UMM Undergraduate Research Symposium

2005

Featuring student research and scholarship from across the campus

Abstracts
Theatrical Presentation
Science Auditorium
3:00 pm

Presenters: Alyssa Herzog, Victoria Pyan
Project Advisor: Bremer (Theatre)
Title: The Embryos and the Process of New Play Development
Type of presentation (Oral / Poster): Performance

Abstract:
"The Embryos and the Process of New Play Development" presents the culmination of an artistic collaboration between a playwright, Alyssa Herzog, and a director, Victoria Pyan. The first portion of the presentation involves an analysis of the collaboration between the playwright and director, including but not limited to the craft of playwrighting, the process of workshopping and revising the script, and special considerations a director employs when developing a new play. A performance of "Snow Angels" will then follow. This 10-minute play is being produced as part of an evening of theatrical works entitled "The Embryos," slated for production the last week of the Spring 2005 semester. The play explores themes of mother-daughter relationships and cycles of behavior and experience, particularly pregnancy and abortion. The cast of "Snow Angels" is Maggie Alexander as Lauren (mother), Megan Wrobleski as Mom, and Asha Agar as Emily (daughter).

Oral Presentations
3:30 – 5:30 pm

Presenters: John Alden,
Project Advisor: O'Loughlin (Political Science)
Title: The Potential for Democracy in Iran
Type of presentation (Oral / Poster): Oral

Abstract:
This paper asks ‘what is the potential for democracy in Iran?’ The paper’s aim is to present an understanding of the Iran’s potential for democracy on multiple levels, relying on Iran’s history, primarily in politics, but also theology, philosophy, and culture. Its analysis begins by delving deeply into the history of Iran, drawing out trends towards and oppositions to democracy. This history is followed by an examination of the potential for Iranian democratization on applied, theoretical and epistemological levels.

Presenters: Sandra Castro Garcia,
Project Advisor: Lawrence (Economics)
Title: Government Intervention and the Informal Sector: A Case Study of Guayaquil, Ecuador
Type of presentation (Oral / Poster): Oral

Abstract:
In recent decades, development economists have not only acknowledged the existence of what is now known as the “urban informal sector”, but also emphasized on its impact on migration, GDP and urban poverty. An important question that economists have about this sector is: how should governments in developing countries react to a growing informal sector? I will try to answer this question using a specific case, the city of Guayaquil, Ecuador. In 1999, the City Council of Guayaquil established policies to organize street vendors. As part of the scheme of organization, the City Council used local tax money to build markets for the vendors in different parts of the city. Vendors in these markets must follow the rules and regulations of the City Council and pay $30 every three months for using them. Based on a survey filled by approximately 100 vendors in the City Council markets, I will focus on answering these questions: How has this intervention affected the socio-economic status of vendors? Who are the people that participate in the activities in the markets? Is there underemployment among the vendors in these markets? How are wages determined in the markets? Has the creation of these markets increased the influx of rural workers to Guayaquil?
Madcap Values: A Little Insanity Goes a Long Way

Abstract:
The city comedies of Early Modern London are often populated with a cast stock characters through which a feel for the entire city is achieved. Often included among a cast of stock characters in these city comedies is a sort of madcap fellow (or woman in the case of The Roaring Girl). These madcap characters are able to permeate social, economic, legal, and even gender boundaries without consequence. Certain patterns emerge surrounding these madcap characters, which I examine in Ben Jonson’s Bartholomew Fair, Thomas Dekker’s Shoemaker’s Holiday, and Dekker and Thomas Middleton’s The Roaring Girl. Each play has two madcap figures, one of the lower class and one of the upper class. However, each madcap character appears to have something of the other class in them as well. Those belonging purely to one class or the other are not viewed as well as those of some mixing. Each play employs its madcap characters towards different ends. Yet, each play uses these madcap characters for different ends, but in the end each play tries to contain the effects of the madcap characters (the permeation of boundaries). This attempt at containing the permeation of boundaries appears to also be an attempt at marginalizing the pattern of increasing social mobility in Early Modern London; the attempt hopes to render the permeation small and relatively harmless. However, the containment fails and the permeation continues in the plays as in real life.

Korean Adoptees: Developing A New Perspective Through the Exploration of Immigrant Experiences and Existing Literature

Abstract:
With inter-country adoption on the rise, adoptees constitute a significant population in society. Statistics from the Korean Ministry of Health and Welfare report that between 1953 and 2001, approximately 150,000 international adoptions took place. In Minnesota, there are more than 10,000 Korean adoptees. During this period, two-thirds of Korean adoptees were placed in the United States, constituting 10% of the entire Korean-American population. The adoption of Korean children is also the most frequent form in transracial adoption in the United States. Although there is not an abundance of adoption research, it is most commonly conducted in psychology, psychiatry, and social work, compared to the limited literature and research conducted within sociology. Although psychology, psychiatry, and social work provide important perspectives in adoption studies, the lack of a sociological perspective prevents the exploration of social factors and the influences such factors have on the adopted Korean population. Utilizing a sociological approach, I will conduct a comparative study of cultural identity formation of Korean adoptees and Korean immigrants in relation to the racism and stereotypes they face as Asian Americans. Specifically, this research compares the Korean immigrant experience to the adopted Korean experience through secondary data analysis and problematizing existing literature on Korean adoptees, and by examining racism and stereotypes faced by Korean immigrants in order to develop a more comprehensive understanding of the adopted Korean population. I will utilize the theoretical perspectives of multicultural feminism, standpoint feminism, and symbolic interactionism to guide my research and intend to provide a new perspective on Korean adoptees and their cultural identity formation.
**Presenters:** Marcques J. Domask,  
**Project Advisor:** Garavaso (Philosophy)  
**Title:** Reason, Skeptics, and Paradox  
**Type of presentation (Oral / Poster):** O  

**Abstract:**
Reason is the foundation of philosophy. We use it to develop arguments and critique the arguments of others. However, reason is a human faculty. This means that, like other powers humans possess, it is imperfect. This imperfection means that reason sometimes leads us to wrong answers; reason can be applied incorrectly. Therefore, there is legitimate reason to doubt reason. Strong skeptics claim that because of this doubt, reason is untrustworthy. Furthermore, they construct scenarios where not only is our reason sometimes faulty, but constantly deceived by malicious outside forces. These arguments lead skeptics to either cast reason aside or greatly diminish our trust in it. There have been many refutations of the skeptics claims made, attacking their basic premises and the utility of their argument. There is a different approach available. The skeptic's conclusion tells us that reason is doubtful and sure not be relied on. However, the argumentation they use depends on reason. If the skeptics do not forward a reasoned argument, philosophers have no reason to accept it. If the skeptics maintain their conclusion, then reason cannot be trusted. This means that their argument no longer has a basis and may be discarded. However, once their argument is discarded, reason is acceptable again, and the skeptics may again attack our reason. This creates a paradox. This paradox is hard to solve, and raises questions on how philosophy depends on reason.

