

# UMM UNDERGRADUATE *Research* Symposium

2006

Featuring student research and scholarship from across the campus



## Abstracts

**Featured Presentation**  
**Science Auditorium**  
**3:00 pm**

---

**Presenters:** Jacquelynn Sullivan, Ashley Sorenson

**Project Advisor:** Tracy Otten (Studio Art)

**Title: Collaborative print exchanges: UMM, University of Central Florida and Ohio University**

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

***Abstract:***

At least once a year UMM printmaking students collaborate in a print exchange with students from another university. Hand pulled, printed images are a unique form of art because the image is not created directly on the surface of a piece of paper but is instead first constructed as a matrix. The matrix holds the image information, which can then be printed to paper repeatedly. This affords printmakers the opportunity to work together to create suites of prints that share ideas, techniques, or represent collective interests. To participate, each student prints a set of 12 identical images and submits them to the faculty organizer from each school. Typically there are 20 to 40 printmakers involved in these exchanges. All of the prints are then sent to UMM where they are randomly collated into portfolios. One complete set is retained for each university archive. The remaining work is divided up equally between the number of participants, with each individual receiving a variety of prints from both schools. The work is also exhibited on both campuses as well as printmaking conferences and workshops. This year we will be showing the exchanges completed between UMM, Ohio University School of Art and the University of Central Florida. The portfolios allow us to learn from what our fellow students are doing around the country, exhibit our creative research and highlight the strengths of our program here at UMM.

---

**Oral Presentations**  
**Sci-1020, Sci-1030, Sci-2190, Sci-2200**  
**3:40 - 5:40 pm**

---

**Presenters:** Nii Anyetei Akofio-Sowah

**Project Advisor:** Sarah Buchanan (French)

**Title: Differences of colonial methods in British and French West Africa**

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

***Abstract:***

My research discusses the differences between British and French approaches to colonialism in West Africa. I've set out to discover how indirect rule used by the British and assimilation used by the French promoted ethnic conflict, also known as intragroup conflict. As well as having many different connotations, there are also different types of colonialism. I begin my paper by defining the term "colonialism" and the types of domination, and by citing examples of the different types of domination used by European powers to control West Africans' governments, economies, educational systems, etc. After defining my terms, I intend to show how British and French colonialisms have affected the region of West Africa. Although the British and French used different colonial styles, both, however, ended with the same result: Ethnic conflict after the period of formal colonialism was over. I also intend to conclude my paper by discussing the post-colonial phenomenon known as neo-colonialism. In many instances, after colonizing powers formally exited the African countries physically, they left lasting effects. Neo-colonialism is the legacy that colonizing powers left behind. Former colonies were affected by devaluation of economies, markets, and currency. Also, colonizing powers that previously had monogamous control over a country's exports imposed self-serving regulations on resources.

---

**Presenters:** John Alden  
**Project Advisor:** Seung-Ho Joo (PoliSci)  
**Title:** US state identity and contemporary foreign policy  
**Type of presentation** (Oral / Poster): o

**Abstract:**

This project seeks to examine the identity of the US as a state, particularly as it exists in the post-Cold War era. The project attempts to draw together various relevant theoretical approaches from the areas of linguistic theory, psychological theory and international relations theory to construct an interdisciplinary understanding of how state identities work, with particular consideration of US state identity. The results of this theoretical discussion are then applied in subsequent sections that address formations of US state identity from 1890 to 1990 and emblematic events for the US in the post-Cold War era, the intervention in Kosovo and the second Iraq war. Drawing on history and theory-centered texts from various fields, the paper attempts to establish how the US's identity, particularly in self-conception, has affected its actions in the post-Cold War era.

---

**Presenters:** Sam BeVier, Scott Lembcke  
**Project Advisor:** Elena Machkasova (Computer Science)  
**Title:** Specialization of generic types in the Java programming language  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Our research is to study the specialization of Java generic types as a potential optimization. Most programming languages require that all data types in a program are specified. This reduces the number of possible errors and helps with efficient computer memory usage. Some functions and data storage structures can work with data of different types. For instance, consider a program that keeps a list of numbers ordered from lowest to highest and a list of strings ordered alphabetically. It would be an error to store numbers in a list intended for strings and vice versa because different data types are ordered differently. However, the programmer does not need to write the code for the data structure twice, it is possible to use the same code for all kinds of ordered lists. Such data structures are implemented using a feature called generic types. Generic structures such as templates can be used to create more specific structures such as a list of numbers, or a list of strings. We compared the running times of several variations of the same sorting program. Our goal is to show why the running times differ and eventually to write our own program to do these optimizations for us. We propose a transformation of program code that allows the Java compiler to create implementations of generic data structures and functions specialized for the types used in a program. We discuss the effects of this transformation on the efficiency of a program.

---

**Presenters:** Sarah Black  
**Project Advisor:** Jennifer Deane (History)  
**Title:** Papal Monarch or Royal Pawn?: Clement V and the Knights Templar, 1307 – 1312  
**Type of presentation** (Oral / Poster): o

**Abstract:**

In 1312, five years after members of the wealthy military order of the Knights Templar were dragged from their homes and arrested, Templar Grand Master Jacques de Molay was burned at the stake and the rest of the order was dissolved by order of Pope Clement V. The charges brought against the crusading military order included heresy and blasphemy, but the motivations behind the charges have been regarded by contemporaries and historians alike as questionable and highly political. Yet historians have neglected key complexities surrounding the trial and suppression of the Knights Templar. Current scholarship fails to consider the motivation and consequence of papal policy in the trial of the Templars, specifically the actions, decisions and policies of Pope Clement V. Clement V has been depicted as a weak pawn of King Philip IV of France in a royal campaign to seize the power, wealth and landholdings in the Latin Kingdoms of the Knights Templar. Contrary to this interpretation, a careful look at primary source evidence not only counters the assertion that royal authority alone determined the outcome of the trial, but reveals that Clement V exercised significant personal influence and political strategy in asserting papal authority over the French monarchy. Through close analysis of papal bulls, letters and charter oaths, this paper argues that Clement V was consistent in his policies toward the Templars, neither vacillating nor falling victim to the political pressures of Philip IV, as existing scholarship would suggest.

---

**Presenters:** Alicia Canfield  
**Project Advisor:** Julie Pelletier (Anthropology)  
**Title: Truths and myths of facial reconstruction**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

As my senior project for Anthropology, I have conducted a specific literature review on the history and development of the field of forensic anthropology, with a special focus on facial reconstruction. This research, combined with training in anthropology and art, informs my project and allows me to demonstrate the process of facial reconstruction. The results of this hands-on project and literature review help elucidate the limitations in the art and science of facial reconstruction, in direct contrast to the fictionalized representations shown in popular TV programs such as *CSI*. A potential benefit that may be drawn from my project is the countering of popular misunderstandings about facial reconstruction which may be held by anthropology majors interested in forensics or by the general population. In addition, a hands-on demonstration of facial reconstruction using a skull cast will illustrate clearly the level of technology currently used in this growing field, the expertise needed to use the technology, and the expense of the technology. This project was designed, as well, to allow me to explore a potential career interest in the field of forensic anthropology and may assist others who have a similar interest.

---

**Presenters:** Katie Clark  
**Project Advisor:** Jennifer Rothchild (Sociology)  
**Title: The social construction of families on television: From *Sanford and Son* to *7th Heaven***  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Media has an enormous influence on the lives of all Americans, whether they think it does or not. But how does television, in particular, influence family structure? I argue that family structures portrayed on television socially construct a model for real-life families, thereby creating tension for the family who does not fit into this model. I plan to conduct a content analysis of four television shows, from 1970 until present. I will then compare these family structures to census data collected from the last five decades. Specifically, I will examine census data on how families are structured through marriage, divorce rates and household size data. I will use these data to track and analyze changes, both in reality and as portrayed on television. Family structures portrayed on television do not necessarily reflect families in reality. Through an examination of how families are portrayed in one social institution, the media, we can better understand families in American society.

