

2007 Undergraduate Research Symposium

The URS Organizing Committee would like to thank the **students** for participating in this year's symposium.

Additional thanks to:

Duplicating Services staff

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Sodexo staff

and all the faculty that advised the projects and provided encouragement.

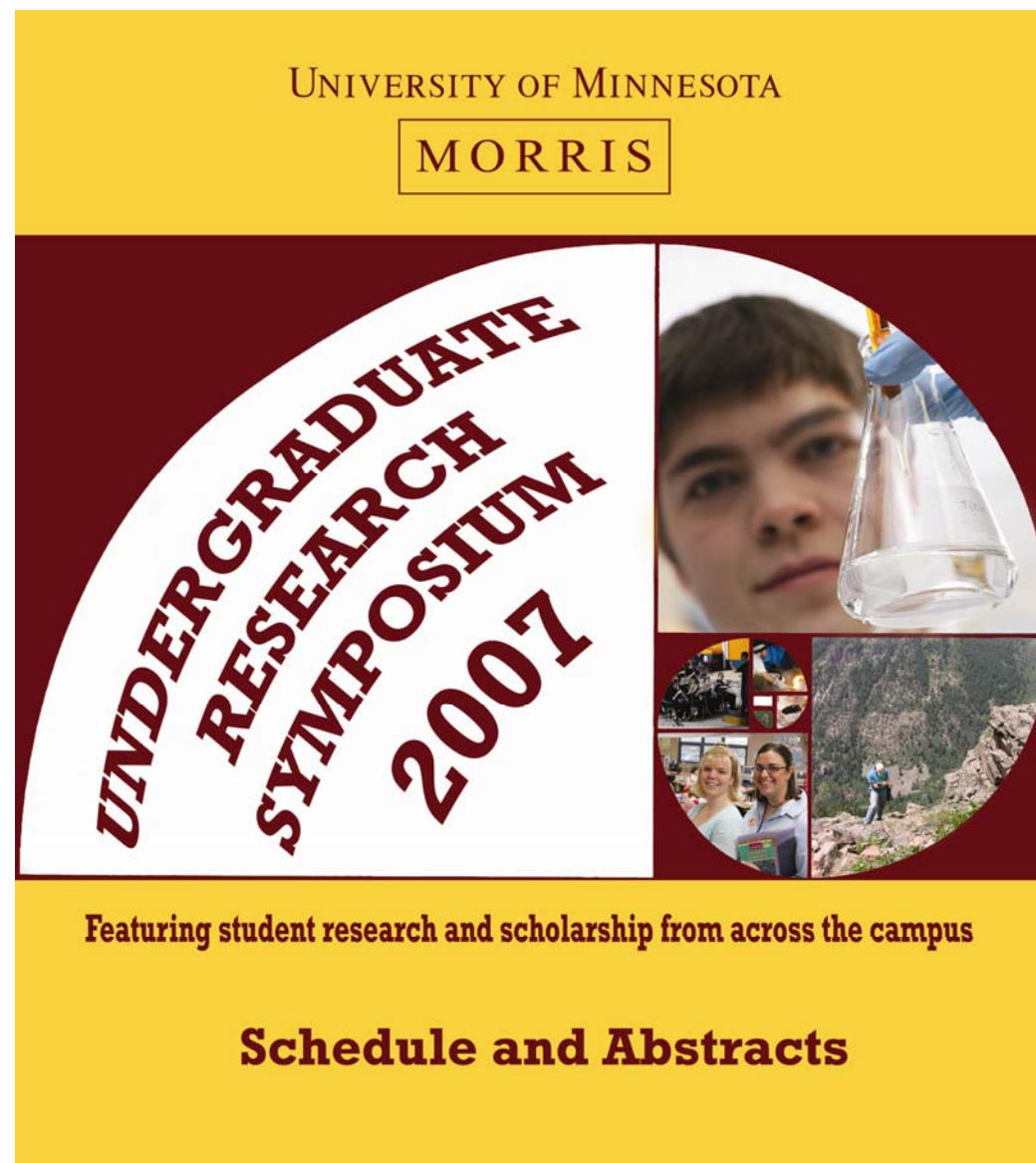
Without the above people, this event would not have happened.

The 2007 URS Organizing Committee

Paula O'Loughlin (Chair), Sylke Boyd, Michael Eble, Mark Logan, Jennifer Deane, Nathan Swanson, Adam Yust, Adele Raymond

URS logo designed by Michael Eble

Funding generously provided by the Office of the Vice Chancellor for Academic Affairs



The poster features a yellow background at the top with the text "UNIVERSITY OF MINNESOTA" and "MORRIS" in a box. Below this is a dark red section containing a large white arc with the text "UNDERGRADUATE RESEARCH SYMPOSIUM 2007" in red. To the right of the arc is a circular collage of images: a student in a lab coat holding a flask, a student in a classroom, and a student hiking in a natural setting. At the bottom of the poster is a yellow section with the text "Featuring student research and scholarship from across the campus" and "Schedule and Abstracts" in red.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

The University of Minnesota, Morris

- 2007 -

UMM Undergraduate Research Symposium
Featuring student research and scholarship from across campus

Friday, April 20, 2007

2:00 p.m. – 3:00 p.m.	Registration, John Q. Imholte Hall Atrium
2:30 p.m. – 3:00 p.m.	Improv Performance, <i>Unusual Suspects</i> John Q. Imholte Hall, Room #109
3:00 p.m. – 3:30 p.m.	Welcome-Dr. Judy Kuechle Interim Vice Chancellor for Academic Affairs and Dean
	Introduction of Keynote Speaker – Dr. Paula O’Loughlin, Associate Professor, Political Science, URS Chair
	Keynote Address “It Takes a College: Fostering Undergraduate Research” Angela L. Bos, UMM Class ‘01 Ph.D. Candidate Political Science University of Minnesota
3:30 p.m. – 5:15 p.m.	Oral presentations: John Q. Imholte Hall, Room #s: 101, 109, 111, 112, 113, 114, 115
5:30 p.m. – 7:00 p.m.	Posters/Visual Displays and Reception, Science Atrium

2007 UMM Undergraduate Research Symposium Program

OPENING CERMONY AND KEYNOTE ADDRESS

John Q. Imholte Hall Atrium 3:00 – 3:30 p.m.

ORAL PRESENTATIONS: 3:30 p.m. – 5:30 p.m.

John Q. Imholte Hall, Room #s: 101, 109, 111

Room #101

- 3:30 Dan Bakke (Economics/Management): **Environmental Building.** (Advisor: Arne Kildegaard), abstract pg. 7
 3:55 Ellery Fisher (Political Science): **The implications of the North Korean economic failure on a peaceful Korean unification.** (Advisor: Seung-Ho Joo), abstract pg. 12
 4:20 Colin Foral (History): **The Morris Campus' Democratizing Mission as Viewed Through Architecture, Landscape and History.** (Advisor: Steve Gross), abstract pg. 12
 4:45 **Herman Dominique Koutouan** (French): **African Aesop: Animal Symbolism in African and French Folktales.** (Advisors: Sarah Buchanan and Matt Senior), abstract pg. 16
 5:10 Emily Loehr (Political Science): **The Objectivity of the Subjective Economy: A Comparison of United States Census Regions** (Advisor: Paula O'Loughlin), abstract pg. 17

Room #109

- 3:30 Laurel Cutright (Theatre): **Never Land.** (Advisor: Siobhan Bremer), abstract pg. 6
 3:55 Brigitte Budahn (English): **Closing the Gap: A Call for Orality in the Classroom.** (Advisor: Tisha Turk), abstract pg. 10
 4:20 Laura Haas (Political Science): **How Responsible are Party Members to Their Parties?** (Advisor: Paula O'Loughlin), abstract pg. 13

Room #111

- 3:30 Alyssa Herzog (Theatre): **Dramaturgy: A Servant to *The Servant of Two Masters*.** (Advisor: Ray Schultz), abstract pg. 14
 3:55 Matt Bryan (Statistics): **Bioinformatics.** (Advisor: Jong-Min Kim), abstract pg. 9
 4:20 Matthew Hutchinson (English): **Nightmare: Atavism in Arthur Conan Doyle's *The Lost World*** (Advisor: Bradley Deane), abstract pg. 14
 4:45 Matt Little (Political Science): **Effectiveness of the Minnesota Political Contribution Refund Program: An Analysis of Minnesota State House of Representatives Elections from 1986-2002.** (Advisor: Paula O'Loughlin), abstract pg. 17
 5:10 Gabriel Maravelas (Sociology): **Effects of Raising Gasoline Prices on UMM Students.** (Advisor: Jennifer Rothchild), abstract pg. 18

Presenter: Bess Vlasisavljevic

Project Advisor: Joseph Alia (Chemistry)

Title: **The Unconventional Bonding in Diborane and B₃H₆⁺ Examined Via Valency Interaction Formulas (VIF)**

Type of presentation (Qral / Poster): Poster

Abstract:

The Valency Interaction Formula (VIF) method is a pictorial form of molecular orbital (MO) theory derived directly from quantum mechanics. The VIF pictures can be drawn in reference to one-electron energy or density. The energy method uses an effective one-electron Hamiltonian operator while the density approach uses an effective one-electron density operator. VIF pictures display interactions between atomic or hybridized atomic orbitals centered on atoms in a molecule. The VIF pictures are related to the numbers of doubly, singly, and unoccupied molecular orbitals and to molecular orbital energy patterns. Moreover, the VIF method is particularly useful as it easily relates MO calculations to verifiable molecular properties. For some molecules, the nature of bonding is simple; however, unconventional bonding species can become complex to interpret. For example, borohydrides are electron deficient and exhibit unconventional bonding in the form of bridging hydrogen atoms. The simplest accurate VIF pictures for diborane and B₃H₆⁺ indicate that bridging hydrogens are stabilized in two electron-three orbital bonds. The carbon counterparts, dicarbane and C₃H₆⁺ respectively, were also examined.

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Presenters: Melissa Rynerson and Andrew Windschitl

Project Advisor: Tracey Anderson (Biology)

Title: **Life Under the Ice: Characterizing the Macroinvertebrate Community in Page Lake, a Minnesota Prairie**

Pothole

Type of presentation (Oral / Poster): Poster

Abstract:

For our research we will determine how many benthic, or bottom, samples are required to obtain a meaningful estimate of community diversity and abundance of macroinvertebrates in Page Lake, near Hancock, MN. Page Lake is a 372 acre prairie pothole lake that is highly eutrophic and surrounded primarily by agricultural land. We selected sample sites randomly along transects crossing the lake starting 20 m from shore. We sampled the benthic zone by lowering an Eckman grab sampler through the ice and collecting 0.02 m² of sediment and associated organisms. Samples were washed through a 0.5mm mesh. All macroinvertebrates retained by the mesh were picked from the sediment and preserved in 80% ethanol. Diptera larvae, oligochaete worms, water mites, and microcrustaceans were common members of the benthic macroinvertebrate community. Macroinvertebrates will be identified to the genus-level whenever possible to more completely characterize the community. We will statistically analyze our results to determine how attributes of the benthic community change with sample size. The results from this study will provide a template for knowing how many samples are required in order to accurately characterize the macroinvertebrate community in prairie pothole lakes.

Presenter: Anna Jeanne Schliep

Project Advisor: Sylke Boyd (Physics)

Title: **Computer Simulations of Edge Dislocations in Crystalline RDX**

Type of presentation (Oral / Poster): Poster

Abstract:

Crystal RDX (Royal Defense Explosive) is one of the most powerful explosive substances, used not only in Cold War era weapons, but also in civilian applications. Crystal RDX is also very sensitive to detonation. Defect density in particular dislocations, has been experimentally correlated with the sensitivity of the substance to detonation. This research is part of a large initiative on improving safety of these materials. Dislocations are formed during crystal growth from solution. An edge dislocation is a type of defect in a crystal which consists of an incomplete stacking plane. The project explores possible geometries of edge dislocations in this fairly complex molecular crystal using a computer model. Various geometries of edge dislocations have been tested for their geometric and dynamic stability and conditions of constant temperature and pressure. We are interested in the influence of such a dislocation on conformation and orientation of near-by molecules, as well as in the strain distribution in the vicinity of the defect. We will present details of the computational model, theoretical background on edge dislocations, as well as current results on possible geometries. We will also outline difficulties that have been encountered while exploring such large-scale defects in a periodic model.