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**Presenters:** Anna Harrington,  
**Project Advisor:** Buchanon (French)  
**Title:** French and Francophone Rap: Music and Lyrics as Instruments of Cultural Critique  
**Type of presentation (Oral / Poster):** O  

**Abstract:**
France is a very diverse country in its different regions, its ethnicities, its religions and its languages. Yet, despite France’s cultural diversity, the French people and the world at large have continued to perceive French culture as unified. France’s ideals of unification are seen throughout its history in the French Revolution, through the foundations of the Republic and in the colonization of African countries. Music, as an artistic representation, is integral to voicing the nation’s identity, but is also instrumental in critiquing it. Popular musicians today are important in shaping French identity. They are especially prominent in rap and hip-hop. Rap artists/groups such as MC Solaar, Suprême NTM and IAM convey very powerful, political messages in their music. With France’s increasing diversities, French rappers’ songs confront issues such as discrimination, racism, cultural alienation, and classism. My research will underline how French musicians are creating a new, unified culture that values and incorporates greater diversity.

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**Presenters:** Laura Hildreth,  
**Project Advisor:** Lawrence (Economics)  
**Title:** Economics of Terrorism: Determinants of Terrorism  
**Type of presentation (Oral / Poster):** O  

**Abstract:**
Though recent claims by politicians and world leaders have cited the causes of terrorism to be linked to poverty and lack of education, research has shown that these factors may be minimal in their influence on determining terrorism. In order to understand the causes of terrorism, factors that are believed to contribute have typically been examined in the context of psychology, sociology, or political science, while economic methodology is seldom used. However, through the use of economic models of consumer choice, cost benefit analysis, and supply and demand, and data analysis, it is possible to shed more light on the causes of terrorism. The use of economic framework shows that the effect of poverty, educational level and financial incentives is minimal while the effect of gender, foreign policy, and governmental policies is quite large. Economic framework also helps explain the role that religious ideology, urbanization, globalization, and civil liberties play in terrorism. Though no one factor can explain what causes terrorism, through economic modeling it is possible to explain how different factors interact and influence/lead to terrorism.
**Presenters:** Becky Iverson,  
**Project Advisor:** Aronson (Spanish)  
**Title:** Cervantes' Unhappy Ending: Who's to blame?  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
Miguel de Cervantes' Exemplary Novel “El celoso extremeño” (“The jealous man from Extremadura”) is his only exemplary novel with an unhappy, negative ending. Most of his short stories end in marriage, but this one ends with widowhood. A deviation from the norm this strong raises several questions, but I will address only one: Who does Cervantes think is at fault for the unhappy ending, the young, naive wife, or the jealous, overprotective husband? For comparison, I will look at the essay “La perfecta casada” (“The perfect wife”) written by the friar Luis de Leon, published in 1583, thirty years before Cervantes' text.

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**Presenters:** Jackie Koppe,  
**Project Advisor:** Rojjanaprapayon (Speech Communication)  
**Title:** Inspector Lee: A High-Context Character in a Low-Context World? A Critical Analysis of the Movie Rush Hour  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
This paper examines how Jackie Chan's character "Inspector Lee," within the movie Rush Hour, has been presented as a character of a high-context culture in the U.S.A, a low-context culture. In order to answer the research question "In what ways does Inspector Lee show a high-context character in the movie Rush Hour?", five major aspects of high-context cultures (Kim, D., Pan Y., & Park, H., 1998) are discussed and employed to map out Inspector Lee's high-context quality: (1) social orientation, (2) commitment, (3) responsibility, (4) confrontation, and (5) communication succinctness. Also, Owen's (1984) techniques for interpretive themes in relational communication are used as a research tool. The findings include themes of: confrontation, communication, social-orientation, responsibility, and expressions of emotion. Ultimately these themes conclude that Lee shows a high-context character by partaking in a verbal exchange, needing detailed explanation of a particular subject, introducing himself to another person before receiving a proper introduction, not following the orders of a higher authority, and finally showing facial expressions to match his verbal expressions. In conclusion, Lee was found to fall short of these definitions as a high-context character. The implications include (1) the movie was created to appeal to Western audiences and would be lost on the audience if the movie were in an Eastern perspective, (2) Although being from a high-context culture, one may have to act in a low-context manner in order to fit in with the surrounding culture--cultural adaptation, and (3) the researcher is not from a high-context culture, so the results are based on the etic perspective--the outgroup's view.

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**Presenters:** Katie Kuechenmeister,  
**Project Advisor:** Bezanson (Speech Communication)  
**Title:** Situations and Cluster Theory: The Useful Rhetorical Tactics of One Influential Suffragette  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
Emmeline Pankhurst was a feisty advocate for women's suffrage. She empowered a generation of women to use militant methods in order to achieve the basic human right to vote. As a well-known English suffragette, Pankhurst spoke in the United States as well as in England. This research used Lloyd Bitzer's Rhetorical Situation and Burklean Cluster Theory to analyze and compare two speeches given by Mrs. Pankhurst, one in England and one in Connecticut delivered within one year of each other. Her "Address at Hartford" was given in 1913, and "Victory is Assured" was given at Camden Hill Square in 1914. This analysis looked at similarities and differences between Mrs. Pankhurst's speeches that proved effective across geographic location. The obstacles Pankhurst faced in the two different settings of her speeches was also discussed as part of this research. Implications on rhetorical theory were addressed, as well.
Presenters: Justin Lautenshlager, 
Project Advisor: Wojtaszek (Spanish) 
Title: Post-Franco Spanish Cinema: The Portrayal(s) of Gender in Almodóvar’s "All About My Mother"
Type of presentation (Oral / Poster): O

Abstract:
This research focuses on Spanish Cinema in the Post-Franco era. According to Contempory Spanish Cinema by Jordan Barry and Rikki Morgan-Tamosunas, “Francoism operated on the basis of highly traditional and retrograde concepts of gender and sexuality. This led to the conflation of sexual and political repression in the cultural life of the dictatorship.” In the Post-Franco era the representation of gender and sexuality changed drastically. I chose to look specifically for innovative portrayals of gender in Cinema and, specifically in films directed by Pedro Almodóvar. His films are able to critique politics and society with little regard for public reaction in a way that was interesting for me. It was my belief that movies shaped society’s understanding of gender more than any form of media. After conducting my research, I was surprised by the positive images of transsexuals in the movies. I expected that after 40yrs of sexual repression that the images of gender would be based on old traditions. My research was based on my viewing of the film All About My Mother (1999) in light of the analysis of gender roles outlined in the study by Jordan and Morgan-Tamosunas.

Presenters: Wayne Manselle, Matt Carlson; Chris Heuer 
Project Advisor: McPhee (Computer Science) 
Title: Niching in Evolutionary Computation 
Type of presentation (Oral / Poster): O

Abstract:
Evolutionary Computation is a method of finding solutions to a given problem that simulates natural selection. We start with a randomly generated population of solutions, and choose the better solutions to recombine and form new ones. Often the process causes new solutions to converge, leaving the population with little diversity. This is undesirable because we'd like to explore alternative, potentially better, solutions. For example, in minimizing two-variable equations, a front exists where each variable is minimized, given the value of the other. Convergence means that all of the best solutions found are near one or a few points on the front. In order to avoid convergence we have implemented a version of evolutionary computation that adds a penalty to each child, based on the genetic similarity of its parents. Individuals with a lower penalty are given a higher chance to reproduce; this is called niching. We will present the results of our empirical study comparing diversity in populations with and without our niching mechanism implemented. This (hopefully) shows that population diversity can be maintained while still finding a good solution with our method.