---

**Presenters:** Elizabeth Cuddy  
**Project Advisor:** Becca Gercken-Hawkins (English)  
**Title: Mother, daughter, and holy trickster: The book of ~~Pauline Puyat~~ Sister Leopolda**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

The troubling issue of Native American assimilation is one of the central themes in Louise Erdrich's *Tracks*, as the ramifications of cross-cultural contact between the Anishinaabe tribe and the nearby white settlements undeniably affect the lives of each character within the novel. One of Erdrich's most memorable characters, Pauline Puyat, is an excellent example of this observable fact; the sum of her experiences shape her into a bewildering combination of Anishinaabe tradition, European-American culture, and a constantly evolving mixture of doctrinal Catholic beliefs and her own mystical visions. Through an analysis of the lives of medieval mystics (with special attention paid to Margery Kempe) and Pauline's personal history and credo, this paper examines the more subtle results of assimilation and the transition between assimilated and assimilator as they are represented in Erdrich's text.

---

**Presenters:** Katie Davison  
**Project Advisor:** Gretchen Minton (English)  
**Title:** Two novel ecofeminist examinations of patriarchal systems  
**Type of presentation** (Oral / Poster): o

**Abstract:**

My paper explores and analyzes two late twentieth-century novels and their ecofeminist approaches to patriarchal figures and structures. As each novel incorporates ecofeminism, that is, concern for the interconnected treatment of nature, women and marginalized peoples, I will first discuss the novels' various approaches to their ecofeminist themes, subsequently analyzing the patriarchal figures/structures in each text through the clarification of the texts' ecofeminist perspectives. One novel will be Barbara Kingsolver's *The Poisonwood Bible* and its ecofeminist interpretation of Belgium, America, missionaries, and the Bible as patriarchal presences in the Belgian Congo. I will also discuss how an ecocritical reading of the text can enlighten the ecofeminist themes of the novel. The second novel I will examine is Jane Smiley's *A Thousand Acres* and its ecofeminist reading of small town culture, farming culture, land use, and Shakespeare as patriarchal structures in Iowa. In light of each novel's clarified ecofeminist themes, I will examine the hopeful conclusion and resolution of *The Poisonwood Bible* in comparison to *A Thousand Acres*' far more cynical one and consider what these various conclusions suggest about coping with patriarchal structures, figures, and texts.

---

**Presenters:** Amanda Dickson  
**Project Advisor:** Leslie Meek (Psychology)  
**Title:** Small mammal populations on two different habitat types (prairie vs. cow pasture) in western MN  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Currently, direct alteration and destruction of natural habitats is the leading cause of extinction. We need to be aware of how our use of the land affects wildlife and ecosystems in order to preserve biodiversity. This study was conducted to examine what species of small mammals live in a tall grass prairie habitat in Pomme de Terre Park versus in a nearby cow pasture. The animals were caught using Sherman Traps and peanut butter with rolled oats for bait. The two different habitat types were found to support different species. Both habitat types supported populations of prairie deer mice (*Peromyscus maniculatus bairdii*), short-tailed shrews (*Blarina brevicauda*), and another shrew species, most likely the masked shrew (*Sorex cinereus*). The cow pasture supported a population of voles, which were not found on the prairie. The voles captured on the cow pasture appeared to be either prairie voles (*Microtus ochrogaster*) or meadow voles (*Microtus pennsylvanicus*), however due to the similarities of the two species a positive identification was not made. Thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*) were found on the prairie, but not on the cow pasture. Clearly, the conversion of prairie to cow pasture has altered the variety of species that the land can support.

---

**Presenters:** Eva Louise Falk  
**Project Advisor:** Joel Eisinger (Art History)  
**Title:** The unwritten architectural theory of Antonio Gaudi  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Scholars generally agree that the early twentieth-century Spanish architect Antonio Gaudi worked without a theory of architecture, and indeed Gaudi himself expressed distaste for theories. Nevertheless, it is my position that there is a theory implicit in Gaudi's practice and its underpinnings. That theory, simply stated, is that the best art derives from the natural world, which may be approached in both a spiritual and a scientific manner. While recognizing the beauty of God's creation, Gaudi also explored biology, geometry, and physics. His resulting architecture is both rational and timeless in its appeal; it evokes natural forms and spiritual aspiration. Even more important is the flexibility and sense of endless possibility with which Gaudi executed his ideas. Although his spaces were founded on familiar principles that can be easily found in nature, his art was completely new and innovative, capable of great expressiveness and unexpected plasticity. His legacy is to have bridged the gap between architecture and sculpture, thus elevating the status of architecture as an art form.

---

**Presenters:** Tim Hellendrung  
**Project Advisor:** Mary Elizabeth Bezanson (Speech Communication)  
**Title: Resurrection through rhetoric: Robert Emmet's speech from the dock**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

In September of 1803, Irish patriot Robert Emmet gave his "speech from the dock" on the day before he was hanged and beheaded. Over 200 years after his oratory, the piece has been essentially ignored by rhetorical critics, minus one Aristotelian analysis by Robert M. Post. The speech is now analyzed by using the work of Lloyd Bitzer and his idea of the rhetorical situation. The speech was analyzed with the hope that the importance of the historical surroundings would surface. Emmet offered the audience of his speech a stylistically beautiful discourse in the hope of his resurrection through words. Though the events surrounding the speech, including the English rule of Ireland and French Revolution as well as Napoleon's conquests, constrained Emmet's ability to reach the modifying audience, the constraints of Emmet's grasp on the classical construction of rhetoric and reputation assisted in his attempt to change the definition of his death to one that lived on. The part of the rhetorical situation that Emmet attempted to solidify was the continued struggle for a free Irish nation and his place in the hearts of the Irish. Through an analysis of the metaphors within the speech according to the work of Lackoff and Johnson, the connection Emmet drew between his words and the everyday experience of the Irish became more apparent and deliberate. Throughout the speech Emmet subtly made metaphors containing references to the Irish Catholic experience and the Irish's geographical relation to the sea. Through his use of metaphors and the superior construction of the speech, Emmet was able to have the exigence of his speech persist, thus creating rhetorical literature.

---

**Presenters:** Laura Hildreth  
**Project Advisor:** Arne Kildegaard (Economics)  
**Title: Assessing the effect of wind power on the demand charge using Monte Carlo analysis**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

The Public Utilities Regulatory Policy Act (PURPA) of 1978 established a class of nonutility generators known as qualifying facilities (QFs), which are small power production facilities or cogeneration facilities. Under PURPA, utilities are required to connect QFs to the grid and purchase excess power at a rate not exceeding the utility's avoided cost. This act has sparked competition in the electricity industry and has led to an increase in small renewable energy sources, such as the wind turbine at UMM. Behind-the-meter wind turbines, such as the one at UMM, have the potential to provide significant reductions in the electricity bill for its owners. The aim of this project is to assess the effect the UMM wind turbine has had on the demand (capacity) charge, the part of the electricity bill based on maximum electricity capacity usage. The effect of a wind turbine on the demand charge will be non-positive, but is otherwise unknown. Using data from UMM and the West Central Research and Outreach Center, Monte Carlo analysis, a statistical method that simulates possible outcomes using the data, and time series analysis were used to simulate and determine the effect of the UMM wind turbine on the demand charge. Through this analysis it is shown that the adoption of a behind-the-meter wind turbine has a significant impact on the demand charge.

---

**Presenters:** Margaret James  
**Project Advisor:** Joel Eisinger (Art History)  
**Title: The iconography of impressionism**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Impressionist painters were described by the nineteenth century critic Emile Blémont as rendering "with absolute sincerity, without any arrangement or attenuation, by simple process, the impression aroused in them by the various aspects of reality." Blémont's view, which was the prevailing one for about a century, suggests that Impressionist iconography (that is, the subject matter and its cultural meanings) was unimportant and that all that really mattered to these painters was technique. But more recently this has been shown not to be the case. This paper examines the Impressionists' iconography, particularly with regard to issues of modernity. Landscapes by artists such as Claude Monet and Camille Pissarro featured the urban sprawl of Paris encroaching on the countryside, with factories and bridges as the focal points of their art. These images expressed an ambivalence about their subjects. Monet, Pierre-Auguste Renoir, and others also painted the "new Paris" of spacious boulevards that Baron Georges Haussmann set out to create under the rule of Napoleon III. Each of these painters responded to the modern city in his own way. The exploration of these representations of modernity by the Impressionists increases our understanding of this major art movement—giving it more substance than it was previously thought to have—and also illuminates the historical period in which this movement flourished.