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ORAL PRESENTATIONS

John Q. Imholte Hall Room #s 112, 113, 114, 115

Room #112

- 3:30 Andrea Markgraf (Speech): **Sports Reporting and the Gender Bias.** (Advisor: Penny Schmidgall), abstract pg. 18
- 3:55 Benjamin Ecklund (Sociology): **The McDonaldization of Pharmaceuticals.** (Advisor: Jennifer Rothchild), abstract pg. 11
- 4:20 Blair Jasper (History): **Staging the Succession: Shakespeare's *King Lear* and the Succession Crisis of 1603.** (Advisor: Jennifer Deane), abstract pg. 15
- 4:45 Amanda Ochsner (English): **Leading Students to Success: A Teacher's Guide to the Five-Paragraph Essay.** (Advisor: Tisha Turk), abstract pg. 19
- 5:10 Emily Stout (English): **Unraveling Imperial Narratives of Time in *Lord Jim*** (Advisor: Bradley Deane), abstract pg. 21

Room #113

- 3:30 Christopher Battaglia (History): **Medieval English Tomb Effigies: Questions of Form and Function.** (Advisor: Jennifer Deane), abstract pg. 8
- 3:55 Nicole Ahles (Speech): **What You Wish They Hadn't Said at Your Wedding: A Rhetorical Construction of Wedding Toasts in Film and Real Life.** (Advisor: Mary Elizabeth Bezanson), abstract pg. 7
- 4:20 John Hanson (Philosophy): **Person, Punishment and the Effects of Imprisonment.** (Advisor: Tamler Sommers), abstract pg. 13
- 4:45 Crystal Oko (Speech & History): **Theodore Roosevelt: Natural Resources – Their Wise Use or Their Waste.** (Advisors: Mary Elizabeth Bezanson and Steve Gross), abstract pg. 19
- 5:10 Megan Weisbrod (English): **Imperial Implications of Identity: Reflections of Empire and the “Other” in Detective Fiction.** (Advisor: Bradley Deane), abstract pg. 22

Room #114

- 3:30 Annie Bigley (Anthropology): **The Impact of the Sex Industry on AIDS in India.** (Advisor: Dennis Templeman), abstract pg. 8
- 3:55 Maria Brun (Economics/Management): **Non-Government Organizations (NGOs) and HIV/AIDS in India: Identifying the Challenges.** (Advisor: Pareena Lawrence), abstract pg. 9
- 4:20 April Kinner (Sociology): **Perceptions of Disabilities.** (Advisor: Jennifer Rothchild), abstract pg. 15
- 4:45 Ruth Olson (Biology): **Development of a curriculum to train facilitators of HIV prevention committees in village churches of the Lutheran Church of Central Africa.** (Advisor: Timna Wyckoff), abstract pg. 20
- 5:10 Adam Turgeon (Economics): **A Case Study of the Cash Flows of the City of Benson.** (Advisor: Pareena Lawrence), abstract pg. 21

ORAL PRESENTATIONS
John Q. Imholte Hall, Room 115

- 3:30 Dana Carter (History): **Student Culture at the West Central School of Agriculture.**
 (Advisor: Steve Gross), abstract pg. 10
- 3:55 Joe Coyle and Corina Bernstein (French): **Framing the Art of Inclusion: Photography and Self-Expression.**
 (Advisor: Tammy Berberi), abstract pg. 11
- 4:20 Phillip Kollar, Luke Elward and Tessa Hempel (English): **Narrative, Meaning and Agency in *The Heat of the Day*.** (Advisor: Brook Miller), abstract pg. 16
- 4:45 Kevin Whalen (History): **Shaping a Future: Native Americans in the Indian Schooling Service, 1900.**
 (Advisor: Bert Ahern), abstract pg. 22
- 5:10 Lora Schuster (Speech): ***I Hope You Dance: A Rhetorical Analysis of a Mother's Wish.***
 (Advisor: Mary Elizabeth Bezanson), abstract pg. 20

POSTER PRESENTATIONS 5:30 p.m. – 7:00 p.m.
Science Atrium

- #1 Amanda Albrecht (Chemistry): **Development of an Organic Chemistry Lab: Fermentation and Distillation of Ethanol.** (Advisor: Nancy Carpenter), abstract pg. 23
- #2 Jessica Anderson and Sara Jamieson (Psychology): **Paternal Alcohol Use on Offspring Development and Spatial Learning in Mice.** (Advisor: Leslie Meek), abstract pg. 23
- #3 Troy Benson (Biology): **The Influence of European Buckthorn (*Rhamus cathartica*) on Soil Microarthropod Communities in Deciduous Forest Ecosystems in Minnesota.**
 (Advisor: Tracey Anderson), abstract pg. 24
- #4 Annika Bergman and Patrick Collins (Psychology): **Anchoring Effects on Different but Related Student Teacher Evaluations.** (Advisor: Tom Johnson), abstract pg. 24
- #5 Brian Bourne (Biology): **Novel responses of the clock gene frequency in entraining and constant light studies of the filamentous mold *Neurospora*.** (Advisor: Van Gooch), abstract pg. 25
- #6 Benjamin Buer (Chemistry): **Isolation of specific proteins via copper(I)-catalyzed alkyne-azide “click” cycloaddition.** (Advisor: Ted Pappenfus), abstract pg. 25
- #7 Ashley Ericson (Sociology): **The Gender Shift in the Homeless Population: A Theoretical Analysis.**
 (Advisor: Jennifer Rothchild), abstract pg. 26
- #8 Jason Fiedler (Biology): **Localization of Biogenic Monoamines with Two Aromatic Amino Acid Transporters of the SLC6 Family in the CNS of Mosquito Larvae.** (Advisor: Margaret Kuchenreuther), abstract pg. 26
- #9 Colin Foral (Anthropology): **The American Flag Lapel Pin and Presidential Identity.**
 (Advisor: Donna Chollett), abstract pg. 27
- #10 Julie Fox (Biology): **Resetting of the circadian biological clock using light in the mold *Neurospora crassa* with a firefly luciferase reporter gene.** (Advisor: Van Gooch), abstract pg. 27
- #11 Sam Geller (Physics): **Monte Carlo simulations of vacancy behavior in simple crystals.**
 (Advisor: Sylke Boyd), abstract pg. 28
- #12 Joshua Giefer (Physics): **An Experimental Study of Ultrasound in a Reflective Horn: Evidence for Chaotic Behavior.** (Advisor: Len Keeler), abstract pg. 28
- #13 Bobby Goodfellow and Megan Mekoli (Geology): **Deformation and Geochronology of the Grizzly Creek Shear Zone, Glenwood Canyon, Colorado.** (Advisor: Jamey Jones), abstract pg. 29

Presenter: Ben Rislow
Project Advisor: Gordon McIntosh (Physics)
Title: Emission Spectra of the Silicon Monoxide Maser VY Canis Majoris in the $v = 0, 1, 2,$ and 3 Vibrational States
Type of presentation (Oral / Poster): Poster

Abstract:
 Masers, a form of non-thermal radiation, originate in clouds of gas existing in the region around some giant stars. Using radio astronomical spectra taken from the Haystack Radio Telescope operated by the Massachusetts Institute of Technology, we generated images of the emission of the silicon monoxide maser source VY Canis Majoris as a function of Vlsr and time. Vlsr is the velocity of the light source with respect to the local standard of rest. Data were taken at various times from 2003 through 2006. Radiation is emitted when the maser undergoes a transition from a higher energy state to a lower energy state. Quantum mechanics allows molecular energy states to change only in discrete steps with some examples of energy states being rotational (J) and vibrational (v). We observed emissions caused by the J = 1-0 transition at the $v = 0, 1, 2,$ and 3 vibrational states. These emissions have been graphed separately. These graphs allowed us to visually, qualitatively assess emission trends within individual vibrational states and compare trends between different vibrational states.

Presenter: Jordan Roman
Project Advisor: Jennifer Rothchild (Sociology)
Title: Racial Inequalities in Education: A Social Conflict Analysis
Type of presentation (Oral / Poster): Poster

Abstract:
 Using a social conflict theoretical lens, this paper examines racial disparities in education and opportunities of advancement for African American students in urban city areas. Specifically, I apply W.E. B. DuBois' perspective of conflict theory in Social Class and Racism to this social phenomenon. I argue that we can come to a better understanding of racial inequalities in education by examining this social phenomenon from a social conflict perspective. There have been many changes in racial inequalities in the United States over the last few decades. As a result of economic growth and restructuring stemming from World War II, minority groups face growing racial inequalities which have been particularly evident in major inner cities. These racial inequalities affect different areas of social life. Existing literature supports the argument that there is a relationship between racism toward African American people in urban cities and their lack of opportunities of overall growth and advancement through higher education and that racism in urban cities leads to decreased access to, participation in, and achievement for African Americans (O'Connor, 2006:4). Thus, there are fewer opportunities for African Americans to attain higher levels of quality education which leads to improved life chances, increased earning potential, and advancement opportunities. Decreased access to higher education leads to high rates of crime, poverty, and unemployment, especially in concentrated inner city areas where most minorities live. There exists substantial evidence that African Americans make up a fairly small percentage of graduating high school students who go to, stay in, and graduate from four year universities and colleges. Until recently, we as a society have disregarded the problem of racism in urban education. As a result, inner cities will continue to worsen and minorities will continue to struggle in gaining opportunities of advancement

Presenter: Jacob Melby

Project Advisor: Ted Pappenfus (Chemistry)

Title: Fabrication and Characterization of Organic Thin Film Transistors (OTFTs)

Type of presentation (Oral / Poster): Poster

Abstract:

There is a need to develop air stable organic semiconducting devices while also considering key performance parameters such as: on-to-off current ratio, field effect mobility, and threshold voltage. This research will focus on the fabrication and characterization of new p-channel OTFTs based on pentacene and novel thiophene-acene hybrid molecules. Highly crystalline thin films will be deposited from the vapor phase onto various gate/insulator substrates followed by deposition of metal electrodes. Thin film structure and morphology will be examined using X-ray diffraction and atomic force microscopy. The electrical properties of OTFTs will be observed using a top-contact transistor geometry and probe station. The connection between molecular/crystal structures and electronic properties provides a foundation for elucidating structure-property relationships and facilitates development of new organic semiconductors with enhanced transport properties.

Presenter: Sam Potter

Project Advisor: Peh Ng (Mathematics)

Title: Forbidden Structures of Directed Hypergraphs with Totally Unimodular Matrices

Type of presentation (Oral / Poster): Poster

Abstract:

One of the challenges of solving optimization problems is attaining solutions that make sense in the real world. One example of this in a scheduling problem, say a company is attempting to allocate their employees in the most efficient manner possible. It is possible that the solutions found via linear programming give noninteger number solutions (the solution may require you to assign 5.5 people to Job 1, 8.7642 people to Job 2 and so on). Thus it is important to know the circumstances under which integer solutions can be guaranteed, since you cannot divide people into fractions. In a linear programming problem $\{\min \mathbf{c}\mathbf{x} : \mathbf{A}\mathbf{x} = \mathbf{b}, \mathbf{x} \geq \mathbf{0}\}$, the only circumstance under which integer solutions can be obtained for any possible costs and any requirements \mathbf{B} , is when the coefficient matrix, \mathbf{A} , is totally unimodular. A ± 1 and 0 m by n matrix is said to be totally unimodular if every square submatrix has determinant of ± 1 or 0. In our research we used directed hypergraphs to find conditions that guaranteed a totally unimodular matrix. A directed hypergraph is defined as $G=(V,H)$ where V is a set of vertices and H is a set of hyperarcs, which have an arbitrary amount of heads and tails. Every matrix with entries of ± 1 or 0 can be viewed as the vertex-hyperarc incidence matrix of some directed hypergraph, thus looking at the structures of the directed hypergraph associated with any of these matrices, we can obtain information about the matrix itself. In our research, we found forbidden structures in directed hypergraphs that will yield totally unimodular vertex-hyperarc incidence matrices.