Presenters: Ben Mathews, 
Project Advisor: Bezanson (Speech Communication) 
Title: Right vs. Reality: Discovering Paradox Between Constitutional Right and Communicative Reality in Wooley v. Maynard 
Type of presentation (Oral / Poster): O

Abstract:
Wooley v Maynard is a seemingly insignificant case with a very important ruling. Wooley solidified a loose precedent line that provides the people of this nation with the right to say NO to the government’s forced ideological conformity. My essay considers the facts of the case, the miracle of its majority decision despite a paper-thin precedent line, the controversial decision, and its contribution to subsequent cases. The final section of the essay explains an inherent paradox between the ruling in Wooley and our communicative reality. Legally, Wooley gave us the right not to speak; theoretically, Wooley gave us the right not to communicate. However, because of nonverbal communication, meanings in people and unintentional communication we cannot stop communicating. In essence, Wooley gave us the Constitutional right to do that which we are incapable.
**Presenters:** Thomas Morton,  
**Project Advisor:** Rojjanaprapayon (Speech Communication)  
**Title:** An Analysis of Subway Television Commercial Discourse  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
An interpretive inquiry of six selected Subway TV commercials to find the prominent themes related to health in verbal and visual discourse was conducted. Social construction of reality theory was employed to investigate how the intensity of the prominent themes can transcend from television commercials into the minds of the audience through linguistic interpretation within the reality of everyday life. Findings include two prominent themes, relating to health, emerging from the commercials analyzed: (1) lifestyle and (2) diet. In conclusion, verbal and visual discourse was viewed by the audience and the discourse became persuasive to the audience through linguistic interpretation; implications include a public awareness of the persuasive capabilities of commercial discourse and how future research could increase further awareness and understanding of the influence commercial discourse has on the audience.

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**Presenters:** Bobbie Olson,  
**Project Advisor:** Chollet (Anthropology)  
**Title:** Curanderas, Brujerias y Mala Suerte: OH MY!  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
From January 9 until May 6 of 2004 I participated in an Anthropological Field School offered through the Anthropology Discipline at the University of Minnesota, Morris. During that time I explored the effects of the closing of the San Sebastián Sugar Mill on the cane growers in and around the village of Los Angeles, Michoacán, Mexico. My interest in Psychological and Medical Anthropology lead me to investigate these effects in reference to the mental health of the cane-growing population and their families. Using the list of ejidatarios, or rural landholders in the community, I conducted twenty-three interviews, most of which were conducted with women. This paper describes, through participant observation, formal interviews, and conversations, the types of illnesses most common to the area, the interaction between the patient and the curandera/o (healer) and how this relationship is beneficial to the patient. The information collected will be of useful to those within the medical profession who wish to understand these beliefs in order to better diagnose and treat patients.

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**Presenters:** Jon Quarfoth, Andy Korth  
**Project Advisor:** D. Lopez (Computer Science)  
**Title:** Task Allocation Algorithms with Communication Costs Considered  
**Type of presentation (Oral / Poster):** O  

**Abstract:**  
Our research goal is to design and implement approximation algorithms for the parallel task scheduling problem. This is an NP-hard problem which means that to find an optimal solution you may have to try all combinations of task schedules. Trying all combinations takes an unrealistic amount of time. Task schedules for jobs with large amounts of tasks can take years to compute an optimal solution. Therefore, we use approximate solutions to the scheduling problems which give near-optimal solutions in minutes or seconds rather than years. Parallel task scheduling algorithms decide how to partition a set of tasks among many processors in order to complete the tasks in a shorter amount of time. Our algorithms take into consideration tasks which may depend on each other. For instance, Task A may have to complete its execution and communicate information to Task B before Task B can begin executing. We use precedence graphs to model this dependence. These precedence graphs are made up of nodes and directed edges. The nodes model tasks, and the edges model task dependence. Our earlier algorithms did not take variable communication between tasks into account. A fixed communication value was assigned to an entire graph. Our new algorithms are more practical because they use a variable communication time between tasks. This adds an important new dimension to our research and increases the value of our model in real-life scheduling tasks.
Presenters: Dave Robbin,
Project Advisor: Kildegaard (Economics)
Title: Global Warming: An Event Study
Type of presentation (Oral / Poster): O

Abstract:
Global warming is the upward trend in average global temperatures and is an environmental concern that has received international attention. The causes of global warming are not fully understood, but evidence so far suggests that it is linked to emissions of greenhouse gases, primarily CO2. CO2 is released when fossil fuels are burned and has been the focus of policy initiatives to stall global warming. The consequences of global warming are also uncertain, but they could potentially be dire: uneven changes in average rainfall (causing droughts and floods), rising sea levels, and greater severity of weather patterns (not only would there be more hurricanes, but they would be, on average, more powerful). "Global warming is a calamity, the effects of which will be second only to nuclear war." That line, spoken by Annette Bening in The American President would surely excite ordinary people. But what about investors? One area in which current research does not focus is on the effects of global warming on the prices of assets, specifically the stock prices of firms involved in emitting greenhouse gases (mainly coal- and oil-fired power plant operators and their suppliers, heavy industry, and automakers). Using times-series, firm-level, stock-price data from the Center for Research in Security Prices (CRSP), I use an event study framework to see if abnormal returns result from announcements relating to policy announcements combating global warming.

Presenters: Aaron Sharratt,
Project Advisor: Chollett (Anthropology)
Title: Exchange and the Environment: Transitions in a Mexican Ejido
Type of presentation (Oral / Poster): O

Abstract:
Exchange and the Environment examines awareness of environmental destruction caused by farming practice in the Ejido Gildardo Magaña, Los Angeles, Michoacán, Mexico through an investigation of individual knowledge and agricultural practice. Twenty three ejidatarios (small-holding agrarian reform farmers), representing half the possible sample were interviewed. The study took advantage of structured and unstructured interviews with ejidatarios and experts (agronomists, union representatives, etc.), a focus group, and participant observation. This research was conducted while I was a participant in the Anthropology Field School through UMM. The influx of foreign produce companies is rapidly changing the San Sebastián zone, where Los Angeles is located, from traditional sugar cane production. Export produce cultivation is providing economic alternatives to the dwindling profits gained through sugar cane. The influx of these companies has spawned environmental awareness to the point that agricultural practices realize foreign food standards. However, the increasing quantity and frequency of pesticide application required by export fruit cultivation is harming an already fragile land and wreaking havoc on human well-being. A lack of information and education is resulting in the uncontrolled use of agrochemicals by many ejidatarios, and to a severe destruction of the soil and water supplies. Agricultural practices promoting conservation, reforestation, and sustainable management are rarely discussed. The uninhibited application of chemicals such as Parathion, Endulsulfan, Marathion, and Furudan, which are heavily regulated or banned in “modernized” countries but readily available in Mexico, is reason for concern. With the desire to stretch the land to its limits for economic gains, ecological and safety concerns are not considered by the majority of ejidatarios.
**Presenters:** Alycen Sletto,  
**Project Advisor:** Dabbs (Art History)  
**Title:** A Study of Van Dyck's Creative Process as Evidenced in Three Versions of the Betrayal of Christ  
**Type of presentation:** Oral / Poster: O