---

**Presenters:** Blair Jasper

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

**Title:** Triumph of the 'Will': War as propaganda in *Richard III* and *Henry V*

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

**Abstract:**

I shall begin with a cursory glance at Shakespeare's role in both defining the Hundred Years' War as a distinctly English experience and establishing his History Plays as a sort of Elizabethan propaganda. Moving forward in time, Laurence Olivier's film version of Shakespeare's *Henry V* was used both to rally the English people to the war effort and to reestablish a fundamental relationship between Shakespeare and the English way of life. I shall then examine the relationship between the diminishing English theatre and English national identity through the lens of Peter Yates's *The Dresser*, a film adaptation of *King Lear* set in London during the German Blitz. Finally, Shakespeare was transformed into a product for mass consumption as shown in Richard Loncraine's *Richard III*, a fascist reimagining of the play of the same name.

---

**Presenters:** Molly Kloek, Christa Mims

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

**Title:** The effects of goal framing on performance, task enjoyment, and goal orientation

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

**Abstract:**

The purpose for this study is to gain further information on the effects of intrinsic (engaging in an activity for its own sake) and extrinsic (taking part in an activity as a "stepping-stone" for subsequent activities) goal framing, particularly on performance, task enjoyment, and goal setting orientation. Past research suggests that intrinsic motivational styles tend to boost performance in work settings. Further, students who have a perceived emphasis on mastery goal setting had more adaptive views of learning while those with a perceived emphasis on personal performance were more likely to focus on their abilities or professed lack thereof. These findings suggest that framing a task in an intrinsic manner may lead to better performance on and greater enjoyment of a task. Participants in this study were asked to complete some simple word and number puzzles on a computer and two short surveys. They were also asked questions intended to provide a goal-framing (intrinsic, extrinsic, and control) device for the tasks. Their performance (accuracy of response and the time it took to answer the questions) was measured and will be compared to scores on the Intrinsic Motivation Inventory (Ryan, 1982; McAuley, Duncan, & Tammen, 1989) and the Work Domain Goal Orientation Instrument (VandeWalle, 1997). The analyses are pending.

---

**Presenters:** Andy Korth, Rob Jansen

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

**Title:** Parallel computing using MPI and task allocation algorithms

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

**Abstract:**

The goal of our research is to implement solutions to complex problems in a parallel computing environment, using task scheduling algorithms to distribute the workload efficiently across many computers. Many large jobs which run on single computers can be split into a series of smaller tasks, each of which can be run on a different computer. Algorithms we designed in our past research schedule these smaller tasks onto a network of computers in order to minimize the computation time for the job as a whole. This prior research, however, was purely theoretical. Jobs were modeled as precedence graphs. Each node of the graph represented a different task as a part of the larger job. Edges on the graph represented latency and communication time between associated tasks. We simulated the length of time it would take a job to run. Our algorithms produced very promising results on these theoretical problems, so we decided to implement them in reality, using the Message Passing Interface (MPI) libraries to coordinate jobs on a group of networked computers. The problem of parallel matrix multiplication was examined. By altering the number and order of matrices multiplied, we can easily create multi-leveled dependencies for our precedence graph models. This problem will serve as an excellent base for testing the performance of our scheduling algorithms. If these tests demonstrate that our scheduling algorithms are viable, this research could easily be applied to other parallel computing problems, such as data compression, machine learning, video analysis, and data mining.

---

**Presenters:** Stephanie Kuik  
**Project Advisor:** Jennifer Rothchild (Sociology)  
**Title: The controversy over transracial adoption**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

Although adoption has become an accepted family structure when formed through biological matching, transracial adoption continues to be controversial. A large body of literature exists that examines whether or not biologically matched families create a positive family structure, but very little research has been done on the positive or negative results of families created through transracial adoption. I am performing a comparative study using secondary sources with the majority of those sources being articles from various academic journals. These articles investigate the benefits of biological families, biologically matched adoptive families, and transracial adoptive families. There is some existing evidence that transracial adoptions benefit both the adoptee and their adoptive families, but the lack of research in this area may explain the lack of support from society. With a growing awareness of the benefits of transracial adoptions, individuals may be more inclined to support transracial adoptions and remove the stigma that society has attached to transracial adoption. According to sociologist Emile Durkheim, the institution of family has several functions and purposes. One of these purposes is to integrate an individual into society. I will look at the support for transracial adoption and explain how Durkheim's theory of integration can be used to support families created through transracial adoption as a beneficial family structure.

---

**Presenters:** Timothy M. Lindberg  
**Project Advisor:** Steve Gross (History)  
**Title: Elmer and Hjalmar: Minnesota's gubernatorial scene in 1938**  
**Type of presentation** (Oral / Poster): o

**Abstract:**

When Minnesota Governor Floyd B. Olson died prematurely in 1936, he left his Farmer-Labor party in dangerous territory. His successor, Elmer Benson lacked his charismatic qualities and his strong leadership skills and the 1938 Farmer-Labor primary was closely contested as Benson faced the anti-communist and anti-Semitic campaign run by Hjalmar Petersen. While Benson did narrowly capture the party's endorsement, the success of Petersen's attacks fueled the Republican "boy wonder," Harold Stassen to victory in the general gubernatorial race. This defeat marked the beginning of the end for the Farmer-Labor party in the state as an individual entity. By 1944 the Farmer-Labor Party had been merged and absorbed into the Democratic Party to form the DFL. The Farmer-Labor Party lasted less than thirty years as an entity, but its success came quickly and it capitalized on a variety of factors present in Minnesota. By 1938, many of those factors had shifted and the party was no longer seen as politically necessary by voters. Through an intense examination of the 1938 election and primary, this study is an attempt to pull apart some of these shifts and determine factors that led to the rapid demise of the party as an individual organization.

---

**Presenters:** Danelle Orange  
**Project Advisor:** Janet Ericksen (English)  
**Title: "Conformity divine" and individual imagination in *Paradise Lost***  
**Type of presentation** (Oral / Poster): o

**Abstract:**

John Milton's epic poem *Paradise Lost* chronicles the descent of Satan into hell, the war between heaven and hell, as well as the fall of Eve and Adam. The philosophical, religious, historical and critical aspects of this work make it one of the primary texts of the British Civil War and the Restoration. Written at a time when the individual's relationship to God was under public debate, Milton's hell is aligned with individuality, at least how we might define it, while heaven becomes a place of communal identity. God gives freedom and therefore within in the collective individuality of heaven, one can do as one wants so long as one remains with God. However, when first Satan and then Eve engage individual thought, and when Eve, as a result, eats of the fruit, they individualize themselves outside of God's all-encompassing communal individuality. It is not that they thought; it is that they think on individual and not communal terms. By contrast, and Milton makes it a stark contrast, by pointedly drawing attention to it in the accounts of the fallen angels, Adam, Eve, and hell, but not heaven. For Milton, since independent imagination is most closely aligned with hell, to be with God, to be a part of heaven, one must think and act within a certain proscribed range of divine will. An exploration of how hell is defined by and uses individual imagination to propagate its hellish state reveals that the poem works to define heaven and hell as opposing views on individuality.

---

**Presenters:** Christopher Orth  
**Project Advisor:** Barry McQuarrie (Mathematics)  
**Title: Borel resummation of a divergent series**  
**Type of presentation (Oral / Poster):** o

**Abstract:**

The Borel Method of Resummation is used to assign a sum to a divergent series that arises in quantum physics. This particular divergent series has been studied using an entirely different method of assigning a sum, namely algebraic approximants. Accurate results from the algebraic approximants are available for comparison and the results from the Borel Resummation agree for certain cases. This work extends the type of physical systems to which Borel Resummation has been successfully applied.

