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

Additional thanks to:
Dean Cheryl K. Contant
Duplicating Services staff
Lynn Halbakken
Chancellor Jacqueline Johnson
Ron Kubik
Mark McCabe
Christine Mahoney
Kate Newland
Plant Services Staff
Adele Raymond
Judy Riley
Sodexho staff
and all the faculty that advised the projects and provided encouragement.

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

The 2009 URS Organizing Committee
Sylke Boyd, Barbara Burke, Jennifer Deane, Michael Eble,
Kathy Julik-Heine, Mark Logan, Elena Machkasova,
Gordon McIntosh, Cody Miller, Paula O’Loughlin (Chair),
Ted Pappenfus, Jeff Ratliff-Crain, Tisha Turk

URS logo designed by Michael Eble

Funding generously provided by the Office of the Vice Chancellor for Academic Affairs
Presenter:  Adam Yust  
Project Adviser:  Paula O’Loughlin (Political Science)  
Title:  The Strategic Convention  
Type of Presentation:  Poster  

Abstract:  
This poster will address the question of whether the locations of presidential nominating conventions have an effect on the electoral outcomes on the state in which they are held. Empirical data from the last ten presidential elections was used in this study. The dependent variable was the difference in presidential votes versus the previous presidential election. I compare the state that held the presidential nominating convention versus all other states. The results show in the past presidential elections, Republicans have benefited more than Democrats, but not at a statistically significant level. The significance of holding a convention in a particular state has decreased over time as well. However, political conventions may have a more indirect effect so understanding what conventions influence and the role of convention placement strategy must be further researched.
2009 Undergraduate Research Symposium

ORAL PRESENTATIONS
John Q. Innholte Hall, Room #s 101 and 109

Room #101
2:30 Adam Olson (Political Science): When does Gender matter: Towards a Better Understanding of Gender Dynamics in Congress (Adviser: Paula O’Loughlin), abstract pg. 23
2:55 Kathy Julik-Heine (Economics): An evaluation of its effectiveness in generating women’s empowerment and diversifying real leadership in India (Adviser: Pareena Lawrence), abstract pg. 15
3:20 Cody Miller (Political Science): What’s in a name? (Adviser: Paula O’Loughlin), abstract pg. 19
3:45 Michael McHride (Political Science): Valued: A Study of the Acquisition of Values, Frames and Party Identification (Adviser: Paula O’Loughlin), abstract pg. 18
4:35 Saba Nasseri and Jesh Livstrom (Political Science): The bounds of political culture on the elites, media, and public: a comparative study (Adviser: Paula O’Loughlin), abstract pg. 20

Room #109
2:30 Sarah Schwietering (Art History): Emotion in Byzantine Art (Adviser: James G. Schryver), abstract pg. 25
2:55 Veronica Olson (Art History): The Gods of Westminster (Adviser: James G. Schryver), abstract pg. 23
3:45 Talia Earle (Art History): The New Woman: Cartoons of Women Suffragists on Postcards and in the Papers (Adviser: Julia Dabbs), abstract pg. 13
4:10 Calla Bjorklund (Art History): Degenerate Art: The Aesthetic Ideal in Hitler and Goebbels’ Germany (Adviser: Joel Esinger), abstract pg. 9
4:35 Anne Bergstrom (Art History): Audrey Flack: Vanitas (Adviser: Julia Dabbs), abstract pg. 9

2009 Undergraduate Research Symposium

Presenter: KauChee Vang, Josie Skala, and Laura Nygaard
Project Adviser: Timna Wyckoff (Biology)
Title: Examination of phenotypic and genotypic pirlimycin resistance in Staphylococcus from milk samples from conventional and organic dairies in west-central Minnesota
Type of Presentation: Poster