POSTER PRESENTATIONS

Science Atrium

- #14 Lauren Goodrich (Chemistry): **Synthesis, Characterization, and Photochemically-Directed Self-Assembly of Au (Gold) Nanoparticles.** (Advisor: Jennifer Goodnough), abstract pg. 29
- #15 Laura Haas (Economics/Management): **Predicting Currency Crises.** (Advisor: Arne Kildegaard), abstract pg. 30
- #16 Tyler Helland (Biology): **Tetracycline resistance determinants in Staphylococcus isolated from milk samples from conventional and organic dairies in west-central Minnesota.** (Advisor: Timna Wyckoff), abstract pg. 30
- #17 Sara Herman (Theatre): **Servant of Two Masters Costume Design.** (Advisor: Siobhan Bremer), abstract pg. 31
- #18 Bethany Hermanson (Chemistry): **Comparison of fused and non-fused substituted ring systems as candidates for organic semiconductors.** (Advisor: Ted Pappenfus), abstract pg. 31
- #19 David Hermanson (Chemistry): **Investigation of poly(3-hexylthiophene) as an undergraduate lab experiment.** (Advisor: Ted Pappenfus), abstract pg. 32
- #20 Jeff Hubers (Chemistry): **Mapping the interaction of the HIV-1 capsid protein and lysyl-tRNA synthetase using covalent cross-linking studies.** (Advisor: Ted Pappenfus), abstract pg. 32
- #21 Scott Hubers (Chemistry): **Chemical probes as tools for studying Parkinson's disease.** (Advisor: Ted Pappenfus), abstract pg. 33
- #22 Becki Jordan (Sociology): **Dispelling the Gender Myth: A Theoretical Analysis of Women as Perpetrators of Domestic Violence.** (Advisor: Jennifer Rothchild), abstract pg. 33
- #23 Pulum Kim (Psychology): **Self-Control and Value: Their Relationships in Commission of Minor Crimes.** (Advisor: Eric Klinger), abstract pg. 34
- #24 Janice Lee (Chemistry): **Using nuclear magnetic resonance spectroscopy (NMR) to study temperature dependent hydrogen bonding in N-Methylformamide.** (Advisor: Jennifer Goodnough), abstract pg. 34
- #25 Emily Loehr (Economics/Management): **Prisoners of Geography? The Differentiating Effects of International Trade on the United States.** (Advisor: Bart Finzel), abstract pg. 35
- #26 Cassandra McMahon (Political Science): **The Role of Information Environments in Environmental Knowledge and Engagement.** (Advisor: Paula O'Loughlin), abstract pg. 35
- #27 Jacob Melby (Chemistry): **Fabrication and Characterization of Organic Thin Film Transistors (OTFTs).** (Advisor: Ted Pappenfus), abstract pg. 36
- #28 Sam Potter (Mathematics): **Forbidden Structures of Directed Hypergraphs with Totally Unimodular Matrices.** (Advisor: Peh Ng), abstract pg. 36
- #29 Ben Rislow (Physics): **Emission Spectra of the Silicon Monoxide Maser VY Canis Majoris in the $v = 0, 1, 2,$ and 3 Vibrational States.** (Advisor: Gordon McIntosh), abstract pg. 37
- #30 Jordan Roman (Sociology): **Racial Inequalities in Education: A Social Conflict Analysis.** (Advisor: Jennifer Rothchild), abstract pg. 37
- #31 Melissa Rynerson and Andrew Windschitl (Biology): **Life Under the Ice: Characterizing the Macroinvertebrate Community in Page Lake, a Minnesota Prairie Pothole.** (Advisor: Tracey Anderson), abstract pg. 38
- #32 Anna Jeanne Schliep (Physics): **Computer Simulations of Edge Dislocations in Crystalline RDX.** (Advisor: Sylke Boyd), abstract pg. 38
- #33 Bess Vlasisavljevich (Chemistry): **The Unconventional Bonding in Diborane and B₃H₆⁺ Examined Via Valency Interaction Formulas (VIF).** (Advisor: Joseph Alia), abstract pg. 39

Featured Presentation
John Q. Imholte Hall Auditorium, Room #109
3:30 pm

Presenter: Laurel Cutright
Participants: Philip Burgraff, John Eisenrich, Peter Ray and Emily Denny
Project Advisor: Siobhan Bremer (Theatre)
Title: Never Land
Type of presentation (Oral / Poster): Feature presentation
 John Q. Imholte Hall, Room #109, 3:30 p.m.

Abstract:

I used inspiration from one of my favorite pieces of literature, *Peter Pan*, by JM Barrie to write my first-ever ten minute play. This allowed me to interpret already established characters in a contemporary manner. One of my favorite aspects of playwriting is the ability to make the audience ask “What if?” questions. It is part of being a writer, and especially one who enjoys working with post-modern styles. I attempt to introduce seemingly normal people into unusual situations, and sit back as they work their way out of it. Staying true to the characters became a very important aspect, especially because I was presenting a new side of some pre-existing (and well-loved) characters. While writing has always been a part of my life, learning to write plays has given me new skills in analysis and critique of all writing, including my own and that of others. Working within the classroom setting gave me valuable feedback as well as a greater appreciation for the nuances of the creative process. I have also had the amazing opportunity to watch as my script became a show, produced entirely by fellow students. While this may seem to be the ‘end’ of the process, it is in fact still another step. Watching my own play only inspires me to experiment further and to work toward my eventual goals of being a professional writer.

Presenter: Emily Loehr
Project Advisor: Bart Finzel (Economics/Management)
Title: Prisoners of Geography? The Differentiating Effects of International Trade on the United States
Type of presentation (Oral / Poster): Poster

Abstract:

This paper builds on previous research in the field of economic development which indicates that a country’s geography is an important determinant of their economic success. Hausmann studies the differences between developed and undeveloped countries and finds that countries furthest from a coastline, or “landlocked,” tend to be poorer, with lower rates of economic growth (46). This paper tests Hausmann’s analysis of the causes of economic development and underdevelopment by region within the United States by comparing employment shifts between two groups of standard metropolitan statistical areas (SMSA): those that are located on major waterways and those that are largely land-locked. The Heckscher-Ohlin model of international trade theory dictates free trade raises the overall income of each country relative to what each would have made under autarky. Since full employment is assumed, trade has no effect on aggregate numbers of jobs in this model. Trade will cause changes in employment patterns and income distribution between industries because the model allows factor prices to adjust to maintain that full employment. If the Heckscher-Ohlin model is correct, then we can expect liberalized trade to have shifted employment in trade-affected industries more so in those SMSAs with easier access to international trade. Data on imports and exports of Standard Industrial Classification (SIC) industries revealed those industries that have been most affected between 1973 and 1994. The shift in those industries’ employment numbers are then compared for the two groups of SMSAs between the two dates, 1972 and 1992, to test the hypothesis.

Presenter: Cassandra McMahan
Project Advisor: Paula O’Loughlin (Political Science)
Title: The Role of Information Environments on Environmental Knowledge and Engagement
Type of presentation (Oral / Poster): Poster

Abstract:

This project aims to examine the relationship between an individual’s information environment and their knowledge of and engagement in environmental issues. Current research shows that young adults (18-25) lack immediate concern for environmental issues and possess less knowledge in these areas compared to older generations. The purpose of this research is to determine whether a young adult enrolled at a green campus, a rich environmental information environment, becomes more informed and engaged in environmental issues than peers at non-green campuses. To answer this question, students from the College of Liberal Arts at the University of Minnesota, Twin Cities and Morris responded to a survey which gauged environmental literacy, civic engagement, and policy preferences. The results of this study have the potential to answer questions regarding the role and effectiveness of environmental education in higher education.

Presenter: Pulum Kim**Project Advisor:** Eric Klinger (Psychology)**Title:** Self-Control and Value: Their Relationships in Commission of Minor Crimes**Type of presentation** (Oral / Poster): Poster**Abstract:**

To what extent does the personality trait of self-control, combined with the value of a desired goal and the likelihood of getting caught, influence the decision to commit an illegal act? Self-control has been defined as the ability to surmount instantaneous gratification and to pursue remote goals that are not evident in the immediate milieu (Slessareva & Muraven, 2002). The Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004) was used to assess self-control. This includes impulsivity, self-discipline, and activity level. The Inventory of Common Misdeeds (Mielke, 2005) assessed the commission of various misdeeds, perceived probabilities of getting caught, along with feelings associated with committing the misdeeds. The Brief Multidimensional Personality Questionnaire (Patrick, Curtin & Tellegen, 2002) was employed to assess higher-order traits such as positive and negative emotionality and constraint. Moderated regression analysis was performed to test (1) the effect of the value of possessing the stolen desired item on the relationship between the perceived chances of being caught and the theft misdeed and (2) the effect of the value of consuming alcohol and of getting away with consuming alcohol while under the age of 21 on the relationship between the perceived chances of getting caught and the consumption of alcohol while under the age of 21. In a mediation analysis, the value of having the better grade through the academic misdeed and of getting away with the misdeed was tested to see their effect on the relationship between the perceived chances of getting caught and the academic misdeed.

Presenter: Janice Lee**Project Advisor:** Jennifer Goodnough (Chemistry)**Title:** Using nuclear magnetic resonance spectroscopy (NMR) to study temperature dependent hydrogen bonding in N-Methylformamide**Type of presentation** (Oral / Poster): Poster**Abstract:**

We performed experimental nuclear magnetic resonance spectroscopy (NMR) to explore the hydrogen bonding groups in N-Methylformamide (NMF) at varying temperatures. Hydrogen bonding is a biologically significant force that holds the structures of macromolecules, such as DNA and proteins, together. Studying hydrogen bonding groups in NMF that are similar to those in protein provides insights into how temperature changes affect the structure of the macromolecules. NMR provides the information related to the hydrogen bond strength of NMF via chemical shift data. Therefore, the chemical shifts of hydrogen bonding group—NH—in NMF are studied from 275 K to 376K. The relaxation times are measured for the amide deuterium on NMF. Relaxation times can lead to the rotational correlation times via calculation. The correlation time tells us approximately how fast the molecule moves at different temperatures. We observed that the hydrogen bond strength decreases as temperature increases. Thus, we report the relaxation time and rotational correlation time as functions of temperature for NMF.

Oral Presentations**John Q. Imholte Hall****Room #s: 109, 101, 111, 112, 113, 114, 115****3:30 – 5:15 pm****Presenter:** Nicole Ahles**Project Advisor:** Mary Elizabeth Bezanson (Speech)**Title:** What You Wish They Hadn't Said at Your Wedding: A Rhetorical Construction of Wedding Toasts in Film and Real Life**Type of presentation** (Oral / Poster): Oral

John Q. Imholte Hall, Room #113, 3:55 p.m.

Abstract:

This project explores the rhetorical construction and function of wedding toasts. This work grows from Aristotle's early recognition of the rhetorical nature of epideictic speeches and continues to this day in current concerns regarding ceremonial speaking in all public speaking texts. This rhetorical construction and analysis focuses on epideictic speeches, commonly known as ceremonial speeches, and more specifically wedding toasts and how these unrecognized ceremonial events are employed in the development of cultural values. Special occasions are rituals that draw people together in celebration of someone or something. For this reason, special occasions stand out of routine because of the uniqueness and therefore, the words spoken for these events are unique. But what makes them this way? What determines a good or bad ceremonial speech? This analysis will use these questions to look at wedding toasts. It will first establish the genre as constructed by films featuring wedding banquets, as the popular exemplar of the type, and then apply it to a real life example: the toasts given at my wedding. My theoretical framework will be established by the guides set forth in both the films of review and from other resources available to the general population with the intent to teach how to give a memorable and successful wedding toast.