**Abstract:**  
The 17th century Flemish artist, Anthony Van Dyck, painted the Betrayal of Christ (c1618-20), now located at the Minneapolis Institute of Art, as a study for a larger version of the same subject. Today we know of two other studies for the Betrayal of Christ, all painted around the same time. The sequence in which the three versions were executed has been a topic of some debate among art historians, although a speculative order has been accepted. I propose that another possible order is much truer to the painting process, in which multiple studies would have been worked through before doing a final large canvas painting in full detail. Through a close stylistic and technical analysis of the paintings I will show that the Madrid version, in which Van Dyck paid much attention to fine detail and closely reiterated the composition of the MIA version, was more likely done as the final, rather than the second, version. The loose paint application, implying immediacy to laying down his thoughts, and drastic differences in composition of the MIA and Bristol versions, suggests that both paintings were done prior to the large Madrid version. In addition, it is much more likely that Van Dyck would have painted two studies with two different compositions, like the MIA and the Bristol, before selecting elements from these for his final, detailed composition. The correct sequencing of these paintings gives art historians insight into this Flemish master’s mind and allows for a better understanding of Van Dyck’s personal painting process.

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**Presenters:** Rebecca A. Steffen,  
**Project Advisor:** Minton (English)  
**Title:** 10 Things I Hate About You: The demotion of the Shrew to a Pop-Feminist Teen Idol  
**Type of presentation:** Oral / Poster: O

**Abstract:**  
William Shakespeare is the most famous British playwright-his works often re-written for various stage and film performances, including movies geared toward 14 year old girls. However, Shakespeare has also been called misogynistic on more than one occasion. It is no surprise that he is given that label after writing plays like The Taming of the Shrew, the story of two sisters-Kate and Bianca-and the courtship of these two women. Although the play is by nature misogynistic, Shakespeare may have been ahead of his time, dropping hints of feminism through the shrew called Kate. But what happens when this play is re-written into a teen-pop film like 10 Things I Hate About You? This study explores the Shakespeare's character of the shrew, Kate, using feminist theories, and what happens to her, and the play when she is re-created as Kat, a high school "heinous bitch" in the teen movie 10 Things I Hate About You. Kate, once a shrew who refused to be inferior to men, is re-written as Kat, a high school senior who rages against the machine by tearing down prom posters and crusading for "better lunch meat".

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**Presenters:** Kathryn Sullivan,  
**Project Advisor:** Ng (Math)  
**Title:** Modeling Nutrient Yield in the Chesapeake Bay  
**Type of presentation:** Oral / Poster: O

**Abstract:**  
The Chesapeake Bay has been a focus of public interest and research for about 25 years. This is because of its declining health and a high local dependence on the bay for fishing and other activities. Agriculture and development in the Chesapeake Bay drainage have increased the levels of nitrogen and phosphorus in the water, causing adverse effects to the ecosystem. For instance, excess nitrogen and phosphorus increases algae growth which blocks sunlight and consumes the oxygen trapped in the water, which in turn suffocates fish in the bay. To evaluate the effects of management practices, several organizations have created different mathematical and spatial models that predict the amount of nitrogen and phosphorus in the water based on landscape characteristics. Most of these models predict nitrogen levels fairly accurately but are significantly less successful at predicting phosphorus yield. In this research project, we examined a potential correlation between model results for the Soil Conservation Service Curve Numbers (CN) and observed levels of total suspended solids (TSS), total phosphorus (TP), and total Nitrogen yields in the water. The curve numbers are used to predict flow based on rainfall amount and is already incorporated into several of the existing watershed models. We will show how applicable this approach is to predicting effects on water quality in the Chesapeake Bay.
**Presenters:** Abby Von Arx,  
**Project Advisor:** Ericksen (English)  
**Title:** The Elves as a Connection to the Past in J.R.R. Tolkien’s The Lord of the Rings  
**Type of presentation** (Oral / Poster): O

**Abstract:**  
In his fiction, J.R.R. Tolkien constructs selected episodes from a particular age of a world with an already tumultuous and deep past. The novels excerpt an entire engineered universe, building a history and referencing a broader context from one era to the next. Indeed, in both Tolkien's fictional and scholarly works, past-ness is a central concern. His construction of the Elves in The Lord of the Rings demonstrates this particularly well, for in them Tolkien repeatedly links main characters, and the audience, to a larger past and the world responsible for that past. The Elves build, enrich, and inform the narrative historically—without becoming central characters themselves. The most significant Elves both in terms of moving the plot forward and connecting to and illuminating the past are Master Elrond of Rivendell and Lady Galadriel of Lothlorien. Both they and their worlds are shaped from a long line of existing texts that Tolkien used to build his stories, refashioning the old to fit new, personal specifications, to create a coherent narrative history where none survives. Works from Germanic, specifically Norse, mythology (particularly the Gylfaginning found in the Prose Edda), from Celtic myth (expressly The Voyage of Bran), and from medieval romance (such as Sir Orfeo and the lays of Marie de France) all lend material to the development of Tolkien’s Elvin edifice. His Elves, and his fiction, thus fit into and expand upon existing literary tradition, and, at the same time, gain a degree of historical, literary legitimacy and reference.

**Presenters:** Trevor Wagner,  
**Project Advisor:** Borchardt (German)  
**Title:** A Matrix of the Romantic in the Postmodern  
**Type of presentation** (Oral / Poster): O

**Abstract:**  
The Romantic (universally, in Europe and America) and the Postmodern share similar goals, perhaps the best-known being the resistance to reason and objective truth, favoring the subjective, the esoteric, and even the superstitious. Both take great interest in de-centering, a major topic for such German philosophers as Fichte and Hegel and for such postmodern thinkers as Derrida and Lyotard. The analysis and research will examine the influence of the German Romantics on early and contemporary works of the Postmodern—mainly the film The Matrix (1999) and Thomas Pynchon's The Crying of Lot 49 (1965)—concluding that artists of the Postmodern, earlier on and more recently, have borrowed formally from German Romanticism by use of specific imageries and demonstration of its central philosophies.
**Poster Presentations**

**Oyate Hall, Student Center**

5:45 – 7:00 pm

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**Presenters:** Heidi Anderson,
**Project Advisor:** Cotter (Geology)
**Title:** Glacial Scours of the Curituba Formation: Occurrence, Characteristics, and Origin
**Type of presentation (Oral / Poster):** P