---

**Presenters:** Nicholas A. Petersen  
**Project Advisor:** Rich Heyman (English & Geography)  
**Title: Violent Space: How ethnically based spatial separation in France's suburbs encourages violent action**  
**Type of presentation (Oral / Poster):** o

**Abstract:**

The recent riots within the public housing sections of France's suburbs, the Habitations à Loyer Modern (HLMs), have attracted much attention to the relationships of the greater French society to immigrant populations. This paper argues that the recent riots, as well as the riots in the 1990's are the result of a negative relationship originating from an integration policy toward immigrant populations, particularly those from North Africa, and the emergence of a neo-bourgeois French society in the 1950's. The effects of this policy and the societal attitudes are a geographic separation of immigrants from the rest of French society on the outskirts of major cities in France. This paper will first examine the history around the formation of the integration policy and the neo-bourgeois attitudes. This paper will then examine the spatial relationships of immigrants in French suburbs to the majority culture of French cities, arguing that these relationships encourage a violent reaction among the immigrant populations.

---

**Presenters:** Tom Schoessler  
**Project Advisor:** Barbara Burke (Speech Communication)  
**Title: Graphic video game violence and aggression**  
**Type of presentation (Oral / Poster):** o

**Abstract:**

Video games and aggression research is currently an important topic for the American public. As technology progresses, the depictions of violence against game characters have become more graphic and realistic, and raise new questions about game image impacts. There is a general public view that by engaging in video games that portray violence, a message will be sent to the player that encourages an aggressive state and attitude. Past research has found that violent game play is one of many factors that warn of future aggressive feelings and perhaps behavior, but no studies have found that game play alone creates this deviant personality perspective. This study is a continuation of previous research in the fields of communication and psychology addressing game play, images, player feelings and attitudes. The study has twelve game players ages twenty-plus with prior experience with Mature-rated video games fill out a Buss-Perry Attitude survey, and then play three modern popular games of increasing violence (*Splinter Cell Pandora Tomorrow*, *Max Payne II*, and *Manhunt*) for twenty minutes each. The participants then filled out current-mood surveys in order to record their emotional states (to suggest whether or not the violence they witnessed had an effect on their overall emotions). For this group of test subjects, the research clarifies the relationship between stronger messages and the players' aggressive feelings, as the graphic depictions of violence increase.

---

**Poster Presentations**  
**Oyate Hall, Student Center**  
**5:45 - 7:00 pm**

---

**Presenters:** Kelly Alsdurf  
**Project Advisor:** Mary Elizabeth Bezanson (Speech Communication)  
**Title:** Analysis of digital rhetoric in Morris city webpage  
**Type of presentation** (Oral / Poster): p

**Abstract:**

One of the fastest growing technologies today is the internet. Homepages on the internet have become a major source of information. New research has shown that a growing number of state governments have started to use homepages to reach citizens and create a more direct connection with the public. These government webpages have come mostly in the form of homepages for cities, and these sites have encouraged more communication between government and citizens. Many homepages use rhetoric and this is classified as digital rhetoric. The analysis of this digital rhetoric in small city web pages included investigation of the use of persuasion, searching for a rhetorical genre among the sites chosen, and then the assessment of web pages fitting in this rhetorical genre. Research involved the study of digital rhetoric used in the web pages of small cities. Characteristics of small cities chosen included the presence of a small public college and comparable population size. Differences and similarities were mapped in an effort to discover if a rhetorical genre existed. A genre was then developed for these types of web pages. The genre outlined characteristics found consistently in the study of these sites. The old and new versions of the Morris City web page were then assessed according to the genre specifications to determine their use of digital rhetoric. This research will help further study of the effectiveness and persuasiveness of digital rhetoric being used by our government, its use of technology, and how that affects citizens of small towns.

---

**Presenters:** Jenna Benson  
**Project Advisor:** Nancy Carpenter (Chemistry)  
**Title:** Synthesis and investigation of palladium chlorovinyl complexes  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Palladium chlorovinyl complexes are of interest because they can be used to investigate the mechanism of dehalogenation of industrial solvents in zerovalent transition metal barriers. These complexes can be prepared readily from the oxidative addition of perchloroethylene to a zerovalent palladium species. A variety of chlorovinyl complexes was prepared from the starting materials tetrakis(triphenylphosphine)palladium(0), bis(tri-tert-butylphosphine)palladium, and the phosphine ligands 1,2-bis(diphenylphosphino)ethane and 1,3-bis(diphenylphosphino)propane. Melting point, <sup>13</sup>C NMR spectra, and <sup>31</sup>P NMR spectra were used to characterize the products. The reactivity of the palladium chlorovinyl complexes was also investigated via the Heck reaction because they are the mechanistic intermediates of the Heck reaction. For these reactions, perchloroethylene was coupled to an olefin via a palladium catalyst. GC-MS, FT-IR, and <sup>1</sup>H NMR spectra were used to characterize and verify the structures of the products.

---

**Presenters:** Matthew Bryan  
**Project Advisor:** Mark Logan (Mathematics)  
**Title:** Combinatorics: Examination of posets  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The purpose of my research is to examine the properties of partially ordered sets, or "poset" for short. A poset is a group of elements which have some form of order to them. A common form of ordering is on the set of real numbers which can be ordered by the less-than and greater-than symbols. Elements that can be ordered in such a way are said to be comparable. However, posets can have incomparable elements as well as comparable elements. For example, sets are ordered by subset. Thus the sets {2,3} and {1,2,3,4} are comparable since the set {2,3} is a subset of {1,2,3,4}. However, the sets {1,2} and {3,4,5} are incomparable since neither is contained in the other. There is an open conjecture in the study of posets which states that the LYM property of a poset is equivalent to the nested chain decomposition property. This has been shown to be true for many posets, but has yet to be proven for all posets. Much of my research has centered on this conjecture. I have been able to provide some further instances where this conjecture holds true. My work has proven that in the Boolean Lattice of size n, one can remove all subsets that are comparable to a single set and the resulting poset will have the nested chain decomposition property.

---

**Presenters:** Kristin Dalrymple  
**Project Advisor:** Barbara Burke (Speech Communication)  
**Title: Computer use in the classroom: The effects on communication**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Researchers who study the Digital Divide have pointed out critical gaps in society among different groups in the context of their access to new media and technology. I studied the Morris area specifically to look at the ways teachers use computers in the classroom. The purpose of this project was to describe how these schools respond to the continual changes in technology. This study surveyed 30 full-time teachers at three schools in the area: Morris Elementary School, St. Mary's, and Cyrus Math, Science, and Technology School. Information gathered includes: teacher demographics (age and gender); teacher computer use practices; and institutional support for hardware, software, and training. Findings indicate, for the Morris area, there is no pattern of younger teachers incorporating more technology into their classrooms. Additionally, I found unequal uses of technology between the three schools, and an eagerness among many teachers for more training opportunities. In response to my overarching research question, "How does incorporating computers in the classroom affect changes in the flow of communication?" I found a variety of answers that indicate that Morris area schools are not far behind in the Digital Divide, and teachers feel computers can be valuable resources.

---

**Presenters:** Larissa Davisson  
**Project Advisor:** Nancy Carpenter (Chemistry)  
**Title: Indium-mediated carbonylation: A better way**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Indium chemistry has been of interest to researchers in the past few years, due to its practical reactivity in carrying out certain types of organic reactions. It is preferred over older methods due to its low toxicity, and apparent ability to carry out some reactions in water, rather than in toxic organic solvents such as dichloromethane ( $\text{CH}_2\text{Cl}_2$ ). It was with this decreased toxicity in mind that we proposed using an allylindium reagent to develop a carbonylation reaction, as shown: (see attached figure). The goal of a carbonylation reaction such as this one is to link together two organic molecules, and insert a carbon monoxide molecule between them. This adds functionality to the molecule. Previously, allylstannane (a toxic tin compound) has been used in a similar, radical reaction. As allylindium reagents have been successfully substituted for allylstannanes in some other reactions, development of such a reaction seemed feasible. To date, we have tried several reactions using two different palladium (0) catalysts. The first one used a relatively common catalyst,  $\text{Pd}(\text{PPh}_3)_4$ , but the reaction was not successful. A second, more reactive catalyst is currently under investigation:  $\text{Pd}(\text{tBu}_3\text{P})_2$ , and the preliminary results, seen by gas chromatography-mass spectrometry and  $^1\text{H}$  NMR, look promising. The project will discuss the background of the reaction, as well as attempts in the laboratory to develop this synthetic pathway.