Presenter: Dan Bakke**Project Advisor:** Arne Kildegaard (Economics/Management)**Title:** Environmental Building**Type of presentation** (Oral / Poster): Oral

John Q. Imholte Hall, Room #101, 3:30 p.m.

Abstract:

The historic elementary school building site located on Colombia Avenue is being developed into a new housing development and a community center for the citizens of Morris. The Committee commissioned to oversee the project has goals that include a sustainable community and reducing costs while saving the environment. The project outlines finding adequate and appropriate means to reduce the costs of living, and emissions created by the houses in the environment, while maintaining a reasonable cost and abiding within the geographical and climate restrictions of the Midwest. The presentation embodies the means to achieve maximum potential for both costs and the environment. The data collected was obtained through information provided by the census and local businesses.

Presenter: Christopher Battaglia
Project Advisor: Jennifer Deane (History)
Title: Medieval English Tomb Effigies: Questions of Form and Function
Type of presentation (Oral / Poster): Oral
 John Q. Imholte Hall, Room #113, 3:30 p.m.

Abstract:

Although the classical worlds of Greece and Rome are known for their sculptural arts, the works produced during Europe's medieval period are no less impressive. In England after 1250 A.D. the design and decoration of tomb effigies in particular becomes interesting. These works became increasingly popular appearing all over the country, such that many can still be found in major cathedrals as well as small country parishes. The primary goals of this project were to survey the body of artistic work in tomb effigies in England during the medieval era, and to make an attempt at interpreting some of the various decorative elements found on the tombs. Effigies in England began to diverge at this time stylistically, not only amongst themselves, but also from those on the continent. The prevalence and diversity of effigies raises many questions. Understanding tombs and their sculptural elements is important because they are a part of the distinct cultural heritage of the western world, and of changing understandings of human mortality. More specifically, the large number of medieval English effigies, and the relative variability of design, indicates that they were an important medium for social and religious expression. Some conclusions of this study are that English effigies eventually developed into three distinct groups, roughly corresponding to the three social classes of the period. While a certain uniformity emerged from the broad influence of certain trends in construction and plan, each group nevertheless utilized specifically meaningful symbolic language in their effigies.

Presenter: Annie Bigley
Project Advisor: Dennis Templeman (Anthropology)
Title: The Impact of the Sex Industry on AIDS in India
Type of Presentation: (Oral / Poster): Oral
 John Q. Imholte Hall, Room #114, 3:30 p.m.

Abstract:

This research project explores the role the sex industry plays in both the spread and prevention of HIV/AIDS through examining official policies, recent studies and the actions taken by the individuals involved in the sex industry. AIDS in India is a relatively new phenomenon which is still widely denied or downplayed by much the population. Sex workers were one of the first groups to be targeted as a high-risk group for HIV and AIDS but are also one of the first groups to become active in the prevention of HIV/AIDS through peer education.

Presenter: Scott Hubers
Project Advisor: Ted Pappenfus (Chemistry)
Title: Chemical probes as tools for studying Parkinson's disease
Type of presentation (Oral / Poster): Poster

Abstract:

The aim of my research was to study the behavior of DJ-1 and α -synuclein, two proteins thought to affect Lewy body formation of Parkinson's disease (PD). DJ-1 is proposed to be an antioxidant that protects cells from oxidative stress whereas α -synuclein may undergo post-translational modification and aggregation under oxidative stress to form Lewy bodies. Since the function of DJ-1 depends on its ability to form a dimer, my research was aimed at finding small molecules that bind to and stabilize dimeric DJ-1, thus enabling it to retain its antioxidant properties. Results from a fluorescence assay suggest that molecules 6027 and 5696 (identified via an *in silico* screening and obtained from Sigma) are able to bind to and stabilize dimeric DJ-1. In order to understand the effects of oxidative stress on α -synuclein, mutant and wild-type α -synuclein was incubated with various concentrations of a stressor called acrolein. SDS-PAGE and Western blot analyses indicate that both mutant and wild-type α -synuclein form dimers and trimers upon exposure to acrolein. In addition to studying the effects of acrolein on α -synuclein, another aim of my research was to identify compounds that inhibit the formation of high molecular weight species of α -synuclein. A compound called hydralazine appears to inhibit the formation of α -synuclein dimers and trimers at half the concentration of acrolein. These findings suggest that molecules and compounds which stabilize dimeric DJ-1 and inhibit high molecular weight species of α -synuclein could be important to the development of therapeutic drugs in the prevention and treatment of PD.

Presenter: Becki Jordan
Project Advisor: Jennifer Rothchild (Sociology)
Title: Dispelling the Gender Myth: A Theoretical Analysis of Women as Perpetrators of Domestic Violence
Type of presentation (Oral / Poster): Poster

Abstract:

Most people in today's society envision women as the victims in instances of domestic abuse; however, there are discrepancies between this perception and current research findings. In this paper, I will focus on women perpetrators and will review current statistics and information on domestic violence to address the misperception that men are the sole abusers in intimate relationships. Specifically, I problematize the discrepancies found within current domestic violence research in regard to the rates of female-perpetrated abuse. Using liberal feminism as my theoretical lens, I compare and analyze the findings of the two most often cited scales of measurement for intimate violence: "family conflict" studies (i.e., those using Conflict Tactic Scales (CTS)) and "crime studies" (e.g., the National Crime Victimization Survey (NCVS) and police call data). I expect to find that discrepancies in current figures are directly related to variations in data collection methods and societal ideologies about domestic abuse. This is an important topic to address because society's stereotypical view of abusers as only men is not accurate. Further examination of these findings will help to determine possible causes for data discrepancies while also revealing a largely overlooked area of abuse, so that appropriate services and programs can be developed and provided regardless of gender.

Presenter: David Hermanson

Project Advisor: Ted Pappenfus (Chemistry)

Title: Investigation of poly(3-hexylthiophene) as an undergraduate lab experiment

Type of presentation (Oral / Poster): Poster

Abstract:

Experiments have been developed for the synthesis and investigation of poly(3-hexylthiophene) for the undergraduate laboratory. This NSF-funded work is part of a larger effort to integrate conducting polymers across the undergraduate curriculum. Monomers were synthesized and characterized by spectroscopic methods including infrared and NMR. Regio-regular and region-random forms of poly(3-hexylthiophene) were synthesized and then characterized using proton Nuclear Magnetic Resonance (NMR) and both solution and solid state UV-Vis spectroscopy. The results from the experiments are consistent with those reported in the literature. Polymers and monomers are also investigated with the use of density functional methods using computational software.

Presenter: Jeff Hubers

Project Advisor: Ted Pappenfus (Chemistry)

Title: Mapping the interaction of the HIV-1 capsid protein and lysyl-tRNA synthetase using covalent cross-linking studies

Type of presentation (Oral / Poster): Poster

Abstract:

The interaction of two proteins necessary in life cycle of human immunodeficiency virus type 1 (HIV-1) was investigated using gel electrophoresis (SDS-PAGE) and Western blot analysis. During the HIV-1 life cycle, host-cell nucleic acid tRNALys3 is used as the primer for reverse transcription. tRNALys3 is selectively packaged into assembling virions in a complex that includes lysyl-tRNA synthetase (LysRS) as well as two HIV precursor proteins (Gag and GagPol) and viral RNA. During packaging, the tRNALys/LysRS complex interacts with a Gag/GagPol complex, with LysRS interacting specifically with Gag and tRNALys interacting with GagPol. The regions critical for the LysRS/Gag interaction have been mapped to the capsid (CA) region in Gag and motif 1 of LysRS (Kovaleski et al., 2006). Covalent cross-linking studies allow identification of proximal residues on closely interacting proteins. Using a cysteine-specific homobifunctional cross-linker (*bis*-maleimido-hexane) and a photoreactive heterobifunctional cross-linker (benzophenone-4-maleimide), studies were conducted to map specific residues involved in the CA/LysRS interaction. Using SDS-PAGE and Western blot analysis, no significant CA/LysRS complex has been observed using either cross-linker, suggesting that the cysteine residues on CA are not in close proximity to the LysRS/CA interaction site. However, both LysRS and CA formed homodimers using the benzophenone-4-maleimide cross-linker. Single cysteine mutated forms of the CA protein were also generated for use in future cross-linking studies.

Presenter: Maria Brun

Project Advisor: Pareena Lawrence (Economics/Management)

Title: Non-Government Organizations (NGOs) and HIV/AIDS in India: Identifying the Challenges

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #114, 3:55 p.m.

Abstract:

India has the second largest population living with HIV/AIDS in the world. It is predicted that the current estimate of 5.1 million HIV positive people will grow to 20-25 million by 2010. This paper examines the role of NGOs in the fight against the HIV/AIDS epidemic in India by examining the experiences of two NGOs that are located in different parts of the country. The paper also identifies the challenges faced by these NGOs such as lack of government responsiveness, funding related problems, corruption and kickbacks, NGO and donor accountability, and cultural problems in their fight against HIV/AIDS. This paper is a case study that adds to the breadth of knowledge on the NGOs working with AIDS in India. It further identifies and analyzes the economic and social challenges faced by NGOs in dealing with the impending AIDS crisis in India. This research is based on interviews and internal documents from the NGOs themselves.

Presenter: Matt Bryan

Project Advisor: Jong-Min Kim (Statistics)

Title: Bioinformatics

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #111, 3:55 p.m.

Abstract:

This presentation will discuss the use of pairwise sequencing in the field of bioinformatics. Pairwise sequencing is a process that aligns two genetic sequences based on the sequence of DNA or protein that make up each gene. This is done in a way that utilizes biological knowledge about the evolution of these sequences. The results of this process can then be used to make inferences about the homology between these two genes. Homologous sequences are those which have evolved from a common ancestor. Thus establishing homology can provide insight into a gene's evolution as well as its genetic function. However, homology is very difficult to establish between two genetic sequences; that is why pairwise sequencing is used to find appropriate candidates to test for homology. In this presentation, I will explain the statistical theory behind pairwise sequencing, and how software tools such as BLAST are used to carry out this process. By doing so, I hope to increase awareness and heighten interest in this growing field.

Presenter: Brigitte Budahn
Project Advisor: Tisha Turk (English)
Title: Closing the Gap: A Call for Orality in the Classroom
Type of presentation (Oral / Poster): Oral
 John Q. Imholte Hall, Room #109, 3:55 p.m.

Abstract:

Although there is much published regarding writing as an advantageous mode of learning, relatively little research has been done on the pedagogical advantages of oral language. Literacy and orality are separate tools of communication used for specific means, yet they remain bound terms that can never be completely detached. For this reason, research regarding the use of purely pedagogical orality is significant. Sadly, orality, defined in this paper as educationally based speech among a classroom's individuals, is vastly underused in middle and high school classrooms. Orality's distinct qualities, most of which lie within the notion of distance, make it an advantageous learning tool that should not be overlooked. This concept of distance in turn leads to four fundamental differences between orality and literacy, which are the keys to understanding the unique benefits of pedagogical orality. These benefits can be reaped by students if orality is efficiently integrated into middle and high school classrooms in conjunction with other, more traditional modes of learning. Orality is an extremely useful tool that should be implemented into middle and high school classrooms as both a mode of learning and way of assessment for the benefit of students.

Presenter: Dana Carter
Project Advisor: Steve Gross (History)
Title: Student Culture at the West Central School of Agriculture
Type of presentation (Oral / Poster): Oral
 John Q. Imholte Hall, Room #115, 3:30 p.m.