Abstract:
Previously, strains of Staphylococcus were collected from milk samples on eight conventional and eight organic dairy farms in west-central Minnesota (Bombyk et al. (2008) J. Appl. Microbiol. 104(6), 1726-31). The strains were tested for phenotypic resistance to pirlimycin; 14% of strains from conventional farms and 2% of strains from organic farms were determined to be resistant using the manufacturer’s (Remel) instructions. In this study, pirlimycin resistant strains were tested for the presence of the lincomamide resistance gene lnu(A). Some pirlimycin sensitive strains (initially used as negative controls) had lnu(A). The study was expanded to look for a pattern in occurrence of lnu(A) among strains determined to be pirlimycin sensitive by phenotype. In order to pick pirlimycin sensitive strains at random, the first ten isolates that had not been previously tested for the presence of lnu(A) were chosen from each farm (i.e. 160 total). Seventeen of these 160 strains considered to be sensitive contained lnu(A), which should confer resistance to pirlimycin. This suggests that more strains from each farm type may be pirlimycin resistant (26% of strains from conventional farms and 10% of strains from organic farms) than were originally classified as such.

Presenter: Andrew Wey
Project Adviser: Jong-Min Kim (Statistics)
Title: An Introduction to Vine-Copula
Type of Presentation: Poster

Abstract:
This presentation will focus on introducing the mathematical modeling technique: vine-copula. Copulas are functions that connect (i.e. couple) a multivariate probability distribution to its univariate marginal probability distributions. Vines, on the other hand, are essentially acyclic graphs that provide an intuitive graphical representation of the conditional specifications being made on a joint distribution. Vine-copulas are merely vines that use copulas in the conditional specifications being made on a particular joint distribution. Also, two different types of vine-copulas will be introduced: a d-vine and a canonical vine. Ultimately, the goal of the presentation is to introduce the basic concepts of vine-copula.
Abstract:
The Truckers & Turnover Project has been working with a cooperating carrier in the trucking industry to monitor student success at one of their truck driver training centers. The cooperating carrier would like to develop methods that would effectively identify students that are unlikely to complete the driver training program. If the training center could remove such students, they would likely reduce costs associated with training those students at risk for training failure. Using our estimated logistic regression model, we developed a screening method to effectively identify students unlikely to complete training. If the training center could remove such students, they would likely reduce costs associated with training those students at risk for training failure. Our method identifies 8% of the students to be of extremely high risk of training failure, and of those students unlikely to complete training could be successfully identified before training begins, such students could avoid the substantial cost of training they are unlikely to complete. Upon enrollment at the training center, tests of basic mathematical skills, and adult reading comprehension were given to students. We used a multivariate logistic regression model to determine if these math and reading tests are associated with training failure after adjusting for previous driving experience, and the type of training. We find statistically significant evidence that both higher math and reading scores are associated with a higher probability of completing training. Because both the math and reading tests are significantly associated with training success, we developed a screening method to identify students at risk for training failure. Using our estimated logistic regression model, we developed a screening method to predict training failure. Our method identifies 8% of the students to be of extremely high risk of training failure, and of those 8%, 93% actually failed. We will continue to adjust this screening method as we receive additional data from the training center.

Poster

Abstract:
Ammonia is an essential chemical compound, currently used mainly for agricultural purposes. However, ammonia in the form of ammonia borane, is also gaining momentum for use as a hydrogen source in proton exchange membrane fuel cells (PEMFCs). To meet the high demand, ammonia has been produced by the Haber-Bosch process. However, the Haber process utilizes methane, a fossil fuel, as a starting material to synthesize ammonia. An alternative and more environmentally friendly method of synthesizing ammonia is through electrochemistry. To optimize this electrochemical synthesis we experimented with varying solvents (especially interested in ionic liquids), working electrodes, lithium salts, and proton sources. The amount of ammonia synthesized was quantified by performing the Berthelot reaction. The efficiency of the synthesis was determined by comparing the amount of ammonia detected by the Berthelot reaction to the theoretical concentration as calculated by the amount of coulombs applied. Current efficiencies at room temperature and atmospheric pressure of the various solvents, electrodes, lithium salts, and proton sources will be presented.