---

**Presenters:** Bethani Diersen  
**Project Advisor:** Jeff Ratliff-Crain (Psychology)  
**Title: Personal control in individualistic versus collectivistic countries**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Cultural values are among the factors that shape a person's desires for personal control. Individualistic societies focus on a person's own actions in comparison with collectivist societies which focus on participation in a group. Individualists show more desire for personal control in situations than collectivists. In the present study I assessed the extent that a study abroad experience may shift students' ideas about control because of the different views and influences of the culture. Individualistic students studying abroad for a semester in collectivist countries were predicted to show a greater change toward more collectivist control beliefs. Thirteen participants, students at UMM, completed questionnaires before and after studying abroad for a semester, 10 – 12 weeks. Four participants traveled to collectivist countries and nine traveled to individualistic countries. The questionnaire consisted of four sections: (1) demographics, (2) a twenty statements test for assessing self-concept and categorizing participants as 'individualist' v. 'collectivist,' (3) desirability and perceptions of control, and a (4) relationships and group control questionnaire. Results indicated that, overall, participants showed a loss of both of personal and group control after returning from their studies abroad. There were no significant differences between whether participants traveled to collectivist or individualistic societies. However, those with a greater reported loss of control, as indicated by the control questionnaires, also showed greater definition in their self-concept after returning, as indicated by the twenty statements test.

---

**Presenters:** Lauren Goodrich  
**Project Advisor:** Jennifer Goodnough (Chemistry)  
**Title:** Comparison of *ab initio* theory levels used to calculate nuclear quadrupole couplings  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Despite the name, quadrupole coupling constants are anything but constant. Quadrupole coupling constants can be determined by either experiment or theoretical calculations, but accurate experimental numbers do not exist for hydrogen-bonded liquids. Therefore, in some cases, theoretical calculations are the only option. When calculating theoretical coupling constants, several options exist for the level of theory. A 'higher' level of theory does not necessarily mean more accurate numbers. The multiple variables in the theory level include the method, basis set, basis functions, and the inclusion of orbitals and diffuse orbitals. These choices contribute to a countless number of ways to calculate the value. For this project, the theoretical quadrupole coupling constants (deuterium, oxygen, nitrogen) were calculated for several small molecules (CH<sub>3</sub>OH, CO, HCN, N<sub>2</sub>O, CH<sub>3</sub>COCH<sub>3</sub>) using several methods including Hartree-Fock, Density Functional Theory, Møller-Plesset, and Møller-Plesset 2. Various basis set, basis functions, etc. were used with each method. The geometries of the molecules were first optimized at the designated level and then the electric field gradient (efg) components were calculated. The nuclear quadrupole coupling constant was calculated from the principle component of the efg. By comparing the theoretical calculation of quadrupole coupling constants for several small molecules with literature experimental values, we report the most accurate method and basis set for calculating quadrupole coupling constants.

---

**Presenters:** Tara Gromatka, Nissa Staffaroni, Tracy Headley  
**Project Advisor:** Margaret Kuchenreuther (Biology)  
**Title:** The color of artificial flowers affects visitation rate by Syrphid flies  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The relationship between flowers and pollinators is a well-studied area of biology; however, more remains to be learned about how insects locate and choose which plants to visit. We studied the effects of artificial flower color on visitation rate by flies in the family Syrphidae. Artificial flowers lack the UV spectrum seen in natural flowers, which enables us to study visible spectrum cues in flower selection. We hypothesized that yellow flowers would be visited most frequently because yellow makes up the largest portion of the insects' visual spectrum. To examine variation in visitation rate, an artificial array of yellow, blue and white (control) flowers were observed in a patch of native prairie. We found a statistically significant difference in visitation rate to artificial flowers of various colors. Of the 231 visits by Syrphid flies, 51% were to yellow flowers, 32.5% were to blue flowers, and 16.5% of visitations were to white flowers. For flies that visited multiple flowers, we observed that the color of the first flower visited had an effect on the color of flowers selected for second visits. Flies showed floral constancy for yellow and blue flowers over the course of multiple visits. Our results supported the hypothesis that yellow flowers would be more attractive and, therefore, visited more frequently than white or blue flowers.

---

**Presenters:** Anne Hayes  
**Project Advisor:** Gordon McIntosh (Physics)  
**Title:** Velocity structures of masers in R Cassiopeia  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Silicon monoxide masers originate in the circumstellar environment of long period variable stars. Theories suggest that this region expands due to the passage of shock waves and contracts due to gravity. This cycle is expected to be correlated with the phase of the star. We have observed silicon monoxide maser emission from R Cassiopeia over several stellar periods and have analyzed the spectra to look for changes in the velocity structure that indicate the passage of a shock. Silicon monoxide maser spectra, velocity information, and phase correlations will be presented.

---

**Presenters:** Alyssa Herzog  
**Project Advisor:** Ray Schultz (Theatre)  
**Title:** Shakespeare's monopoly on love and revenge in *The Merchant of Venice*  
**Type of presentation** (Oral / Poster): p

**Abstract:**

This project is an example of dramaturgical research for a production of *The Merchant of Venice*, directed by Professor Ray Schultz, which took place in November 2005. Throughout the summer, prior to the rehearsal period, I conducted both textual and cultural research, as the show was set in the 1980s. I corresponded with the director throughout the summer, collaborating on conceptual ideas regarding the play. I also provided the director with a list of textual cuts and a definition list for the actors. I publicized the show, announcing auditions to the student body and faculty. I actively participated in the audition and casting process, as well. The information in the booklet provided is a compilation of the research I conducted, which includes a study guide created for the audience and cast members, as well as essays on my involvement in the show. The intended contributions of this project to the progression of theatre are to raise awareness about the field of dramaturgy to both those involved in theatre and the general audience, its potential influence upon theatrical productions, and for an extended dialogue between the audience and the theatre regarding the purpose and meaning of specific theatrical productions.

---

**Presenters:** Nathan Jarnot, Anders B. Carlson, Jennifer J. Evenson, Sheila R. Koval  
**Project Advisor:** Margaret Kuchenreuther (Biology)  
**Title:** UV floral pattern modification in black-eyed susan (*Rudbeckia hirta*) decreases bee visitation frequency  
**Type of presentation** (Oral / Poster): p

**Abstract:**

In addition to reflecting light in the visible spectrum, some flowers and plants differentially reflect and absorb light in the ultraviolet region of the spectrum. Black-eyed Susan (*Rudbeckia hirta*) is one of these flowers, and it has a bull's eye pattern of differing UV reflectance and absorbance. This experiment was undertaken to determine the effect of ultraviolet floral pattern modification in *Rudbeckia hirta* on the visitation frequency of bees. Bees were presented with unmodified *Rudbeckia*, modified *Rudbeckia* with completely reflective rays, and modified *Rudbeckia* with completely absorbent rays. The number of bee approaches to *Rudbeckia* was counted. The unmodified *Rudbeckia* received the largest number of approaches (50%), followed by the reflective head (30%), and the absorbent head (20%). The bull's eye present in the unmodified *Rudbeckia* may have made it more conspicuous to bees. The presence of both UV reflectance and yellow color, in the reflective head, may have caused it to be more conspicuous than the absorbent head. All of the heads were presented in front of a UV absorbing background and those with reflectance were visited most. This suggests that contrast between the background and the flower may determine the effectiveness of the UV guides.