Abstract:

My research examines student culture on the West Central School of Agriculture campus, primarily in the 1940's and 1950's. Using archival material and conducting a number of interviews with former students, I attempted to gain an understanding of what life was like on campus during those years. The educational facilities that existed on this campus prior to the UMM campus left a legacy for future UMM students to follow. Yet many students and faculty have only a surface understanding of the ideas, goals, and lifestyles of the people who were here at that time. Student culture on campus varied greatly by gender and was greatly influenced by the individual's background before coming to school. However, no matter how varied their lives had been, each student transformed the campus from a slightly imposing place filled with virtual strangers to a very familiar setting filled with friends.

Presenter: Sara Herman
Project Advisor: Siobhan Bremer (Theatre)
Title: Servant of Two Masters Costume Design
Type of presentation (Oral / Poster): Poster

Abstract:

As the costume designer for *The Servant of Two Masters*, I studied Commedia dell' Arte history and clothing worn in 1750's. I created a color costume design for each character in the play and assisted with the construction of the clothing. There are three classes in *The Servant of Two Masters*. These class differences are shown through color and texture of fabrics. The lower class is in earth tones and bold colors using coarser fabrics such as wool, coarse cotton, muslin the upper class is in rich and royal colors using satins, velvets and leather and the middle class lovers are in pastels to illustrate innocence and immaturity. Because the play is being played in the round here at UMM, the costumes are walking scenery as well. They are the visual stimulation for the audience. So the costumes also have to be colorful and reflect traditional Commedia dell' Arte stock characters, whose costumes rarely changed during the popularity of Commedia (1500-1750's).

Presenter: Bethany Hermanson
Project Advisor: Ted Pappenfus (Chemistry)
Title: Comparison of fused and non-fused substituted ring systems as candidates for organic semiconductors
Type of presentation (Oral / Poster): Poster

Abstract:

The primary objective for the research is to compare the effects of adding zero, one or two electron-withdrawing groups on organic molecules. These materials are candidates for organic semiconductors. A fused ring core system and a non-fused ring system are of current interest. A new molecule (TCV-TPT) was synthesized as part of the non-fused ring system and was compared to the unsubstituted (TPT) and disubstituted (TCV-TPT-TPT) molecules. These molecules were compared using cyclic voltammetry, UV-Vis spectroscopy, and theoretical methods. Ongoing work continues on fused ring core systems and preliminary data will be presented in this area.

Presenter: Laura Haas
Project Advisor: Arne Kildegaard (Economics/Management)
Title: Predicting Currency Crises
Type of presentation (Oral / Poster): Poster

Abstract:

This presentation is a review of crisis models that have been available over time to economists and the proposition of a new model of crisis analysis. Models are reviewed on their uses, their in-model predictability, and their out-model effectiveness. A Cox-Proportional Hazards Model is then explained, examined, and applied to the data used in previous models to determine what variables lead to crises and how variables differ between geographical areas that have already suffered financial crises.

Presenter: Tyler Helland
Project Advisor: Timna Wyckoff (Biology)
Title: Tetracycline resistance determinants in *Staphylococcus* isolated from milk samples from conventional and organic dairies in west-central Minnesota
Type of presentation (Oral / Poster): Poster

Abstract:

A total of 374 *Staphylococcus* strains were previously isolated from milk samples collected on conventional and organic dairies in west-central Minnesota and tested for susceptibility to several antibiotics (Bombyk and Wyckoff 2006, ASM 106th General Meeting). Here we report the genotypes of the 49 isolates showing tetracycline resistance by disc diffusion. Crude DNA preparations from each isolate were analyzed by multiplex PCR for the presence of tet(K), tet(M), tet(L) and/or tet(O) using published primer sequences. In addition, each multiplex reaction contained primers to *Staphylococcus* 16S rDNA as an internal control. The tet(K) gene was detected in 16 of the 19 isolates from organic dairies and in 28 of 30 isolates from conventional dairies. Of the three remaining organic isolates, tet(M) was detected in two and tet(L) in one. The two remaining conventional isolates were negative for all four tetracycline resistance determinants, but were confirmed as *Staphylococcus* by the internal control. The tet(K) resistance determinant was most common among our isolates from both types of dairy, although tet(M) and tet(L) were present in a small number of isolates from organic dairies. Known tetracycline resistance determinants were not detected in two conventional isolates. Further characterization of these isolates is underway.

Presenters: Joe Coyle and Corina Bernstein
Project Advisor: Tammy Berberi, (French)
Title: Framing the Art of Inclusion: Photography and Self-Expression
Type of presentation (Oral / Poster): Oral
 John Q. Imholte Hall, Room #115, 3:55 p.m.

Abstract:

This presentation describes the conceptualization, implementation and outcomes of a funded service learning project with “consumers” at Divine House, Inc, a company whose mission is to encourage independent living skills in developmentally disabled people. The project is a three-part workshop devoted to photography and self-expression, held at the University of Minnesota, Morris in the spring of 2007. Basically, participants were introduced to fundamental principles of photographic art, and given a disposable camera. The second workshop is devoted to sharing pictures and telling stories about our lives, and the third will be devoted to framing and making collages. This project is grounded in the work of disability studies, which denaturalizes disability as biological impairment and reframes it as a social category worthy of analysis. Photography—a visual medium—may prove to be particularly liberating for participants whose verbal abilities vary greatly. In this presentation, we will begin with a discussion of photography and the ways that it has traditionally been used to frame and stigmatize disability, effectively making disability the object rather than the subject of inquiry. We will then analyze the outcomes of this project through the lens of action research, and draw upon our experiences as organizers of and participants in the photography workshops. We evaluate the benefits of participation in the visual arts for people with developmental disabilities through the data we have collected in these workshops.

Presenter: Benjamin Ecklund
Project Advisor: Jennifer Rothchild (Sociology)
Title: The McDonaldization of Pharmaceuticals
Type of presentation (Oral / Poster): Oral
 John Q. Imholte Hall, Room #112, 3:55 p.m.

Abstract:

In the last ten years the consumption of pharmaceutical drugs has tripled in the United States. This study will explore how the adoption of George Ritzer’s McDonaldization theory can be used to further understand the increase in the amount of pharmaceuticals sold and consumed by the American culture. The four aspects of the McDonaldization theory are control, calculability, predictability and efficiency. Together they reveal why the market has continued to increase even after the countless number of prescription drug recalls that have occurred in the last ten years. Through the application of Ritzer’s McDonaldization theory I will show how American society values rationalization and efficiency over their own health and safety.

Presenter: Ellery Fisher

Project Advisor: Seung-Ho Joo (Political Science)

Title: The implications of the North Korean economic failure on a peaceful Korean unification

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #101, 3:55 p.m.

Abstract:

North Korea and South Korea have been separate, sovereign states since their division in 1945. Socialist North Korea has faced economic sanctions since the Korean War and has been in the midst of an ever worsening economic crisis since the fall of the Soviet Union in 1991. This current severe economic crisis and lack of infrastructure in North Korea would prove an obstacle for the peaceful unification of the Koreas, as it would make the cost of such a unification prohibitively expensive. The objective of this paper is to examine how North Korea's current economic crisis could become an obstacle to a peaceful Korean unification and how a more economically self sufficient, liberalized North Korea could make this process less challenging and more likely. The first section of this paper will introduce the current state of North Korea's economy and will briefly touch on the primary causes for its economic failure. The second section will compare the impact of North Korea's economic situation on a peaceful reunification between two scenarios, one of North Korea with its current economic situation and another of North Korea if it were to successfully reform its economy. The third part will draw upon the findings of the first two sections to analyze the implications of the current North Korean economic situation and economic policy for an eventual peaceful reunification of North and South Korea. I try to conduct my research empirically, drawing from limited primary sources and current secondary sources. This research will build on and add to the existing body of work concerning the pressing issue of Korean unification, an issue of great importance to the Korean people and to the stability of the region.

Presenter: Colin Foral

Project Advisor: Steve Gross (History)

Title: The Morris Campus' Democratizing Mission as Viewed Through Architecture, Landscape and History

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #101, 4:20 p.m.

Abstract:

This project considers how the democratizing mission of the Morris Campus is expressed through symbols embedded in landscape and architecture. The designers of the campus display an intentionality which is evident in their product. The college campus has an identity, formulated by physical structure, portrayed through landscape and architecture. Using a pictorial collection, coupled with sentiments from Country Life experts and Morris Campus architects, the symbols and intentions of this publicly funded frontier based democratizing institution become clearer. The University of Minnesota-Morris Campus has served as a democratizing force within two different models since the turn of the twentieth century. The first was as a tool for assimilation of indigenous people—a part of Manifest Destiny. The second function is to civilize the rural farmer as per the Country Life Commission Report. Both of these missions create a contested space between arbitrarily defined boundaries. The design of the campus and symbols used in its construction are a product of a new American focus on the frontier and its inhabitants. Rural people were seen as problematic in this newly industrial America and homogenized cultural identity was fostered through prairie education. The Morris Campus identity was created by agricultural scientists, rural sociologists and concerned politicians to address a problem which comes when defining civilization and the other.

Presenters: Bobby Goodfellow and Megan Mekoli

Project Advisor: Jamey Jones (Geology)

Title: Deformation and Geochronology of the Grizzly Creek Shear Zone, Glenwood Canyon, Colorado

Type of presentation (Oral / Poster): Poster

Abstract:

We attempted to determine the history of deformation in the Grizzly Creek Shear Zone. The Grizzly Creek Shear Zone (GCSZ, Kirkham et al., 1995; 1997) is a recently discovered zone of concentrated crustal deformation in the Glenwood area of western Colorado. In the field, we logged strike and dip, cross cutting relationships, and sample orientation measurements. These data will assist in interpreting the age of the shear zone and in creating a map of the area for presentation.

Presenter: Lauren Goodrich

Project Advisor: Jennifer Goodnough (Chemistry)

Title: Synthesis, Characterization, and Photochemically-Directed Self-Assembly of Au (Gold) Nanoparticles

Type of presentation (Oral / Poster): Poster

Abstract:

Stable suspensions of Au nanoparticles (NPs) were synthesized in organic and aqueous solvents. The particle size was controlled by seeding growth methods or by altering the ratio of the reductant/capping agent concentration to the Au precursor concentration. The Au NP suspensions were utilized in two new mechanisms of photochemically-directed self-assembly. The first mechanism involves anthracene dimerization. Au NPs were functionalized with anthracenethiol. Photoinduced changes of the UV-visible absorption spectra suggest that anthracene photodimerization causes the aggregation of the anthracenethiol-modified Au NPs. The second mechanism involves the adsorption of Au NPs to sputter-deposited Au films through the base pairing interactions of complementary single-stranded DNA. Preliminary electrochemical data suggest that the surface attachment process is turned off by UV photooxidation of the surface-adsorbed thiolate.

Presenter: Sam Geller
Project Advisor: Sylke Boyd (Physics)
Title: Monte Carlo simulations of vacancy behavior in simple crystals
Type of presentation (Oral / Poster): Poster

Abstract:
We are interested in finding an algorithm to study stable configurations for vacancies in a molecular solid. Crystals are solids characterized by an extended periodic and often highly symmetric arrangement of particles. Defects are disturbances in the periodicity or symmetry of these arrangements. A vacancy is a type of defect in which a crystal site in empty. Vacancies are present in all crystals, and often form clusters or even migrate to form stable group arrangements. Many macroscopic properties of crystals are influenced by the properties and arrangements of defects. We developed a Monte Carlo algorithm which allows us to study thermal equilibrium configurations of a simple crystal under various temperature and pressure conditions while allowing the creation and removal of particles. The test system we used is solid Argon due to its structural simplicity. This project is a precursor for the study of vacancy behavior in molecular crystals. The poster will present the algorithm and preliminary results.