**Abstract:**
Unique landforms of the Curituba Formation (late Paleozoic, 300 million years before present) presumed to be glacial scours (Rocha-Campos et al 2004) were located, described and measured. The Curituba Formation is exposed in the Santa Brígida Graben in the Sergipe - Alagoas basin. Outcrops studied are located near Lagoa Seca, Bahia State and Curituba, Sergipe State, Brazil. The outcrops studied consist predominantly of a sandy diamict (glacially derived) containing sparse clasts. At many outcrops there are abundant burms and striations, landforms that provide evidence of iceberg calving and/or a nearby-grounded glacier. The striations and burms (which also contain striations) are up to 30m in length, 3.5m wide and 40cm deep and are consistently oriented approx. N40oW. The morphology of the features analyzed is very consistent with descriptions of iceberg scours in the literature. However, the consistency of the N40oW orientation is somewhat problematic. Striae of iceberg origin should vary more and there is very little evidence for grounded ice nearby (Rocha-Campos et al 2004). Additionally, there appears to be six different stratigraphic horizons of these consistently oriented striations. Characteristics, origin and possible explanations of these unique features will be presented. Research for this study was funded by grants from the N.S.F.-PAESMEM Program (NSF-HRD 0003111) and the University of Minnesota - Undergraduate Research Opportunities Program (UROP).

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**Presenters:** Taylor Anderson,
**Project Advisor:** Rothchild (Sociology)
**Title:** Life Histories of Women on Dairy Farms
**Type of presentation (Oral / Poster):** P

**Abstract:**
Social institutions such as education, family and economy reinforce the existing gendered social order by transmitting representations and beliefs about ‘natural’ and ‘appropriate’ gender roles. This research will examine the ways in which gender is socially constructed, reinforced, and maintained through experiences of families, education and work. Specifically, this research will examine central Minnesota. Life histories from eight to fifteen women in our sample will be examined, while paying attention to how each woman has navigated her way through the institutions of family, education, and the economy of dairy farming. Three objectives will serve as the touchstones for this research. Through life history interviews I intend to examine the development of these women's gendered identities and to investigate gendered behavior and interaction in dairy farm families. Utilizing these objectives will guide my research to understand the consequences of socially constructed gender constraints faced by women dairy farmers.

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**Presenters:** Isaiah Brokenleg,
**Project Advisor:** Pelletier (Sociology)
**Title:** Structural Violence and Child Prostitution in Southeast Asia
**Type of presentation (Oral / Poster):** P

**Abstract:**
Within the vast Asian sex industry lays a multibillion dollar sub-industry closely linked to tourism: child prostitution. The Asian child prostitution industry hurts many, benefits few, and is supported and perpetuated by those in power, including Western governments. This paper explores the culture of prostitution in Southeast Asia, with a particular focus on the inner workings of child prostitution. I describe some of the medical implications of child prostitution for the children and their clients, implications which may include HIV/AIDS as well as physical and emotional trauma. I apply Paul Farmer and other theoreticians’ concept of structural violence to analyze the phenomena of Southeast Asian child prostitution’s relationship to the governments that support it (Asian, American, and other Western governments) and to others in power who benefit from this sex trade, as well as commenting on the violence done to family relationships. Also of interest is the role of tourism in Southeast Asian child prostitution, and the ineffective lip service paid to attempts to regulate the industry. My paper is informed by a study of literature including statistical data.
**Presenters:** Bill Cox, Project Advisor: McIntosh (Physics)  
**Title:** Using Autocorrelation Functions to Examine the Pumping of Silicon Monoxide Masers  
**Type of presentation (Oral / Poster):** P

**Abstract:**
A current theory suggests that the predominant mechanism pumping stellar silicon monoxide masers is periodic shocks through the region in which the masers originate. To examine this theory, we have measured the widths of maser features in spectra taken from the long period variable stars Mira and R Cassiopeia. The width of a maser feature is affected by the velocity field present in the originating region, so the passage of the stellar shocks may be apparent due to a disruption of the velocity field and a discontinuity in the maser widths. In our spectra, the maser features are blended making it impossible to determine the width of an individual feature. Instead, an autocorrelation function is generated from each spectrum. An autocorrelation function measures the correlation between points a given width apart in the spectrum. Thus, the autocorrelation function can be used to characterize the widths of all features in the spectrum. Our data provide no evidence that would support the theory that stellar shocks are the predominant pumping mechanism.

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**Presenters:** Carolyn Draper, Elizabeth Savelkoul  
**Project Advisor:** T. Wyckoff (Biology)  
**Title:** Comparison of the Antibiotic Resistance of Staphylococcus Isolates from Milk Samples Obtained on Conventional and Organic Dairies in West-Central Minnesota  
**Type of presentation (Oral / Poster):** P

**Abstract:**
Heavy use of antibiotics has been associated with increasingly prevalent antibiotic-resistant strains of bacteria in human health settings. Staphylococcus aureus is a common pathogen that is responsible for numerous problems in agriculture and human health. Dairy farms must combat Staphylococcus to control outbreaks of mastitis, an inflammation of the udder that reduces milk yield and quality. Conventional dairies frequently utilize antibiotics, while organic dairies apply alternative, non-antibiotic treatments. The current study sought to compare the resistance of Staphylococcus isolated from organic and conventional milk samples. Standard techniques were used to culture milk samples and isolate Staphylococcus species. These samples were then identified as coagulase-positive (CPS) or coagulase-negative Staphylococcus (CNS). The CPS samples were determined to be S. aureus or other related CPS species. All Staphylococcus cultures were then exposed to eight antibiotics (penicillin, ampicillin, oxacillin, erythromycin, tetracycline, vancomycin, novobiocin, and cephalothin) to determine susceptibility. Staphylococcus aureus was isolated from only organic farms (see accompanying poster by L. Sullivan and A. Bykowski.) Of the bacteria from organic farms, S. aureus was more susceptible to antibiotics than CNS species. No significant difference was found between the resistances of organic and conventional CNS species. The data suggest that the different patterns of antibiotic use on organic and conventional dairies are not currently resulting in a significant change in resistance of CNS species. The absence of the pathogenic S. aureus in conventional farms may be explained by a greater susceptibility to antibiotics than the environmental CNS.

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**Presenters:** Johanna Farmer,  
**Project Advisor:** Bremer (Theatre)  
**Title:** Blithe Spirit Costume Design  
**Type of presentation (Oral / Poster):** P

**Abstract:**
This presentation is based on research and production of the costumes for Blithe Spirit. This production of Blithe Spirit was set in the late 1930’s. The costumes are based on this time period with an art nouveau flair. I researched and helped to make the costumes. The presentation includes renderings and pictures of the costumes.
Abstract:
This project is based on research done for a directed study titled Native Americans & Public Policy: A Case Study on Land Reclamation. It focuses on the struggle for the Black Hills in South Dakota between the Federal and State government and the Native American Tribes. It includes research on treaties, the history of the area, media coverage, and the public policy surrounding land reclamation of Native American Lands.