Presenter: Laura Thoma and Carly Dukart
Project Adviser: Ted Pappenfus (Chemistry)
Title: Electrode, Electrolyte, and Proton Effects on the Electrochemical Synthesis of Ammonia.
Type of Presentation: Poster
ORAL PRESENTATIONS
John Q. Imholte Hall, Room #s 114, 115, 202

Room #114
2:30  Clare Stover (French): The Unique Case of Language and Identity in Belgium: How Language Usage has Created Contemporary Belgium (Adviser: Tammy Berberi), abstract pg. 26
2:55  Kelsey Hagen (Spanish): Cultural Repression and Collective Amnesia in Francoist and Contemporary Spain (Adviser: Thomas Turner), abstract pg. 14
3:20  Ashley Marie-Arlene Deering (French): Saving Faith in Languedoc: The Dominican Practice of Medieval "Doctors of Souls" (Adviser: Stephen Martin), abstract pg. 11
3:45  Tiffany Allison (Spanish): Narrative Literary Theory and Ethical Controversy in Cartas desde el Infierno (Adviser: James Wojtaszek), abstract pg. 8
4:10  Tom Vail (History): "Echoes of Populism’s Clarion Call (Adviser: Marynel Ryan Van Zee), abstract pg. 28
4:35  Matthew Nelson (History): Statistical Success in Scotland: Factors Leading to the Success of the Old Statistical Account of Scotland and Their Implications (Adviser: Marynel Ryan Van Zee), abstract pg. 8

Room #115
2:30  Katherine Struss (Mathematics): A Chaotic Image Encryption (Adviser: Barry McQuarrie), abstract pg. 26
2:55  Tyler Sable (Mathematics): Computational Monodromy: Visualizing the Behavior of Polynomials (Adviser: Dave Roberts), abstract pg. 25
3:20  Sara Lahr (Computer Science): Evolving a Solution: Developmental Plasticity in Genetic Programming (Adviser: Nic McPhee), abstract pg. 16
3:45  Eric Aultdher (History): Productivity and Sustainability of Northern US Agriculture in 1860 (Adviser: Steve Goss), abstract pg. 21

Room #202
2:30  Tom Vail (Psychology): Dimensions of Jealousy (Adviser: Jeff Ratliff-Crain), abstract pg. 28
2:55  Justin Kemppainen (Communication, Media, and Rhetoric): Failure and Frustration: Discovering Reasons for Aggressive Behavior in Gamers (Adviser: Barbara Burke), abstract pg. 16
Abstract:
Circadian rhythms are biological cycles that organisms use to predict cyclical events in the natural world, such as day and night and seasonal changes. The molecular circadian clock has been extensively studied in the fungus *Neurospora crassa* via direct measurement of spore formation. The protein VIVID provides *N. crassa* spores with their bright orange color, as well as its strong inhibitory effect on the primary light sensitive protein complex WCC. Previous work has shown that VIVID is maximally expressed during the beginning of a light period, thereby preventing the established circadian clock from resetting at the beginning of a new day. In our studies, we used transgenic strains of *N. crassa* with the bioluminescent firefly gene luciferase inserted behind promoters for several known circadian genes. The transgenic strains were grown on a medium that induced colony growth, rather than the traditional medium that promotes rapid spore formation. Gene expression was quantified via time lapse photography with a CCD camera. Our results show that under imposed 12 hour light:12 hour dark cycles, there appears to be no regulation of the WCC genes and their products, suggesting that VIVID is not well expressed in our cultures. We hypothesize that the decreased VIVID expression is due to VIVID’s sporulation related properties and the environment used here does not facilitate spore formation. By understanding the molecular circadian clock in such a simple organism as *N. crassa*, we gain insight into the circadian clock of higher organisms.