---

**Presenters:** Lisa Jordan  
**Project Advisor:** Chris Cole (Biology)  
**Title:** Chemical defense trade-offs in Aspen  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Trembling aspen (*Populus tremuloides*), the most common North American tree, are known for high concentrations of secondary metabolite compounds such as phenolic glycosides (PGs) and condensed tannins (CTs), which account for 10-35% of dry weight of leaves. These compounds are energetically costly for trees to produce, thus it has been suggested that aspen trades-off between growth and defense energy allocation. Salicortin and tremulacin, typically the most abundant PGs, are thought to act as a chemical defense for aspens. Researchers are still trying to understand why aspen produce CTs, whose roles are still unknown, and the relationship between allocation to growth and chemical defense. In controlled gardens, inverse correlations were found between CT concentration and growth, and between CT and genetic variability (Hobs). For leaf samples from different wild aspen trees in Wisconsin, the amounts of CT and PG as well as Hobs were determined. Collaborating with researchers at the University of Wisconsin, we attempted to answer the following questions: Is there a relationship between genetic variability and the chemical composition of the tree? Is there a trade-off between PG and CTs? Do these compounds vary with the size of the tree? These data were analyzed for chemical composition versus genetic variability and size, and for PG vs. CT. We found no correlation between Hobs and DBH or chemical content, but did find a trade-off between PG and CT concentrations. Also, for all of the 51 aspen samples collected, the % salicortin was larger than the % tremulacin, contradicting previous literature.

---

**Presenters:** Ryan Kalmoe  
**Project Advisor:** Kristen Kearns (Physics)  
**Title:** Astronomical imaging of variable stars - Instrumentation and calibration  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Variable stars are stars that change in brightness over time for a variety of physical reasons. The observation of variable stars is particularly suited to observers with small, local telescopes because meaningful datasets are comprised of regular observations over long time periods (months to years), and there are many relatively bright variable stars in need of observation. Professional observatory scheduling is not well suited to this requirement, thus a significant contribution to variable star research is provided by small observatories similar to the UMM 16" telescope. We have chosen the star U Ori as a test target for our instrumentation project. U Ori is a Mira-type variable, meaning it is an old, evolved star that periodically changes in size, resulting in a change in luminosity. Long-term photometric studies of such stars provide a basis for refining current models of post-main sequence stellar evolution. In order to produce scientifically valid, magnitude-calibrated images of variable stars such as U Ori with the UMM 16" telescope and CCD imager, the optical systems must be designed and the hardware components assembled, pointing and calibration mechanisms must be integrated into this system, and the processes for observation and analysis must be mapped out, evaluated and standardized. This report will describe the current state of this ongoing project, focusing on the assembly of imaging hardware, fabrication of a flat field screen, and tests of the image calibration process.

---

**Presenters:** Natalie Kinsky, Lindsay Brinkman  
**Project Advisor:** Jeff Ratliff-Crain (Psychology)  
**Title:** Media influence on body image  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The study investigates media influences on personal body image. Print and T.V. media have usually relied on unrealistically thin and stylized versions of the "ideal" woman's body. It is a strong belief that media-based ideals are a contributing factor to negative body image held by American women. Recently, however, there have been attempts by some media and advertisers to use more "realistic" models, with the purpose of correcting the misperceptions, such as the recent ad campaign by makers of Dove soap. The present study will assess the extent that women (a) identify with images depicting the typical "ideal" models versus ones more accurate to average women's bodies versus ones depicting larger proportioned models and (b) the extent and direction of effect on women's perceptions concerning their own bodies. Female, undergraduate students between the ages of 18 and 22 at the University of Minnesota, Morris were invited to participate in this study. Participants filled out a background questionnaire packet pertaining to demographic information and exposure to media. Following the questionnaire, the subjects viewed five colored photo-copied images of a randomly selected body type (skinny, normal, plus size) and then filled out the Body Esteem Scale; the order of viewing the images and filling out the scale was alternated for each session. The last task asked subjects to view a body image continuum and circle the figure that best represented their own body image and also the figure that best represented the cultural ideal of the "perfect female body." The researchers anticipated that media exposure to images focusing on female body types would cause women to become more self-critical, regardless of the body-type. The study was conducted to test the validity and add to the research of the current ad campaigns using realistic depictions of the female body.

---

**Presenters:** Laura Knierim  
**Project Advisor:** Bart Finzel (Economics)  
**Title:** The effects of the workplace on trust  
**Type of presentation** (Oral / Poster): p

**Abstract:**

This project entails researching the determinants of trust using cross-sectional data from thirty-six countries from the International Social Survey Program's (ISSP) Social Networks II survey from 2001. Previous research identifies attitudinal, interpersonal, and institutional-based explanations for trust. For example, one form of the research concentrates on how individuals with similar characteristics (e.g., age, race, religion) are more likely to form an attitudinal foundation for trust. Another form of the research focuses on how repeated interaction with another person fosters trust. In other words, individuals learn to trust. A third form of trust, institutional-based, explains an individual's perception of how safe and secure they can be with their environment and with those around them. This research follows the principle of institutional-based trust and is primarily concerned with how the workplace characteristics affect trust. The ISSP variables include trade union participation, education, employment status, and hours worked weekly. These are potentially related to a person's willingness to trust another. Three variables within the ISSP data are proxies for "trust" and will serve as dependents. These include only a few people you can trust completely, other people want what is best for you, and other people take advantage of you. This research uses Two-Stage Least Squares (TSLS) and linear regressions for analyzing the data. It is expected that regressions using the chosen variables will provide an explanation of how the stated workplace variables affect trust.

---

**Presenters:** Stacie Lilliquist  
**Project Advisor:** Nancy Carpenter (Chemistry)  
**Title: Formation and characterization of the allyl indium reagent**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

In recent years, indium has become an important non-toxic reagent in the formation of new carbon-carbon bonds in organic synthesis. In fact, some indium-mediated reactions are capable of occurring in aqueous media, making indium an environmentally-friendly reagent. Many of these reactions involve the use of allyl indium halides, due to the further synthetic use of the carbon-carbon double bond. Although many studies have investigated allyl indium reactions in organic synthesis, little research has been conducted on the formation of the allyl indium reagent. My research used <sup>1</sup>H-NMR spectroscopy to investigate the formation of allyl indium bromide under various conditions. Solvents and molar equivalents of starting materials were varied in order to observe the rates of reactions and approximate yields of allyl indium bromide. To date, the best reaction times and yields occurred in a system of dimethylformamide (DMF) exposed to oxygen and using one equivalent of indium, although allyl indium bromide was also found to form in water. Future plans include conducting trials under an oxygen-free environment, as well as using a DMF/H<sub>2</sub>O solvent system in order to observe other possible changes in rates and yields.

---

**Presenters:** Jacob H. Melby  
**Project Advisor:** Ted Pappenfus (Chemistry & Mathematics)  
**Title: Synthesis and characterization of thiophene-pyrrole oligomers**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

A series of thiophene-pyrrole oligomers with hexyl or perfluorohexyl capping groups has been synthesized. Pyrrole substituted oligomers were prepared by cyclization reactions of dicarbonyl thiophene compounds with 4-hexylaniline. Hexyl and perfluorohexyl substituents were introduced by Stille coupling reactions. Perfluorohexyl compounds were prepared by perfluoroalkylation of bromoheterocycles via organocopper intermediates. Preliminary experiments show that pyrrole substitution results in higher energy electronic transitions in comparison to pure thiophene oligomers. Additional physical data including emission spectra and electrochemical data will be presented and compared to the pure thiophene oligomers. Computational methods will also be utilized to help explain the effect of pyrrole and perfluorohexyl substitution on the electronic and redox properties of the oligomers. Thiophene-pyrrole oligomers have important implications in the development of electroactive materials and many of these oligomers have not been studied to date.

---

**Presenters:** Elizabeth Montgomery  
**Project Advisor:** Katherine Benson (Psychology)  
**Title: A comparison of the sexual and violent content on MTV versus PBS after-school shows**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

What content in TV programs do children watch after school before their parents come home and can supervise them? The purpose of this study was to compare the content of MTV versus PBS programs during the 3:30-4:30 p.m. time span. Both networks were recorded over a 3:30-4:30 time-span for four consecutive days per week for two weeks, and then divided into ten-second intervals throughout the programs for the observation of content. Each ten-second interval was viewed and rated for the following content: sex, adult topics, violence, or none of the three, (i.e., no content was objectionable on those criteria). Before rating, inter-rater reliability was obtained with a reliability coefficient of 98%. The first major difference between the after-school programming for MTV and PBS concerned their official ratings, which were TV14 for MTV and TVY for PBS. The TV14 rating meant that this programming contained material that many parents would find unsuitable for children under age 14; the TVY rating meant that this programming was designed to be appropriate for all children. When the observed content was compared, it was found that MTV showed material that wasn't suitable for 14-year-olds because of sex, violence, or adult topics. MTV programs must be evaluated by parents before children watch them. Predictably, PBS programs and ratings did not cause concern for content. The implications will be discussed.