Presenter: Joshua Giefer
Project Advisor: Len Keeler (Physics)
Title: An Experimental Study of Ultrasound in a Reflective Horn: Evidence for Chaotic Behavior
Type of presentation (Oral / Poster): Poster

Abstract:
For several decades, theorists have been studying reflecting systems that generate chaotic patterns. One such example is that of the sound emerging from an ideal horn. Sound is reflected many times within the horn. Eventually sound waves are emitted out the end of the horn. With horns of a specific shape, the emerging sound waves are predicted to be chaotic in time. This experimental study is motivated by a theoretical group from the College of William and Mary who have developed a new analytical approach to analyzing data from chaotic systems. We have constructed a horn of their design out of aluminum. Adapting an ultrasound rangefinder device, we introduce a short pulse of 40kHz sound waves into the back of the horn and record the sound output as a function of time using an ultrasound receiver, amplifier, and digitizing oscilloscope. We will present our experimental method, results, and compare these with numerical simulations of the system. We will also perform a simple nearest neighbor distribution test of the experimental data to look for evidence of chaotic behavior.

Presenter: Laura Haas
Project Advisor: Paula O’Loughlin (Political Science)
Title: How Responsible are Party Members to Their Parties?
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #109, 4:20 p.m.

Abstract:
This presentation considers whether political party members who run for office cohere with their national party platforms. Political parties are key pieces to our system of representation at least partly because of the underlying assumption that party membership signifies a coherent and consistent political ideology. This project is a statistical analysis of 2004 and 2006 non-incumbent Senate candidate web-pages to determine significance of the party platforms and issue importance to members of the two major political parties. This study was done to find out if members of political parties are actually ideological representatives of their parties in their political campaigns. To discern the answers to these questions, the differences between the two main parties had to be defined. This paper recognizes the 2004 Republican and Democratic Party Platforms as the only goals formally supported by the Republican and Democratic parties respectively. The discerned differences in the parties were used to compare and analyze candidate issue stances as derived from candidate’s personal web sites during the 2004 and 2006 senate race.

Presenter: John Hanson
Project Advisor: Tamler Sommers (Philosophy)
Title: Person, Punishment and the Effects of Imprisonment
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #113, 4:20 p.m.

Abstract:
This paper critically considers the philosophical basis for retributive punishment in light of the psychological impact of prisons. In his classic paper, *Persons and Punishment*, Herbert Morris presents a strong case for retributivism, the view that the only possible justification for punishment is the repayment of wrongs done. His argument is built around an extremely strong conception of personhood and individual rights, which he uses to criticize those who advocate for rehabilitation as guiding principle in the philosophy of punishment. In one of the most crucial of his arguments, Morris suggests that under systems of rehabilitation, the rights to not have one's person manipulated in undesired and unjust ways cannot be assured, and thus cannot be consistent with a fully developed conception of justice. As a result of this and other considerations, he rejects rehabilitation on moral grounds. Morris' emphasis on the sanctity of the person raises a troubling set of questions for any theory of punishment. If a just system of law cannot impinge upon our fundamental selfhood, then all systems of punishment must be held to this standard. My paper argues that the retributivist's preferred method of punishment, the prison, does cause substantial and disturbing changes in the person that seem to violate Morris' conception of justice. In particular, I will suggest that the work of psychologists studying prisoners' stress presents a picture of the prison environment that is a far cry from Morris' ideals, and that this raises serious doubts about the viability of his approach as a basis for both real world policy and theoretical discussions of criminal justice.

2007 Undergraduate Research Symposium

Presenter: Alyssa Herzog
Project Advisor: Ray Schultz (Theatre)
Title: Dramaturgy: A Servant to *The Servant of Two Masters*
Type of Presentation: (Oral / Poster): Oral
John Q. Imholte Hall, Room #111, 3:30 p.m.

Abstract:
My dramaturgical work for the UMM Theatre Discipline's winter production of *The Servant of Two Masters* by Carlo Goldoni (directed by Visiting Professor Kimberly Glover) displays my contribution to (re)defining the role of the dramaturg, a profession that started in the United States within the last half of the 20th century. Glover and I attempted to create a truer Commedia interpretation of *Servant* via traditional Commedia elements such as improv, costumes, and general stylization. Two points of contention disrupted our interpretation and generated interesting problems to solve: one, the script itself prohibits a complete return to the improvised nature of Commedia; and two, Goldoni wrote this play not to celebrate Commedia, but instead to reform it. Although Goldoni might scoff at the restoration of Commedia in our production of *Servant*, the blend of scripted versus improvised material, coupled with audience interaction, created a delightful theatre experience. Throughout the production process, my duties included assisting the director with historical research on Commedia and *Servant*, script analysis, and auditions; providing background information on the play and Commedia dell'Arte to the actors via a production website; audience education; and production support. Ultimately, by providing essential information to contextualize the world of the play, my various services to the production illustrate the often elusive definition of who a dramaturg is and what a dramaturg does.

Presenter: Matthew Hutchinson
Project Advisor: Bradley Deane (English)
Title: Darwinian Nightmare: Atavism in Arthur Conan Doyle's *The Lost World*
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #111, 4:20 p.m.

Abstract:
The Lost World, Arthur Conan Doyle's 1912 novel about the enterprises of a ragtag group of British adventurers and their journey into South America revels in many of the established societal anxieties over ideas of empire, race, and atavism. Doyle explores these ideas, especially the idea of atavism (methods in which civilization can easily revert back to barbarism or savagery), in manners that blur the divisions declared truth by society at the time. Atavisms dominate every aspect of the book, including the British exploratory party, the native peoples, the man-apes, dinosaurs, and landscape. These groups all intermingle and their atavistic aspects are amplified and questioned. For example, one of the characters, Professor Challenger, is a scientist, but he is contrasted with the chief of the ape-men in an approach that suggests enlightened humans are closer to the primitive than one may think. The indulgence in all the aspects of atavism develops into a hyperbole of drama, pushing the story forcefully along its path while muddling the reader's preconceived ideas on the subject, resulting in a parody of the established Imperial Gothic fictional form as it comically questions and obeys those preconceived notions.

2007 Undergraduate Research Symposium

Presenter: Colin Foral
Project Advisor: Donna Chollett (Anthropology)
Title: The American Flag Lapel Pin and Presidential Identity
Type of presentation (Oral / Poster): Poster

Abstract:
This poster addresses the question of what symbols create George W. Bush's 2001 presidential persona as observed through interpretive anthropology. I draw upon the work of Victor Turner. According to Victor Turner, symbols are the smallest unit which represents the "social-glue" which holds society together. The three levels of Turner's symbolic analysis of the Ndembu are Exegesis (name & physical characteristics), Operational (latent sense) and Positional (unconscious sense and relationship to other symbols). Symbols are used in liminoid (complex) societies as representations and critiques of society. The year 2001 was the first year of the George W. Bush presidency and a defining time for his presidential persona. There are symbols associated with this persona, as observed in 343 official White House photographs taken between January, 2001 and December, 2001. The most striking symbol present in the White House photographs is the American Flag lapel pin. There are no photographs of the president with the lapel pin before September 11, after the 17th of September he is seen wearing it in an overwhelming majority. Treatment and use of the flag & lapel pin are defined by presidential order and the American flag's meaning is represented throughout our society. The president's pictorial association with the flag, lapel pin, presidential seal and Air Force One during his first year in office, in relation to geographical and historical symbols, contains messages of cultural identity, political statements and societal reflections. This study of the 2001 presidential persona through photographs provides one interpretation of George W. Bush's American presidential identity.

Presenter: Julie Fox
Project Advisor: Van Gooch (Biology)
Title: Resetting of the circadian biological clock using light in the mold *Neurospora crassa* with a firefly luciferase reporter gene
Type of presentation (Oral / Poster): Poster

Abstract:
In this study a new construct is used to examine the effects of light in resetting the circadian biological clock using different growth media and conditions. After altering the type of media and growth conditions, the light induced clock-shift of the mold *Neurospora crassa* was assessed. Intrinsic daily oscillations, known as circadian rhythms, are an integral part of most organisms. It is known that these clocks need to be reset by the rising and setting sun. Under constant environmental conditions the filamentous fungus *Neurospora* expresses a clearly defined rhythm of spore formation with a period length of about 21.5 hours and the phase of this clock is known to be resettable by light. The genetic mechanism of the *Neurospora* circadian clock is fairly well understood and the *frq* gene is known to be a major component. To more closely understand how the *frq* gene actually works, the *frq* promoter was recently placed in front of a codon modified firefly luciferase reporter gene. Now we can directly see the molecular mechanism of the circadian clock using bioluminescence. It is interesting that under certain conditions I find that a one-hour light pulse easily resets the biological clock while under other conditions it does not. Most interestingly I find some very strange behavior at intermediate conditions. It is hoped that these results will yield important information about how light affects the resetting of circadian clock mechanisms.

Presenter: Ashley Ericson

Project Advisor: Jennifer Rothchild (Sociology)

Title: The Gender Shift in the Homeless Population: A Theoretical Analysis

Type of presentation (Oral / Poster): Poster

Abstract:

Contemporary mainstream society largely ignores our homeless population and concentrates instead on speculative explanations for this growing subculture. Consequently, past stereotypes which depict the homeless population as predominately middle-aged, alcoholic men prevail today. While it is true that the majority of the homeless were once men, the gender balance has shifted in recent years. Today, young women make up the majority of the homeless population, and their reason for a lack of a permanent residence may or may not include alcohol abuse (National Coalition for the Homeless 2006). This study examines the gender shift in the homeless population in order to come to a better understanding of why the number of homeless women is currently exceeding that of homeless men. I attempt to explain this recent phenomenon through a theoretical analysis of existing literature on the shift in the gender balance of the homeless. By examining this matter from the theoretical perspectives of the social conflict paradigm and liberal feminism, I will offer a framework for better understanding a growing subculture within American society.

Presenter: Jason Fiedler

Project Advisor: Margaret Kuchenreuther (Biology)

Title: Localization of Biogenic Monoamines with Two Aromatic Amino Acid Transporters of the SLC6 Family in the CNS of Mosquito Larvae

Type of presentation (Oral / Poster): Poster

Abstract:

In the quest to develop environmentally safe insecticides for the control of the mosquitoes that vector diseases including malaria, we identified a set of nutrient amino acid transporters (NATs, SLC6 family) from *Anopheles gambiae* that are unique to insects. Two clones of these NATs selectively transport L-phenylalanine (agNAT8) and L-tryptophan (agNAT6). These substrates are the precursors to some important neurotransmitters. We hypothesized that agNAT6 and agNAT8 may play a role in transporting these essential substrates into neuronal cells in the central nervous system (CNS), where they are converted into biogenic monoamines for neurotransmission. We used fluorescent immuno-cytochemistry to examine the distribution of agNAT6, agNAT8, dopamine (DA), serotonin (5-HT) and its precursor 5-hydroxytryptophan (5HTP) in the CNS of *Anopheles gambiae* larvae. DA and agNAT8 were localized in the same cells in the ganglia of the CNS. 5-HT and 5-HTP immunoreactive cells were also detected in similar cells in the ganglia of the CNS. Immunoreactive nerve fibers were also observed in the stomatogastric nervous plexus. No agNAT6 immunoreactivity was observed that co-localized with 5HT or 5HTP immunoreactivity. It is likely that agNAT8 delivers the substrate for DA synthesis in the CNS and may even transport tryptophan in parts of the CNS. Our study reveals the first link between NATs of the SLC6 family and the aminergic neurotransmitters in the CNS. We propose that molecular ligands that interfere with insect NATs would compromise neurotransmission as well as nutrition in the insect and thus could provide potent and environmentally safe insecticides.

Presenter: Blair Jasper

Project Advisor: Jennifer Deane (History)

Title: Staging the Succession: Shakespeare's *King Lear* and the Succession Crisis of 1603

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #112, 4:20 p.m.