Abstract:
Archaeal species are thought to be lacking many of the genes that encode the enzymes in the pentose phosphate pathway (PPP). Because archaea need to produce pentose, a sugar necessary for the synthesis of nucleotides (DNA and RNA), it is believed that these organisms use a different pathway for this synthesis. The archaeal species Methanocaldococcus jannaschii is known to contain all of the genes that encode for the enzymes in the non-oxidative phase of the pentose phosphate pathway (NOPPP), however, the role that these enzymes play in metabolism is unclear. This research project focuses on the expression, purification, and characterization of transketolase, an NOPPP enzyme for M. jannaschii. Genes that encode the N-terminal and C-terminal subunits of transketolase (Tk1 & Tk2) were expressed in Escherichia coli. SDS-page gel analysis was used to determine that Tk1&Tk2 were expressed. Each protein was purified using heat-treatment and anion-exchange chromatography. Coupled enzyme assays were used to determine the activity of the recombinant transketolase by monitoring the absorbance of NADH at 340nm. These assays have demonstrated that the Tk1 & Tk2 subunits are active together but not separately. It was also discovered this archaeal transketolase may be able to use ribulose-5-phosphate instead of xylulose-5-phosphate, the normal substrate. In the future, we will determine the Km and Vmax values for Tk1 & Tk2.

Abstract:
Circadian rhythms are daily cycles that are regulated internally by most organisms. Neurospora crassa, a filamentous fungus, has proven to be a durable and dependable model system in the study of the basic cellular and molecular components of circadian rhythms. Neurospora crassa demonstrate a well defined 24-hour biological clock. The recent success of inserting the firefly bioluminescent gene, Luciferase, into Neurospora crassa allows the mold to glow. The daily biological cycles of Neurospora crassa can now be recorded with the help of this light. The surrounding conditions and techniques for monitoring Neurospora crassa under this new research are now being addressed. Neurospora crassa have modest nutritional requirements and these nutrition regimes influence the development of the mold. This study was undertaken to determine the most effective concentrations of sorbose, glucose and fructose within the growth media for Neurospora crassa. The effectiveness of the concentrations was based upon the colonial growth, spread and viability of the mold. The results demonstrate that higher concentrations of the fructose and glucose sugars promoted more vigorous growth within the Petri dishes. Higher concentrations of sorbose added to the growth medium of Neurospora crassa induced the mold to form tight colonies on the solid agar medium. The concentration of sorbose restricted the growth of Neurospora crassa so that colonies became isolated. This isolation will be significant in future research when formal genetic and mutation work is conducted on individual colonies.
**Presenters:** Matt Gravelle,
**Project Advisor:** Boyd (Physics)
**Title:** Computer Modeling of the Vacancy Behavior in an RDX Crystal
**Type of presentation (Oral / Poster):** P

**Abstract:**
Our research involves a very common chemical explosive commonly named RDX. More specifically, we are focusing on the different types of defects that can occur in a RDX crystal. This study is part of a larger project researching the correlation between crystal defects in the crystal formation and the growth conditions. There are several defects that can occur in an RDX crystal. Our presentation will focus on one particular defect type called a vacancy. Ideally, a crystal structure has a very ordered array of molecules, but it is possible to have a missing molecule within the array. This will cause the surrounding molecules to shift or rotate from their original position over a period of time. We study these changes using computer simulations. Our poster will present results on the geometric analysis of molecules in the vicinity of a vacancy, as well as diffusion properties of a vacancy at 300K, 400K, and 500K.

**Presenters:** Katie Haberkorn,
**Project Advisor:**Thorson (Political Science)
**Title:** The Development of Political Identity
**Type of presentation (Oral / Poster):** P

**Abstract:**
My research project explores the process of political socialization in the United States. What experiences, teachings, and people cause a person to associate with a certain political party or ideology? How do gender, age, religion, occupation, and race influence someone's political beliefs? I will also be discussing the role of education in political socialization. Many feel it is the duty of the public school system to teach a core set of political values. Others feel students should learn these values at home. How can we effectively educate our young people about the political system while allowing them to develop their own political identity? There have been many studies involving American teenagers and their parents. The media and peers also play an important role in shaping political identity. Political socialization is a complex process, and I will highlight some major studies that explore the issue. My research will come from three books. The political socialization of children and adolescents by Joseph Galin gives an overview of the issues related to political socialization (such as civic courses and curriculum) and provides a list of sources on the subject. Education for democratic citizenship by Roberta Sigel looks at political socialization from the perspective of an immigrant. When immigrants learn to participate in their new culture's political system, they undergo a different (often more difficult) process than natural born citizens. Reactions to the new culture (and perceptions of the native country) also change with each new generation. The student parent socialization study by M. Kent Jennings (1965) assessed the attitudes and values of high school seniors and their parents through interviews.

**Presenters:** Tony Heinen,
**Project Advisor:** Bezanson (Speech Communication)
**Title:** Rhetoric in Protest Music: A Rhetorical Criticism of March of Death
**Type of presentation (Oral / Poster):** P

**Abstract:**
Protest rhetoric has come in many forms throughout history, such as speeches and pamphlets. In my research, I chose one of my favorite mediums, that of song, as a medium for an analysis of rhetorical elements. While there has been much research done on rhetoric of various forms, there has been significantly less research done on music, which reaches as many people as most other forms of rhetoric. Using Kenneth Burke’s Dramatistic Pentad as well as Sellnow and Sellnow’s Illusion of Life method for critiquing songs, I will analyze the internet-only release of the song “March of Death” by Zack de la Rocha as a means of persuasion.
**Abstract:**
My research objectives are to examine how the interaction of perfectionism and pessimism affects mental health. Perfectionism (defined as a cognitive disposition to perceive anything short of perfect as a failure) and pessimism (the tendency to expect negative outcomes) have been widely researched in a myriad of different directions; however, they have not been linked together until recently. Bradford (2004) examined the relationship between perfectionism, pessimism, and discouragement. Bradford’s study revealed that perfectionism is related to pessimism, negative outlooks on life, anticipating negative outcomes, defensive pessimism, and negative views regarding future efforts to reach a goal. Perfectionism and pessimism have been linked to mental health in several studies. My investigation will specifically examine how perfectionists who are optimistic rate on mental health scales compared to how perfectionists who are pessimists rate on mental health scales. I hypothesize that perfectionists who are pessimistic will score higher on mental disturbance scales and will utilize mental health services more often than perfectionists who are optimistic or are simply devoid of pessimistic attitudes.

**Abstract:**
Healthcare is a growing, changing and complex system in the United States. Despite its constant flux, it is essential to all human beings to maintain awareness on issues of health that concern ourselves or those closest to us. In the U.S. categories are placed on men and women based on roles and activities in which they participate. These categories stem from society’s definition of gender, which is different from the biological differences between the sexes. I propose these same divisions are made on health problems, categorizing them as either a man’s or a woman’s problem with little to no overlap. Thus, my research study addresses the question: Is there enough information to stop a health problem before it begins, regardless of how it is affiliated with gender or biological sex? Based on a pre-established criterion of current major health problems in the United States, I will code between thirty and fifty books at four public libraries across Minnesota. I will compare the data I collected with secondary sources as well as statistics regarding the leading causes of death for U.S. men and women. Preliminary data analysis indicates support for my assertion that society’s perceptions of health problems are polarized based on biological sex and socially constructed gender and that there has been an androcentric (male dominated) view in the medical field. Findings from this applied research project may be useful in determining future policy.