---

**Presenters:** Amanda Patnode  
**Project Advisor:** Jennifer Rothchild (Sociology)  
**Title:** A definitional investigation of genocide in the twentieth century  
**Type of presentation** (Oral / Poster): p

**Abstract:**

What is genocide? How do we define a genocidal event? Defining and understanding the concept of genocide is vital to raising the much needed social awareness of genocidal events of the past, present, and future. Studying how the concept of genocide is defined helps us to understand why specific historical events, during which a significant number of lives were destroyed, received different levels of political and public attention. I argue that the international community has become desensitized to the term and concept of genocide. This research project takes a critical look at previously published theoretical definitions of genocide and the elements of these definitions as related to historical events in order to reach a better understanding of what collective factors define genocide. I will be analyzing the definitions through a theoretical perspective based on the social conflict theory. An socially accepted and accurate definition of genocide will lead to social change on several different levels. A solid societal understanding of genocide and its elements will greatly assist in the raising social awareness, increasing political involvement, recognizing genocidal stages prior to the execution process, distinguishing the differences between 'war crimes' and 'crimes against humanity,' appointing appropriate responsibility and punishment for such genocidal crimes, and avoiding misuse or desensitization of the word "genocide."

---

**Presenters:** Mike Plesha  
**Project Advisor:** Eric Klinger (Psychology)  
**Title:** Participation in community activities on college campuses  
**Type of presentation** (Oral / Poster): p

**Abstract:**

What exactly motivates one human to volunteer, going out of his or her way to extend a hand to another human, often a complete stranger, remains a vexing question. Past research has shown that volunteering serves to enhance a volunteer's life through removing guilt or improving life in some other way such as a better resume or to meet new people. A study in 1998 by Clary, Snyder, and Ridge broke volunteering motives down into six categories: values, understanding, social, career, protective, and enhancement. My study further assessed if participants can be persuaded to volunteer as a function of their underlying motivations to volunteer. The participants were 32 students from UMM psychology and sociology courses. There were 13 male and 17 female participants with 2 participants not specifying gender. Participants were first tested to see in which of the six motivation categories they belong. Participants then observed either a social or career persuasive message. Participants finally viewed five real volunteer opportunities and rated them on how much they appealed. My hypothesis was that participants who scored high in social motives for volunteering after reading a socially persuasive message to volunteer or scored high in career motives and read a career persuasive message would be more likely to report wanting to volunteer than those who scored low in social or career motives to volunteer.

---

**Presenters:** Ajeng Puspitasari  
**Project Advisor:** Jennifer Rothchild (Sociology)  
**Title:** Non-formal education as an approach to diminish risky behaviors among street children in Indonesia  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The goal of this study is to analyze Indonesian street children's risky behaviors, such as stealing, fighting, practicing unprotected sex, using illicit drugs and alcohol, as survival mechanisms against pressures from more dominant social groups. Conflict theory is used as a framework to deeply examine this social issue. The economic crisis that hit Indonesia in 1997 has caused a significant increase of street children in numerous urban areas. Based on a report by Indonesian Ministry of Social Welfare, it is predicted that in year 2000, the total number of street children was as high as 3.1 million. Most of them live in extreme poverty and lack basic or secondary education. Almost all of them are involved in some kind of risky behaviors that are threatening for them and other members of society. Therefore it is seen as very important to study and examine these behaviors explicitly. From a sociological approach I will utilize secondary data analysis using existing research and literature, governmental data, and NGO's program reports, to argue that risky behaviors are survival strategies used by street children as a result of their inability to create a significant change in Indonesian society due to their limited power and wealth.

---

**Presenters:** Leanna Rahn, Jamie Lueke, Takayla Lightfield  
**Project Advisor:** Jeff Ratliff-Crain (Psychology)  
**Title: Hot or Not Hot: How the perception of alcohol use affects attractiveness**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

In this study we examined the effect of alcohol-related cues on perceived attractiveness of like-aged individuals presented on an Internet dating website. We hypothesized that the targets whose descriptions included drinking statements would be rated as more attractive. However, attractiveness was hypothesized to vary by gender of target such that men would give women who drink a lower overall rating, and women would give men who drink a higher overall rating. We want to know in particular if the effects seen in other experiments dealing with traditional dating can be extended to internet dating. The study used web-based photos and descriptions of young-adult males and females (the "targets"), varying inclusion of words that reflected drinking-related beliefs or behaviors. Participants were asked to rate the different targets on their attractiveness. Our study was a 2X2X3 design, including (1) gender of participants, (2) gender of chosen target, and (3) the alcohol use level of the target. The three levels of alcohol use were: no alcohol use, none specified, and alcohol use explicitly noted. The dependent variables were the ratings of attractiveness and desire to meet the target. There were four measures of attractiveness: "hot or not hot," "attractive or unattractive," "interesting or uninteresting," "exciting or unexciting."

---

**Presenters:** Cara Rudney  
**Project Advisor:** Carol Marxen (Education)  
**Title: Lesson Study: Collaborative professional development for preservice teachers**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The purpose of this project was to participate in a Japanese Lesson Study to answer the question of whether or not the professional development model is appropriate for preservice teachers at UMM. Japanese Lesson Study is a professional development model for educators which focuses on using teacher collaboration to enhance student learning and increase teachers' content knowledge. This model was introduced to the United States as a result of the Third International Mathematics and Science Study (TIMSS). By participating in the creation, teaching, debriefing, and editing of a Research Lesson, Carol Marxen and I were able to collect qualitative data about the benefits and obstacles of using this professional development model with preservice teachers. Results from the pilot study indicated that the collaborative nature of Lesson Study provides preservice teachers with a beneficial way of creating and thinking about lessons. Also, working with experienced teachers and educational professionals to create a lesson and receiving feedback about the lesson during the debriefing sessions provides enhanced guidance and support for preservice teachers. However, obstacles such as lack of specific knowledge about students in practicum classrooms and logistical problems made the Japanese Lesson Study professional development model difficult for preservice teachers to implement.

---

**Presenters:** Gus Rustan  
**Project Advisor:** Gordon McIntosh (Physics)  
**Title: Determining the orbital period of R Aquarii**  
**Type of presentation** (Oral / Poster): p

**Abstract:**

R Aquarii is a long period variable star that exhibits silicon monoxide (SiO) maser emission and is part of a binary system. Published velocity data for R Aqr has been collected and combined with SiO data taken at UMM in an effort to extract the orbital parameters of the binary star system. Accurate orbital information is essential to the understanding of the mass transfer mechanism that may be occurring in this and similar binary star systems. The recent UMM SiO data suggest that the period may be 35 years, rather than the previous estimate of 44 years (Hinkle et al, 1989).

---

**Presenters:** Andrew Shaffer  
**Project Advisor:** Peter Wyckoff (Biology)  
**Title:** Exotic earthworm abundance in West Central Minnesota  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Native earthworms did not survive the Pleistocene glaciations in Minnesota. The earthworms currently found in the state are mostly Eurasian, and result from a biological invasion that followed European settlement in the 1800's. One of the main modes for the spread of earthworms is thought to be through sport fishing. Although many regions of the state are now infested, some areas are thought to remain worm-free. Recent studies have documented negative impacts of Eurasian earthworms on Minnesota forests. Data on worm distribution in Minnesota, however, are patchy. We surveyed for earthworms using liquid extraction in five forested study areas in west central Minnesota - the town of Morris, the University of Minnesota, Morris campus and three State Parks. Worm abundance is high in town and on campus, but much lower in the State Parks. Our three parks have low worm densities despite the presence of at least one fishing lake in each park. One of our study areas, Glacial Lake State Park, appears to be largely worm-free. Contrary to a published study suggesting a link between earthworms and invasive European buckthorn (*Rhamnus cathartica*), we see an inverse correlation between worm abundance and buckthorn abundance in the study plots at our State Park sites.