Abstract:

Scholars have long ruminated on Shakespeare's *King Lear*, but no one has yet touched on the fact that its story bears striking similarities to that of Elizabeth I in her twilight years. Through close analysis of succession tracts, historical documents, and Shakespeare's source material, this paper argues that *King Lear* is more than Shakespeare's greatest and most cosmic tragedy. Instead *King Lear* can be seen as something that grew from a very specific historical moment -- a reflection of a nation at war with itself -- and can be used to shed light on the political and social complexities of the Elizabethan succession, heretofore one of the most overlooked events in all of English history.

Presenter: April Kinner

Project Advisor: Jennifer Rothchild (Sociology)

Title: Perceptions of Disabilities

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #114, 4:20 p.m.

Abstract:

People perceive disabilities differently according to their age, particularly in today's society that is so focused on youth and the young. In this paper, I consider the question of whether college students are more likely to stigmatize young people with disabilities than they would the elderly. Using survey data collected in spring of 2007 I consider college students' perceptions of disabilities, particularly the differences in the ways they perceive young people with disabilities and elderly people. These college students' perceptions indicate how stigmatization of people with disabilities varies depending on the age of the disabled. Although societal attitudes are changing, there is more work to be done in order for people with disabilities to have the same access to opportunities as able-bodied persons.

Presenters: Phillip Kollar, Luke Elward and Tessa Hempel

Project Advisor: Brook Miller (English)

Title: Narrative, Meaning and Agency in *The Heat of the Day*

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #115, 4:20 p.m.

Abstract:

In Elizabeth Bowen's novel, *The Heat of the Day* (1948), the construction of personal and interpersonal narratives is ambivalent. Attempts to make stories—that is, narratives which relate the self to others, to social contexts, and which are in some fashion teleological—are at once necessary responses to conventional narratives and ways of coping with the alienation induced by the Blitz and the emergence of a culture of surveillance. They are also, inevitably, fraught with an anxious sense of their own falsity. If novels like *The Last September* (1927) and *The House in Paris* (1935) establish and unravel an expressionistic mapping of inner experience with the history of a place, then in *The Heat of the Day* that problematic mapping has been multiplied beyond all recognition. Houses, parks, cafés, and even larger spaces like London and Ireland become problematic containers for subjects. On the one hand, they provide the grounds for inter-subjective symbolic identification and remain 'free,' offering the possibility of both a plentitude of meaning and of a continued flexibility of identity. Yet these possibilities are decidedly compromised by the pervasiveness of ideology, which shapes meaning around the agency of the state, limits freedom to the recognizable and nameable, and, most significantly operates a surveillance apparatus that, while nominally protecting citizens, deeply conditions their social experience. The war normalizes these effects, but it does not essentially change the nature of social experience.

Presenter: Herman Dominique Koutouan

Project Advisors: Sarah Buchanan (French) and Matt Senior (French)

Title: African Aesop: Animal Symbolism in African and French Folktales

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #101, 4:45 p.m.

Abstract:

My project compares and contrasts the importance of animals in French and sub-Saharan African folktales. My work is based on the theories of C. Levi Strauss and B. Bettelheim whose anthropological investigations focus on the origins of animal symbolism in myths and religions. The use of animals in ancient and modern literatures, and oral and written texts has persisted throughout the ages across various continents in the world. Strauss and Bettelheim suggest animals perform different functions and represent various social, aesthetic and political models in folktales. I do a close textual analysis of a few animal tales, French and African, taken as models, and I show how their themes and forms fit into the social, religious, political, and aesthetic patterns of the societies which produce them. For example, in the medieval tales of Marie de France, the reader comes across an abundant repertoire of fantastic animals such as dragons, unicorns and werewolves. In sub-Saharan Africa, story tellers narrate the prodigies of Ananze, the cunning spider.

Presenter: Brian Bourne

Project Advisor: Van Gooch

Title: Novel responses of the clock gene frequency in entraining and constant light studies of the filamentous mold *Neurospora*

Type of presentation (Oral / Poster): Poster

Abstract:

The purpose of this research was to investigate the effects of light on the circadian rhythms of the filamentous mold *Neurospora*. Circadian rhythms are daily biological cycles occurring in a range of organisms - from bacteria to humans. These cycles persist when external clocking cues are removed and thus demonstrate an underlying capacity for cellular timekeeping. In constant conditions, the circadian clock does not exhibit an exact 24-hour cycle. However, circadian rhythms may be entrained by a periodic light-dark cycle; as with the natural 24-hour period of the sun. *Neurospora crassa*, a eukaryotic model organism, has long been a tool for circadian rhythm studies. Light studies have previously been difficult since classic methods rely on rhythmic spore formation, which itself is influenced by light, independent of the clock. The frequency (*frq*) gene of *Neurospora* has been ascribed a central role in the clock and its light response. Using the firefly luciferase gene, linked to the *frq* promoter, high-resolution bioluminescent study of the circadian light response is now possible. With this tool, using a 12 hr:12 hr light-dark cycle, I have been able to produce an entrained *frq* rhythm. One observation is that a very low light intensity – as low as moonlight levels – is able to induce an entrained rhythm. In addition, I have shown that there is a high-amplitude, angular rhythm under entraining conditions when compared to the rhythm classically measured in constant dark. Also, I have found that rhythmic behavior appears to be absent in constant light conditions.

Presenter: Benjamin Buer

Project Advisor: Ted Pappenfus (Chemistry)

Title: Isolation of specific proteins via copper(I)-catalyzed alkyne-azide “click” cycloaddition

Type of presentation (Oral / Poster): Poster

Abstract:

The isolation of specific proteins from live cells is key to discovering protein complexes involved in protein-drug interactions. Due to its reactivity under biological conditions and orthogonality to functional groups of biomolecules, copper(I)-catalyzed alkyne-azide “click” cycloaddition provides an ideal method for the immobilization of a protein-drug complex to a solid support. Geldanamycin (GA) is an inhibitor of Hsp90, a protein chaperone that is over-expressed in cancer cells, providing a very promising target for anti-cancer drugs. The binding of Hsp90 to GA not only provides a model system for the elucidation of specific proteins with the use of “click” chemistry, but may also reveal unknown Hsp90 binding partners.

Presenter: Troy Benson

Project Advisor: Tracey Anderson (Biology)

Title: The Influence of European Buckthorn (*Rhamus cathartica*) on Soil Microarthropod Communities in Deciduous Forest Ecosystems in Minnesota

Type of presentation (Oral / Poster): Poster

Abstract:

I investigated the effect of invasive European buckthorn (*Rhammus catharica*) on the soil microarthropod community in a forested habitat in west central Minnesota. Microarthropods include mites (Acari), springtails (Collembola) and other smaller groups of arthropods; these organisms play an important role in nutrient cycling in forests. Soil samples were collected from four 5 m² plots in Niemackl Lake Park in Grant County, MN. In two plots the understory vegetation was dominated by buckthorn. In the other study plots, buckthorn made up less than 1% of the understory vegetation. Larger trees such as basswood and ash were present in the canopy at both sites. After removing large debris and vegetation I collected three 10 x 10 cm soil cores from randomly selected points in each plot. Soil microarthropods were extracted using Berlese-Tullgren funnel apparatus with a 2.5 mm screen and preserved in 80% ethanol. The microarthropods were then sorted from other debris and identified. Preliminary data suggest that there are fewer microarthropods in the plots dominated by buckthorn. This study will help document the impact of introduced species such as European buckthorn on native communities. It may also prove useful in restoring native forests as the soil microarthropod community can have a great impact on the vegetation present.

Presenters: Annika Bergman and Patrick Collins

Project Advisor: Tom Johnson (Psychology)

Title: Dramaturgy: Anchoring Effects on Different but Related Student Teacher Evaluations

Type of Presentation: (Oral / Poster): Poster

Abstract:

Anchoring occurs when a previously viewed value weighs a person's rating on something else one way or the other. Anchoring can cause biases in many types of decisions. The purpose of this research study was to determine whether anchoring effects are still present in student's evaluations of professors when the point scales and questions of the anchor evaluation differ from the evaluation participants fill out. It was hypothesized that these differences would not interfere with any anchoring effects. To measure anchoring in our study, subjects viewed average evaluation scores for a professor on four aspects of teaching. They then viewed a video clip of that professor. After the video, subjects filled out their own evaluations on the professor. The evaluation filled out by participants had different questions and a different point scale than the first evaluation. Our results showed statistical significance for anchoring and that changing the questions and point scale did not affect anchoring.

Presenter: Matt Little

Project Advisor: Paula O'Loughlin (Political Science)

Title: Effectiveness of the Minnesota Political Contribution Refund Program: An Analysis of Minnesota State House of Representatives Elections from 1986-2002

Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #111, 4:45 p.m.

Abstract:

This research examines whether or not the Minnesota Political Contribution Refund (MNPCR) program has been effective in reducing the fundraising disparity between incumbents and challengers. The Minnesota Political Contribution Refund program was passed into law in 1991 in an effort to make Minnesotan elections more competitive and to encourage small donations. Donnay and Green (1998) previously examined the goal of increasing the amount of small donations leaving the effects on competition to go unexamined. The data used is a set of 2375 individual candidates from each Minnesota House of Representatives race since 1986 through 2002. This data was examined in three time periods: Pre-MNPCR 1986-1990, Early MNPCR 1992-1996, and Late MNPCR 1998-2002. Other tertiary research in this paper looks at the differences in party and gender in how effective each group has been able to use the program. The results show a slight decrease in overall disparity with Political Contribution Refunds having a minor role in that trend. More importantly, the results prove that the program has the potential to erase the fundraising disparity depending upon the individual candidate's ability to utilize the program.

Presenter: Emily Loehr

Project Advisor: Paula O'Loughlin (Political Science)

Title: The Objectivity of the Subjective Economy: A Comparison of United States Census Regions

Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #101, 5:10 p.m.

Abstract:

This paper considers the question of what voters mean when they allude to the importance of the economy. Most of the literature on economic voting is confined by two things: analysis at the national level and insufficient differentiation between the subjective and objective economy. De Boef and Kellstedt (2004), for example, find that while objective economic conditions are solid predictors of economic sentiment, citizens' economic sentiment is also largely colored by things like partisanship, war, rhetoric, etc. This paper will replicate the study of De Boef and Kellstedt (2004), but will also break down the analysis by census region. Running a linear regression with economic sentiment as the dependent variable first for the United States as a whole and then separately for each census region reveals variance in the ability of the chosen objective economic indicators to explain economic sentiment.

Presenter: Gabriel Maravelas
Project Advisor: Jennifer Rothchild (Sociology)
Title: Effects of Raising Gasoline Prices on UMM Students
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #111, 5:10 p.m.

Abstract:

This project addresses the complexities of the transportation system and the way that people make transportation related decisions. This project will examine a case group, UMM students, to see if the local structural conditions produce data that differs from general transportation trends and land-use structures found in greater society. Data collection took the form of a survey distributed to the student population. The survey was designed to see if rising gasoline prices are having any effects on student behavior. This research is useful because it could help university planners meet student needs. Research of this nature will be useful to anyone interested in how rising fuel prices will change American's transportation behavior.

Presenter: Andrea Markgraf
Project Advisor: Penny Schmidgall (Speech)
Title: Sports Reporting and the Gender Bias
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #112, 3:30 p.m.

Abstract:

This research paper focuses on gender discrimination in sports and sports reporting. The paper looks at differences in broadcast commentaries, as well as ideas and views of women in sports and sports media. The following are the main research questions: Are there differences in male vs. female broadcast commentaries? Are the perspectives of male vs. female athletes visible in sports commentaries? What are the public's perceptions of male vs. female athletes and sports journalists? To analyze these questions a content study was used in which a series of research articles and surveys were viewed, as well as by watching sporting events today to see if the ideals are the same today as they were when the research articles were written. These ideas have been studied separately but not together. It is an important to look at all this together because they all interlock and play a role for other views and discrimination factors in the sports world.

Poster Presentations
Science Atrium
5:30-7:00 p.m.