Presenter: Sam Potter
Project Adviser: Peh Ng (Mathematics)
Title: Impacts of Seasonality, Spatial Heterogeneity, and Disease on Competitive Grasslands
Type of Presentation: Poster

Abstract:
The presence of disease can drastically affect the makeup of ecological communities. In a 2004 paper, Borer et al. used numerical results from an integrodifference model to show that the competitive balance between native perennials and invasive annuals was reversed due to the presence of the barley yellow dwarf virus. Their results showed that the virus allowed competitively inferior annuals to not only invade the perennial native habitat, but to outcompete the perennials. To make the model more amenable to study I have used several different forms of a seasonal forcing function to eliminate the use of difference equations in the original model. Sensitivity analyses also show some parameters can be reset to zero, simplifying the model further. Once the model is fully continuous it can be generalized into a metapopulation model, which allows for the study of spatial heterogeneity. I will be presenting both numerical and analytical results of the system forced with different seasonality functions, the sensitivities of various parameters, as well as the dynamic effects of spatial heterogeneity.
POSTER PRESENTATIONS 5:00 – 7:00 p.m.
Science Atrium

#11 David Nieves (Mathematics): Advanced Techniques for Summing Divergent Series
(Adviser: Barry McQuarrie), abstract pg. 39

(Adviser: Ted Pappenfus), abstract pg. 42

#13 Susan Gilbert (Studio Art): An Obsession With Tea
(Adviser: Jenny Nellis), abstract pg. 35

#14 Matthew Bombyk, Brooke Knick, Jamie Nohl, and Monica Sweeney (Biology): The effect of rising corn prices on the Conservation Reserve Program in Minnesota.
(Adviser: Chris Cole), abstract pg. 31

#15 Rebecca Lindquist (Chemistry): Comparison of Oilseeds for Use as Biodiesel: Analysis of Fatty Acid Composition
(Adviser: Nancy Carpenter), abstract pg. 38

#16 Anthony Anderson (Chemistry): Valency Interaction Formulas Introduced and Applied to Singlet Carbenes and Their [1,2] H-shift Transition Structures
(Adviser: Joseph Alia), abstract pg. 30

#17 Sara Russell (Biology): Competitive exclusion of Uca pugilator by Hemigrapsus sanguineus: The effects of an invasive species on the ecosystem ecology of Long Island salt marshes
(Adviser: Chris Cole), abstract pg. 41

#18 Jeff Aday (Biology): Impact of deer browsing on tree seedlings in west central Minnesota
(Adviser: Peter Wycokoff), abstract pg. 30

#19 Rui Ding (Statistics): Molecular Classification of Cancer Using Java visualization
(Adviser: Jong-Min Kim), abstract pg. 33

#20 Sam Potter (Mathematics): Impacts of Seasonality, Spatial Heterogeneity, and Disease on Competitive Grasslands
(Adviser: Pheh Ng), abstract pg. 40

#21 Andrew Wey (Statistics): An Introduction to Vine-Copula
(Adviser: Jong-Min Kim), abstract pg. 43

#22 Charles Rudeen (Mathematics): Solving the Maximum Weight Connected Subgraph Problem on a Subclass of Graphs
(Adviser: Pheh Ng), abstract pg. 41

#23 Jeremy Davis (Mathematics): Sierpinski Fractals
(Adviser: Byungik Kahng), abstract pg. 39

(Adviser: Solomon Gashaw), abstract pg. 38

#25 Adam Yust (Political Science): The Strategic Convention
(Adviser: Paula O'Loughlin), abstract pg. 44

#26 Ben Greiling and Andrew Barnes (Psychology): Natural Restorative Environments: Possible Applications Inside Buildings
(Adviser: Jeff Ratliff-Crain), abstract pg. 36

#27 Tricia Steffen and Chris Thorne (Statistics): Truck Driver Training: Predicting Student Success
(Adviser: Jon Anderson), abstract pg. 42

#28 Nicole Dobmeier (Statistics): Cognitive Skills, Screening for Job Matches, and a Competing Risks Model of Quits versus Discharges Among Truckers
(Adviser: Jon Anderson), abstract pg. 33

#29 Mananj Gavada (Statistics): Truck Driver Accident Risk: Predictive Factors
(Adviser: Jon Anderson), abstract pg. 35