---

**Presenters:** Emily Stout  
**Project Advisor:** Peh Ng (Mathematics)  
**Title:** The characterization of balanced matrices in directed hypergraphs  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Given a matrix with  $m$  rows and  $n$  columns whose entries are all  $0, \pm 1$ , the matrix is said to be balanced if for every square submatrix that has two nonzero entries in every row and in every column, the sum of the entries is a multiple of 4. While balanced matrices are highly theoretical, they have several useful applications. In particular, they reduce computational complexities while solving optimization problems, among other things. A balanced matrix, for instance, can guarantee an integer solution for certain types of network flow problems (i.e. the cost of shipping items between cities, under specific constraints). Previous research had succeeded in characterizing balanced matrices in terms of the corresponding bipartite graphs, another graphical form of representation. In our research, we created a representation of any  $0, \pm 1$  matrix called a directed hypergraph. In this presentation, we will show the characterization for balanced matrices in reference to the directed hypergraph created by the hyperarc incidence matrix, and also the preservation of "balanced" over a certain graphical transformation that simplifies the resulting matrix.

---

**Presenters:** Melissa Touroutoutoudis  
**Project Advisor:** Van Gooch (Biology)  
**Title:** Phase shifts of circadian rhythm in bioluminescent fungus due to temperature pulses  
**Type of presentation** (Oral / Poster): p

**Abstract:**

Circadian rhythms are important in determining our patterns of daily activity, including sleeping and eating. When our circadian rhythm is perturbed, these patterns of activity can be disturbed, resulting in jet lag, insomnia, fatigue, and other sleep disorders. Recently, the firefly luciferase gene has been inserted into the fungus *Neurospora crassa*'s genome. The luciferase gene, coupled to a gene controlling the circadian rhythm, will produce the enzyme luciferase when the circadian rhythm gene is activated. The enzyme will bind luciferin, and this chemical reaction will emit light at an intensity corresponding to the level of circadian activity of the organism. Through the use of an extremely light sensitive camera, we can accurately record the peaks of light production over time. By exposing the fungus to one-hour pulses of temperatures above the control temperature, we found that we could phase-shift their circadian rhythm; either advancing or delaying the peak of activity during the daily cycle. This effect depended on where in the cycle the temperature-pulse was applied, and seemed to be the greatest when the pulse came 30 hours after the organisms had been placed into the constant dark environment. When we perturb the cycle with temperature pulses, we see probable transients; a period of irregular emittance of light while the *Neurospora* is resetting its clock to a new cycle. We see good phase resetting at 32°C and no resetting at 29°C, so we believe that the critical temperature needed to reset *Neurospora*'s clock is approximately 32°C.

---

**Presenters:** Kelly Whipple  
**Project Advisor:** Bart Finzel (Economics)  
**Title:** Labor Allocation Decisions  
**Type of presentation** (Oral / Poster): p

***Abstract:***

The purpose of my research is to identify factors that determine the time allocation of husbands and wives between market labor and household labor. Shelton and Daphne discovered that women assume the majority of household work, while men spend more time in the labor market. Since at least the 1970s, there has been a decrease in the amount of time both husbands and wives spend on household work, but women have increased their total work time. According to a study done by Blau, from 1978 to 2000, women increased market work by 5 hours per week (hpw), while decreasing housework by 8.8 hpw. In the same period, men slightly reduced market work by .8 hpw and slightly increase household work by .7 hpw. Researchers have identified the factors determining the time allocation decision. These include increased labor force participation rates of married women, changing gender roles, wages and non-labor income, education and occupation. I plan to use data from the International Social Survey Programme, Family and Changing Gender Roles III of 2002, to determine whether or not the findings of previous research are supported. Using SAS, linear regression and two stage least squares will be used to test whether new independent variables such as religion, urban/rural and number of children along with the above variables explain the time allocation. Hours spent per week on household work will serve as the dependent variable. I expect to find that each new variable impacts the allocation of market labor and household work.

---

**Presenters:** Ryan Whittaker, Jacob Holthaus  
**Project Advisor:** Keith Brugger (Geology)  
**Title:** Paleoglacier reconstruction and inferred paleoclimate, Crystal Creek drainage basin, Colorado  
**Type of presentation** (Oral / Poster): p

***Abstract:***

Reconstruction of the Crystal Creek, CO, paleoglacier consisted of field mapping techniques and scrutinizing topographic maps and aerial photos. The field techniques included the mapping of 1) the down valley extent of the terminal moraine, 2) the position of lateral moraines, 3) the upper limit of glacially transported erratic boulders, and 4) the upper limit of glacial erosion. From the reconstructed glacier, the paleo-equilibrium line altitude (ELA) was determined using accumulation-area ratio (AAR) method. Changes in the ELA, since the last glacial maximum (LGM), can be interpreted in terms of changes in temperature and/or precipitation. By studying the difference between the paleo-ELA and the current ELA, we inferred climate change since the LGM.

---

**Presenters:** Michele Wilson  
**Project Advisor:** Jennifer Rothchild (Sociology)  
**Title:** Mission Possible: What motivates and allows volunteerism during natural disasters or catastrophic events  
**Type of presentation** (Oral / Poster): p

***Abstract:***

Research suggests that volunteerism has always been a middle class phenomenon (Bunker, 1957; Dynes, Tierney 1994; Cihlar, Shrestha 2004), but it is unclear if this aspect of volunteerism has changed or if there is an association between social class and the motivation to volunteer after a natural disaster. For this study I plan to conduct 20 interviews (N=20) with individuals from a rural Midwestern area who have volunteered during a natural disaster. I have crafted interview questions to elicit responses regarding interviewees' social status, motivations, those things that encouraged them to volunteer, and their experiences while volunteering. I have also asked participants to complete a questionnaire with demographic and socio-economic questions. The interview questions and the questionnaire will provide valuable information regarding the status of the subjects and the aspects that motivated them to act. This study is very timely in that the year 2005 had a record number of natural disasters, many of which were extremely devastating. If the number and intensity of such events should continue to increase, it will be increasingly important to identify who volunteers and why. These elements are critical to the future of the volunteer workforce. Studies such as this may serve as a valuable tool in the recruitment of traditional volunteers or may serve to implement unconventional volunteers.

---

**Presenters:** Karly Zyskowski  
**Project Advisor:** Eric Klinger (Psychology)  
**Title:** General health, loneliness, and sleep patterns in college students  
**Type of presentation** (Oral / Poster): p

**Abstract:**

The purpose of this study is to investigate loneliness, general health, sleep, and social patterns. It is predicted that the amount of loneliness will have a negative effect on a person's health and sleep quality. Past research has displayed that lonely individuals tend to have poorer health and often do not get enough sleep. It is predicted that lonely individuals spend more time with male friends than female friends. A study done by Hawkey, Burleson, Bertson, & Cacioppo in 2003 found that lonely individuals tend to spend more time with men that they do with women. This is thought to occur because of the nature of male and female friendships. Participants were asked to fill out a 94-question, multiple-choice self-report survey. Participants reported to one of the university's computer labs. The investigator presented participants with the consent form and went over it with the group and answered any questions that the participants had regarding the study. The survey asked questions about participants' age group and sex, and also questions from the Gender and Friendship Scale, the 36-Item Short Form Health Survey Instrument, the R-UCLA Loneliness Scale, the Sleep Effectiveness Scale, and the Zung Self-Rating Depression Scale. The investigator designed the Gender and Friendship Scale and the Sleep Effectiveness Scale specifically for this project. Results have yet to be calculated.

---

**Presenters:** David Wilson  
**Project Advisor:** Siobhan Bremer (Theatre)  
**Title:** Costume cusader  
**Type of presentation** (Oral / Poster): p/visual display

**Abstract:**

This project demonstrates the costuming process: From research to renderings to construction. These costumes are being produced for the UMM Theatre Didipline's Spring Production of "The Dark Castle," directed by Siobhan Bremer. The goal of this presentation is to present an understanding of the theatrical costuming process. The costume design and construction fulfills a senior project requirement. An examination of the research process, as well as how collaborative art is created, make up the bulk of this project. Examples of the costume process from 'thumbnail' sketch, to design, to a physical garment that can be worn will be displayed.

---