Presenter: Amanda Albrecht
Project Advisor: Nancy Carpenter (Chemistry)
Title: Development of an Organic Chemistry Lab: Fermentation and Distillation of Ethanol
Type of presentation (Oral / Poster): Poster

Abstract:

The purpose of this research was to incorporate into the organic chemistry laboratory curriculum an experiment that illustrates distillation techniques while pertaining to local agricultural and bio-fuel interests, specifically the local ethanol production from corn. The fermentation procedure was adapted from a process utilized by Denco LLC where ground corn is treated with yeast (Thermosacc), yeast extract (BP1422-500), alpha-amylase (spezyme ethyl), gluco-amylase (G-zyme 480 ethanol), urea (45% nitrogen), protease (GC 106), and peptone (BP1420-500) in order to ferment ethanol in an anaerobic reaction. For a more applicable and feasible lab procedure further investigations limited the chemicals involved to yeast (active dry yeast), alpha-amylase, gluco-amylase (amyloglucosidase), and urea. The entire scale of the experiment was reduced as well. Ethanol was identified in the distillate fractions using gas chromatography. Possible alterations to optimize this procedure were then investigated. Variables under consideration included changing the types of enzymes used into non-proprietary, commercially available chemicals, varying the concentrations of the chemicals involved, varying the temperature and/or the time the mixture was stirred for during the fermentation, and decanting the mixture prior to distillation.

Presenters: Jessica Anderson and Sara Jamieson
Project Advisor: Leslie Meek (Psychology)
Title: Paternal Alcohol Use on Offspring Development and Spatial Learning in Mice
Type of presentation (Oral / Poster): Poster

Abstract:

Much is known of the effects of fetal alcohol syndrome. However, less research has been conducted to study the effects of paternal alcohol use. The majority of the research on paternal alcohol effects in rodents has used a chronic alcohol use model; this model presents some potential confounds. In this study, paternal alcohol effects were studied using an acute model of alcohol use. Male C57BL mice in the experimental group were injected with ethanol within 24 hours prior to mating. Data was collected on birth weights and lengths of offspring as well as litter sizes and litter weights. The offspring were subsequently observed for their development of post-natal reflexes such as eye opening, tooth eruption, clinging, and linear movement until all developmental measures were attained. As adults (3 months), the offspring were tested for spatial learning abilities using the Morris Water Maze swim test.

Presenter: Megan Weisbrod
Project Advisor: Bradley Deane (English)
Title: Imperial Implications of Identity: Reflections of Empire and the “Other” in Detective Fiction
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #113, 5:10 p.m.

Abstract:

Through investigating the genre of British detective fiction during a time of Imperial power, we can interpret the anxieties held not only by the Empire, but by its opposite, its “other”—its Indian colonies. Identity becomes a blurred boundary, and there is a fascination with science and power. The true identity problem that detective fiction first introduced was that of the British Empire and its eastern colonies—where did Empire stand in relation to its Oriental “other?” This detective fiction works to reflect the pre- and post-mutiny methods of discipline employed by the Empire in its identity crisis with the “Other.” In an analysis of Sir Arthur Conan Doyle’s *The Sign of Four*, the famous Sherlock Holmes and his indispensable Doctor Watson introduce the problem of criminality and identity. Holmes and Watson each approach the identity of the criminal and victim through the blurred identities of Empire and the “Other,” calling attention to the implications of identity and power in Imperial rule.

Presenter: Kevin Whalen
Project Advisor: Bert Ahern (History)
Title: Shaping a Future: Native Americans in the Indian Schooling Service, 1900
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #115, 4:45 p.m.

Abstract:

This study broadens the understanding of Native American employment within the Indian School Service (ISS) by linking data for individuals found on the 1900 ISS employee roster to the corresponding census data for the same year. In 1899, Native Americans comprised forty five percent of those employed by the Indian School Service division of the Bureau of Indian Affairs (BIA), making that year the high point for Native participation within ISS schools. Previous research on Native American employment within the ISS has been restricted to the use of employee rosters contained within the Annual Report of the Commissioner of Indian Affairs. Subsequently, knowledge of each employee is confined to seven basic categories: name, race, date of employment, gender, school of employment, title, and salary. The augmentation of ISS employee roster data with census data will shed light on important questions regarding family, race, age, marital status, literacy, and for Native American employees, tribal heritage. Who was the average Native employee? Were members of certain tribes more apt to seek ISS employment? Were people of mixed (Native and white) ancestry more likely to receive titled, highly paid positions within the ISS? How was salary correlated to percent of white ancestry? Investigation of these questions through analysis of these linked data sets will serve to provide a clearer understanding of the roles played by Native peoples within the process of their own assimilation and serve to further examine the notion that Natives played active roles in determining the outcomes of the assimilationist era.

Presenter: Amanda Ochsner
Project Advisor: Tisha Turk (English)
Title: Leading Students to Success: A Teacher’s Guide to the Five-Paragraph Essay
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #112, 4:45 p.m.

Abstract:

Many composition theorists and educators have criticized the five-paragraph essay for its numerous failures and shortcomings, including its predictability, its inability to engage students, and its lack of adaptability outside of classrooms and testing situations. My research process consisted of analyzing the causes of these primary objections to the five-paragraph form. My objective was to find practical solutions to the weaknesses that currently make five-paragraph essay writing so objectionable to most educators and researchers in the composition field. I found that many composition specialists fail to recognize that the form is embedded in standardized testing and high school curriculums. I argue that to simply not teach students the five-paragraph form would leave students unprepared for the types of writing required after graduation. High school teachers have a responsibility to teach the five-paragraph essay, but they must also teach students how to expand that form, incorporating creative elements so that students do not become bored with formulaic writing or become afraid of other writing forms. I propose that allowing students to incorporate their own creativity and alternate forms within the five paragraph form eliminates many of its weaknesses. This presentation includes suggestions for assignments, including multi-genre approaches to the five-paragraph essay and implementing writing assignments for specific purposes. These specific assignments include occupational writing forms such as resumes, memos, and letters, and also writing forms commonly found in other disciplines, including the sciences and social sciences.

Presenter: Crystal Oko
Project Advisor: Mary Elizabeth Bezanson (Speech) and Steve Gross (History)
Title: Theodore Roosevelt: Natural Resources – Their Wise Use or Their Waste
Type of presentation (Oral / Poster): Oral
John Q. Imholte Hall, Room #113, 4:45 p.m.

Abstract:

In May of 1908 at the Conservation of Natural Resources conference at the White House, President Theodore Roosevelt stood before the governors’ of each state and talked of “Natural Resources- Their Wise Use or Their Waste.” Roosevelt explained that the conference was called that May to, “consider the weightiest problem now before the nation,” the exhaustion and wastefulness of natural resources. In 1908 it was still believed that American could never exhaust its resources. Today, we know that is not true and America is still tackling the “weightiest problem.” The analysis of Roosevelt, the man, his movement-Progressivism, and how they relate to his speech at the conference will reveal the importance of the conservation movement that started early in the 20th century. This analysis will employ a neo-Aristotelian criticism, and assess the speech contextually and rhetorically to demonstrate the progressivism of Roosevelt’s ideas about natural resources and conservation. Also, the analysis will help to understand where and how the conservation movement, which is so prevalent today, got its start. Though never examined by rhetorical critics and seldom looked at by historians, Roosevelt’s speech is even more relevant to the world today, when even at the University of Minnesota, Morris, there is a new awareness of the importance of conserving non-renewable natural resources.

2007 Undergraduate Research Symposium

Presenter: Ruth Olson

Project Advisor: Timna Wyckoff (Biology)

Title: Development of a curriculum to train facilitators of HIV prevention committees in village churches of the Lutheran Church of Central Africa

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #114, 4:45 p.m.

Abstract:

This session will describe the development of a curriculum to train facilitators of HIV prevention committees in village churches of the Lutheran Church of Central Africa (LCCA). I spent two months during the summer of 2006 with the Lutheran Mobile Clinic (LMC) in Lilongwe, Malawi; the clinic is a branch of the Central African Medical Mission, which also works in Zambia, and it is associated with the LCCA. One component of their HIV/AIDS Prevention Program is organizing presentations in villages where the LCCA has congregations. In order to develop a curriculum to train the facilitators in HIV/AIDS education and leadership skills, I conducted research by (1) reading and analyzing papers and books to learn best practices, (2) touring and visiting other aid organizations, (3) conducting interviews with Malawian and expatriate aid workers and village pastors, and, (4) visiting and working in rural villages served by the LMC. I then developed a curriculum during the fall semester that was submitted to the administrators of the clinic, and they will begin implementing the curriculum during this semester with the goal of developing and deploying community-based leaders and organizers of peer-led outreach programs in their villages.

Presenter: Lora Schuster

Project Advisor: Mary Elizabeth Bezanson (Speech)

Title: *I Hope You Dance: A Rhetorical Analysis of a Mother's Wish*

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #115, 5:10 p.m.

Abstract:

Drawing on sources from previous studies, musical score, musical lyrics, history of the musician, and secondary sources, this study will explore the rhetorical dimensions of Lee Ann Womack's *I Hope You Dance*. The focus of the work will exhibit how Womack's use of lyrics and music pressure the audience to accept her vision of a child's life. This specific and only song in the study being used was chosen because of the uniqueness of the song. Rhetorical studies are mostly done on artifacts such as speeches, advertisements, and books, but this study focuses on a form of rhetoric that impacts the audience on an everyday basis, but still many people do not think of a song being rhetoric and persuasive as they are listening to it. This study brings to attention how a song is rhetorical and how a rhetorical song can influence the audience listening to the song. A form of criticism called the "illusion of life" is the form used. I look at the musical score and the lyrics to see how they connect and assist each other in persuasion. This study is partially influenced by an understanding of the rhetorical dimensions of music in the everyday beliefs of college students as well.

2007 Undergraduate Research Symposium

Presenter: Emily Stout

Project Advisor: Bradley Deane (English)

Title: Unraveling Imperial Narratives of Time in *Lord Jim*

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #112, 5:10 p.m.

Abstract:

Written only a year after *Heart of Darkness*, Joseph Conrad's novel *Lord Jim* has received significantly less critical attention in terms of its imperial implications. Nevertheless, the novel arises out of a decisive period in history: the British Empire was at its peak, but its residual Victorian sentiments were complicated by emergent modern ideas. Between his adventures on the high seas and ruling his own island, the title character experiences a life where imperial desires seem well within reach; and yet, these desires are ultimately thwarted. At the heart of Jim's inability to become the imperial lord of his fantasies lies a series of ideological paradoxes that alter the construction and perception of time itself. Jim, in attempting to embody the imperial dream, becomes mired in contradictory structures of time. These take the forms of a host of literary conventions such as the Bildungsroman (the narrative of a youth's formation) and the newly forming fantasy of imperial young men, as well as a morally desirable progress and an even more desirable vision of permanence. By examining *Lord Jim* in conjunction with literary criticism from Conrad's contemporaries to current scholarship, this paper will examine Jim as the embodiment of these conflicting narratives of time, and the stark picture he presents of the state of imperial ideology, and of empire itself.

Presenter: Adam Turgeon

Project Advisor: Pareena Lawrence (Economics/Management)

Title: A Case Study of the Cash Flows of the City of Benson

Type of presentation (Oral / Poster): Oral

John Q. Imholte Hall, Room #114, 5:10 p.m.

Abstract:

I have been working on a research project funded by the City of Benson and the Service-Learning program at UMM that examines the economic health of businesses in the Benson area. The Benson Community Cash Flow Project's main objective is to assess and analyze the current cash flow within the Benson area and evaluate customer satisfaction with the services offered by these businesses and make recommendations based on the analysis to the Benson Area Chamber of Commerce and City officials to improve the economic vitality of the area. To achieve the objectives of this study, a survey was designed and distributed to fifteen hundred households in the Benson area, of which 585 were completed and returned. I would like to present my findings regarding spending patterns and what influences them.