**Abstract:**
Sequencing the genome of Methanocaldococcus jannaschii has revealed that this microorganism lacks genes for a biochemical pathway that makes ribose, a precursor for the synthesis of DNA and RNA. Genomic evidence suggests that a different pathway, the ribulose monophosphate pathway (RuMP) may carry out this function in many archael species. In this pathway fructose-6-phosphate is first isomerized into hexulose-6-phosphate. This is broken down into formaldehyde and ribulose which can be used to make ribose. The aim of this project has been to confirm the function of the putative RuMP pathway genes in M. jannaschii. We have cloned one of the RuMP genes, 3-hexulose-6-phosphate synthase (HPS). The gene sequence was selected, primers made, and the gene was amplified using PCR. The HPS gene was then put into a vector. DNA sequencing has shown this cloning to be successful. The enzyme is now being expressed and characterized.
Presenters: Robin Moe, Katie Kuechenmeister; Beth Venekamp
Project Advisor: Ratliff-Crain (Psychology)
Title: Adult Attachment Style, Sexual Behaviors, and Condom Use
Type of presentation (Oral / Poster): P

Abstract:
This study aimed to assess the extent to which adult attachment style, sexual motivation, and condom use correlate with one another. Of particular interest was the possible predictive role adult attachment style plays in condom use and how these factors correlate with behavioral attitudes underlying condom use. Research in the area of attachment has been largely focused on children, so this study aimed to explore the role of adult attachment in college-aged individuals. Additionally, research has been largely absent in the realm of the possible role of attachment style on safe sex behavior. The focus of this study was to clarify previous inconsistencies by using a survey that assessed sexual motivations and more clearly differentiated between attitudes and behaviors. Over 340 UMM students completed the survey. We hypothesized that adult attachment style would play a significant role in the correspondence between attitudes and behaviors relevant to safer sex practices, specifically (1) securely attached individuals would be more motivated by their own intimacy and would follow their own intentions when engaging sexual behaviors, (2) highly avoidant (dismissing and fearful) individuals would have a higher number of sexual partners, but not necessarily less condom use, (3) those falling into the preoccupied attachment category would be less likely to use condoms but would not necessarily have a greater number of partners, and (4) anxiously attached individuals would have engaged in sex at an earlier age and would be more likely to use condoms if they used a condom during their first sexual experience.

Presenters: Kristen Moritz,
Project Advisor: Bezanson (Speech Communication)
Title: A Case Study in Free Speech: United States v. American Library Association
Type of presentation (Oral / Poster): P

Abstract:
In this project, a free speech case – United States v. American Library Association – will be analyzed. There are two main sections of this project – the legal section and the public policy section. In the legal section, the facts of the case will be discussed followed by an overview of the relevant precedent involved in the case. I will follow the case from the district court ruling to the Supreme Court decision. In addition, the oral arguments and the legal briefs will be analyzed. Using these, I will try to discern the Supreme Court’s definition of communication and what constitutes unprotected speech under the First Amendment. The public policy section will discuss how this decision has been implemented and the effects it has had on public library policies. It will also include interviews with local librarians. The communication implications of the ruling in the United States v. American Library Association and the resulting public policy are the focus of this project.

Presenters: Kay Saager,
Project Advisor: Burks (Economics)
Title: The Impact of Bonus Compensation on Truck Driver Turnover and Productivity
Type of presentation (Oral / Poster): P

Abstract:
Previous work related to this study shows that the high turnover of drivers in the truckload (TL) motor carrier segment has an impact on driver productivity. Drivers in this segment have very high turnover, and are paid by the mile, but also get a small part of their earnings from a secondary bonus pay system. This bonus system rewards secondary performance characteristics, as mileage pay provides direct productivity incentives. This study will use proprietary data from a large trucking firm to attempt to statistically identify the effects of the firm's bonus system on turnover and/or on productivity. Expectations for the outcome for productivity are ambiguous given our data and the effect on retention is expected to be positive. The significance of this study is that it provides additional information to be used in the design of compensation systems in a high turnover setting.
Presenters: Dan Schlatter, Project Advisor: Cole (Biology)  
Title: The Effects of Age and Climate on Growth Rates of Populus tremuloides  
Type of presentation (Oral / Poster): P  

Abstract:  
Populus tremuloides is the most widely spread species of tree in North America. In order to explore the relationship between their growth rate, age, and climate conditions, five core samples of were taken from 192 genets (clones) from 10 populations throughout Wisconsin. The growth rate for each of these cores was then measured, using their annual growth rings as markers for each year, to compare how sex, age, and climate conditions affect their growth rates. The number of rings (age) and width of each annual ring was measured to .001mm for each core using light microscopy. Since Populus tremuloides is notorious for its faint growth rings, the cores were finely sanded and stained to darken the rings so the growth rings could be more accurately identified and measured. These growth data were then compared to the sex of each genet, historical climate records, and age to determine their relationships. The resulting plots showed that growth rates decrease with age and increase with moisture.

Presenters: Kathryn Schwaderer, Project Advisor: Pappenfus (Chemistry)  
Title: Synthesis of Dithienylpyrroles as Organic Materials  
Type of presentation (Oral / Poster): P  

Abstract:  
Organic semiconductors are potential candidates for use in organic thin-film transistors (OTFTs), which are used in electronics, opto-electronics and information-storage devices. Inorganic compounds are typically used as the main components of transistors today, but current research is turning to organic compounds. Organic semiconductors allow for altered electronic properties by adding different substituents, as well as, large-scale, inexpensive manufacturing. The unique properties of organic semiconductors will allow these compounds to be placed in several new electronic applications. Our research is focused on the design and synthesis of new organic molecules as candidates for organic semiconductors. Specifically, we are interested in a class of molecules called dithienylpyrroles. In order to achieve our goal, a novel diketone intermediate will be synthesized with alkyl groups added to make the molecule soluble in organic solvents. Through standard synthetic methods, we will be able to reach the desired dithienylpyrrole. The molecule will be modified with electronic withdrawing groups and the data from these new compounds will be compared to the previously reported pure thiophene series.

