Spectrometry data are used to determine where the acetyl group(s) adds to acetylferrocene. Determining where and under what conditions an acetyl group adds to acetylferrocene will help to determine the relative acidity of the hydrogen atoms, information which will eventually aid researchers in using acetylferrocene to make new materials and catalysts.

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**Presenter:** Stephanie White

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** Violence against Women in Post-Apartheid South Africa: The Need for Gender Justice

**Type of presentation** (Oral / Poster): O

***Abstract:***

This paper examines the connections between gender inequalities and the political climates in urban and rural South Africa. Specifically, the paper addresses questions concerning the viability of gender equality and the implementation and enforcements of policies for women's rights. I argue that violence against black women in South Africa continues to prevail at astoundingly high rates in the new democratized society because policies promising gender equality have been ignored and women's issues have been deemed as low-priority. Therefore, a key theoretical argument for the democratization of South Africa is challenged: How can a democratic society ignore rights, and hence equality, for women, who make up approximately 52% of the South African population? To address this question, I analyze the roots of violence, particularly sexual violence, against black South African women during apartheid and post-apartheid. I argue that the three societal spheres of education, economy, and violence are inter-related; thus, the intersectionality of these spheres requires analysis in order to aptly answer why violence against women is occurring. The importance of studying gender inequality in South Africa goes beyond the argument that adequate rights should be ensured for the majority of the population. This research is important because South Africa, one of the most stable African countries, has higher incidences of rape than any other country in the world. Understanding how a democracy would allow such high rates of rape and making necessary adjustments to combat sexual violence is of benefit not only for South Africa, but also for other democratic societies that wish to disassociate high occurrences of sexual violence with democracy.

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**Presenter:** Cynthia S. Wingert

**Project Advisor:** Jennifer Rothchild (Sociology)

**Title:** Women in Catholicism: Can One be Catholic and Feminist?

**Type of presentation** (Oral / Poster): P

***Abstract:***

There are many contemporary issues that the Catholic Church does not condone. Many of these issues are considered feminist issues. Catholic women must react to what the Church teaches while considering what they personally believe. This paper looks at contemporary feminist issues such as ordination of women, birth control, and abortion rights from Catholic women's perspectives. Many Catholic women do not agree with what the Church says on these issues. This study focuses on what 16 women from a specific Catholic Church have to say about how they live as a Catholic and as a woman. These women consented to participate in an interview lasting from 30 to 60 minutes. They were asked to state and explain their opinions on many feminist issues relating to Catholic teachings. Most women do not disregard what the Church teaches, but many do not follow the Church's teachings completely. Some women find it necessary to adjust their individual take on Catholicism to match their personal beliefs. Some of those interviewed believe that the Catholic Church is out of touch with contemporary societal needs. I found that many of the women I interviewed do identify with some feminist ideals. Many of the women were not comfortable labeling themselves as feminists, but most were willing to admit that they shared many goals with feminist movements. This research is important because it shows that there can be a compromise between feminist thought and Catholic teachings.

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**Presenter:** Nicole M. Zanin

**Project Advisor:** Gretchen Murphy (English)

**Title:** Images of Imperialism: Turn of the Twentieth Century Literary Trends Across the Americas

**Type of presentation** (Oral / Poster): O

***Abstract:***

This literary analysis research presentation seeks to compare turn of the twentieth century Latin American and United States literature in relation to the Spanish-American War and U.S. imperialism in general. I will present an evaluation of the role of gender in Latin American and U.S. representations of the Spanish-American War. Also, because U.S. imperialism complicates the idea of “domestic” and “foreign” literature, the presentation seeks to acknowledge a cross-disciplinary approach to the study of American literature.

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**Presenters:** Chad Zeman, Doug Moll

**Project Advisor:** Arne Kildegaard (Economics)

**Title:** Profit Maximization of the Foreign Exchange Market Using Neural Network Prediction Techniques

**Type of presentation** (Oral / Poster): O

***Abstract:***

Our research examines methods to profit from short term fluctuations in the foreign exchange market using time series regression neural networks to predict future exchange rates. We want to evaluate whether or not the margin between this period’s exchange rate and next period’s exchange rate proves profitable. The profitability is measured against the cost of borrowing, exchanging the money to a foreign currency, and exchanging back at the end of the period. To do this evaluation, we first develop an optimized neural network using historical currency exchange data. We then use this network to predict the exchange rate one period out repeatedly for a year and plug it into our profitability model.