Presenters: Laura Sullivan, Adria Bykowski  
Project Advisor: T. Wyckoff (Biology)  
Title: Evaluation of the Occurrence of Staphylococcus Isolates from Milk Samples Obtained on Conventional and Organic Dairies in West-Central Minnesota  
Type of presentation (Oral / Poster): P  

Abstract:  
Mastitis, or inflammation of the udder, is a very costly disease in the dairy industry, resulting in lowered milk yield, increased costs of production, and reduced milk quality. Infection originates in the udder and can be spread from cow to cow during the milking process with the potential to infect an entire dairy. A major mastitis pathogen is Staphylococcus aureus. In this study, we compared the occurrence of Staphylococcus isolates from milk samples obtained at conventional or organic dairies. Using standard techniques, Staphylococcus were isolated from milk samples collected on organic and conventional dairies and identified as coagulase-negative (CNS) or coagulase-positive (CPS). CPS were further identified as S. aureus or “other CPS”. CNS were seen in similar percentages on both conventional and organic dairies, 44.3% and 43.4% respectively. The occurrence of CPS was very small, showing up on only 3 of 371 cows, yet all three of these cows were from organic dairies. S. aureus was isolated from 0.8% of conventional dairy cows and from 10.3% of organic dairy cows. The occurrence of clean cows, or cows showing no evidence of any Staphylococcus strain, was higher on conventional farms (54.9%) then on organic farms (44.1%). Our results show that Staphylococcus strains which can potentially cause mastitis were isolated at a higher occurrence from organic dairy cows then from conventional dairy cows. This research supports the idea that the use of antibiotics reduces the occurrence of potentially harmful Staphylococcus strains.
**Presenters:** Michael Sutherland,  
**Project Advisor:** Burks (Economics)  
**Title:** The Impact of Recent Hours of Service Regulations Changes on Truck Driver Productivity  
**Type of presentation** (Oral / Poster): P

**Abstract:**  
This project will provide an historical context for understanding the current Hours of Service regulations covering commercial vehicle operators. Then it will use proprietary data from a large trucking company to explore whether the recent changes of January, 2004, in the Hours of Service regulations affected driver productivity.

**Presenters:** Tim Trometer,  
**Project Advisor:** Goodnough (Chemistry)  
**Title:** Effects on Hydrogen Bonding in Methanol Due to the Addition of Calcium Chloride  
**Type of presentation** (Oral / Poster): P

**Abstract:**  
The structure of liquid methanol is a unique mystery. The liquid methanol structure is a dynamic state, which makes it difficult to determine the structure by exact methods (such as x-ray crystallography and infrared spectroscopy). To obtain the structural information, the nuclear magnetic resonance (NMR) instrument is used. The data obtained from the NMR shows a decrease in the chemical shift of methanol with an increase in the salt concentration and an increase in temperature. This suggests that an increase in the salt concentration and/or increase in temperature decreases the hydrogen bonding between methanol molecules. These data are now currently being used to gain a better idea on what the structure of liquid methanol actually is.

**Presenters:** Amanda Warner,  
**Project Advisor:** Rothchild (Sociology)  
**Title:** Beautiful Smart Women, Never Heard of Them: An Analysis of Women in Television Sitcoms  
**Type of presentation** (Oral / Poster): P

**Abstract:**  
Throughout history women, have been socialized through various forms of media that they are to act and look a certain way. Judging by contemporary television programs, there is no such thing as a strong, intelligent, beautiful woman. You are either strong and intelligent with masculine features or beautiful with distinct feminine characteristics. Television sends out the message that women who do not fall into one of these two roles are outcasts and need to change to fit into what society thinks is an “ideal woman.” Through these television shows we are teaching our children that they have to make a decision when they become an adult on which role to be. This study will analyze how women in five American television sitcoms during the period of 1994 to 2005 are presented in roles that focus on their characters overly feminine or masculine. The Social Construction Feminist Theory will guide this research project. I will examine this topic through content analysis. Specifically I will code five sitcoms, focusing on issues of race, age, social class, their appearance and how they are portrayed. I will then analyze the frequencies and percentages for each characteristic as well as the reoccurring themes and trends. This research will help women to see that even though media and our society tells and shows them that they are to act a certain way, it is acceptable to not fit into the roles that they illustrate.
**Presenters:** Ashley Wersal,  
**Project Advisor:** Rothchild (Sociology)  
**Title:** Internal Migration: Young, Educated and on the Move  
**Type of presentation (Oral / Poster):** P

**Abstract:**
What factors influence students’ decisions about future migration? This research project examines factors University of Minnesota, Morris (UMM) students perceive to be important in their decisions to migrate. Internal migration is broadly defined as the movement of individuals within a country or state. In this study, internal migration refers to the movement of individuals within a country. The study of internal migration patterns is important when planning and implementing public policy in communities and within regions. To better understand future internal migration patterns for UMM students, the researcher administered a survey to a sample of UMM students that was designed to gather basic demographic information as well as specific questions focusing on factors of migration. Analysis includes a comparison of the future migration plans of UMM students with the migration patterns of the general population. Preliminary analysis finds that students see socio-cultural factors, such as family or future educational opportunities, as more important than economic factors, which is contrary to current theories of internal migration. This research adds to the sociological understanding of migration and helps to develop a cohesive theory on internal migration in young, educated populations.

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**Presenters:** Nick Wolner,  
**Project Advisor:** Gooch (Biology)  
**Title:** Characterization of the Bioluminescent Reaction in the Mold Neurospora  
**Type of presentation (Oral / Poster):** P

**Abstract:**
In a firefly (Photuris pyralis), when the substrate luciferin and an enzyme luciferase interact, they catalyze an energy releasing reaction that is observable as bioluminescence. Recently the firefly gene has been incorporated in the mold Neurospora crassa so that it too makes luciferase and can emit light when luciferin is added. Neurospora, over the years, has proven to be a valuable model system for basic cellular and genetic studies. The bioluminescence will be a valuable aid in furthering these studies. However, before we move forward, it is important to characterize this new bioluminescent reaction in the mold. I further investigated the factors that affected the mold’s bioluminescence. I was able to measure the relative light emission with different concentrations of luciferin to determine their impact on the amount of light emitted. My results suggest that an increase in luciferin concentration gives a linear increase in bioluminescence, but that other unusual biochemistry may be involved.

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**Presenters:** Cassandra Yant,  
**Project Advisor:** Lawrence (Economics)  
**Title:** Child Labor: An Historical Comparison and the Factors Associated with It  
**Type of presentation (Oral / Poster):** P

**Abstract:**
Recent data show that approximately 120 million children around the world ages 5-14 are working full time, and another 130 million are working part-time. When discussing child labor, “child” refers to a person 15 years old or younger, based on ILO’s standards. “Labor” is defined as economic activity, or regular work that results in productive output. Child labor has been prevalent for centuries, but in the 1800s, due to the Industrial Revolution, it skyrocketed in what are now today’s developed nations. It is speculated that economic growth factors (e.g., poverty, unemployment, income, etc.) is negatively related to child labor rates. Culture and tradition could also possibly play a role in how prevalent child labor is in a country. The purpose of this research project is to investigate the factors that are common among countries with high child labor rate, as well as compare and contrast how other countries outlawed child labor and why they were successful at it. By examining data from the ILO and World Bank, I hope to find a common link among the countries where child labor is still a problem and also look at case studies to see what successful policies are being used to eradicate child labor in the 21st century. Hopefully, this will give a little more insight as to what causes children to resort to working and how the countries they live in can help eradicate the problem.