Abstract:

In this project, a computer model was tested and developed to study the formation and growth of cloud droplets. In clouds, once nano-sized droplets have formed, they will grow fairly quickly, and incorporate all of the available water molecules within their immediate surroundings, thus limiting their own growth at micrometer sizes. However, a warm cumulus cloud can go from initial formation to rain (millimeter-size droplets) within thirty minutes. It is possible that fluid dynamic effects of the air surrounding the cloud droplets may increase the chances for coalescence, as well as increase condensation rates. A computer model may be able to answer some of the questions concerning the fluid dynamics of the surrounding air, mechanisms of coalescence as well as equilibrium conditions for droplet existence. We are developing such a computational model for droplets embedded in air. We used a Leonard Jones potential to model interactions between molecules. The molecular dynamics algorithm allows us to model conditions of constant temperature and constant pressure in a molecular dynamics simulation of two co-existing phases. Some challenges included working with large numbers of particles (20,000 particles), finding the correct parameters for the force field, as well as developing a reliable method for temperature and pressure control in such a two-phase system. We will present the evaporation rates as they vary with temperature and droplet size, energetic results, and the outcome of coalescence simulations. The model is a work in progress with the goal to explain the behavior of water droplets in an atmosphere.
Presenter: Ning Jiang  
Project Adviser: Solomon Gashaw (Sociology)  
Title: Social Memory: The Construction of Chiang Kai-Shek’s Image in the Mainland of China, 1949 -- 2009  
Type of Presentation: Poster

Abstract:
The image of Chiang Kai-shek, who served as Generalissimo of the Nationalist Government of the Republic of China (ROC) from 1928 to 1948, has varied during different periods of time in mainland China. Based on individual interviews I did with some local people in the hometown of Chiang Kai-shek in 2008 and representations of him by mass media since 1949 in the mainland of China, the dramatic changes in Chiang Kai-shek’s portrayals vividly show how social memory is constructed and influenced by political positions, social changes and a storyteller’s personal perspective. This paper was designed to find how society remembers a social event and how social memory continues and changes by looking into the case of Chiang Kai-shek’s image in mainland China, which has evolved to be more complex and nuanced over time as China has become more prosperous and open.

Presenter: Abigail Swafford  
Project Adviser: Siobhan Bremer  
Title: Just Things: A New Play  
Type of Presentation: Performance

Abstract:
As a playwright my primary concern is with creating complex and often contradictory characters. I want an audience to simultaneously love and hate each of my characters. There are no protagonists to cheer for, no antagonists to scorn, only characters that deserve equal praise and criticism. In my new play, Just Things, I chose to portray a non-nuclear, matriarchal family coping with the loss of their mother. Partly inspired from events in my own life, Just Things attempts to show the conflict between personal identity and familial obligation. When does one choose one’s own path in life and when does one do what is expected? Why does one feel the need to come back home and at the same time feel as though home no longer exists? Why can’t you ever escape your family? These are the questions I am most concerned with exploring on stage.

Presenter: Rebecca Lindquist  
Project Adviser: Nancy Carpenter (Chemistry)  
Title: Comparison of Oilseeds for Use as Biodiesel: Analysis of Fatty Acid Composition  
Type of Presentation: Poster

Abstract:
This research explores different crops as promising sources of biodiesel, a form of alternative energy. The biofuels are first derived from plant materials in the form of triacylglycerides. Triacylglycerides alone do not possess the qualities suitable for a petroleum surrogate; they must first be converted to fatty acid methyl esters (FAME). The fatty acid composition of the oil greatly impacts the performance of the oil as biodiesel; hence, FAME analysis was carried out by gas chromatography. Seven different oil seed crops (Cuphea viscosissim, Camelina sativa, Calendula officinalis, Crambe abyssinica, two varieties of Helianthus annuus, and Thlaspi arvense) were investigated to determine which seed could provide the highest yield of oil, and to determine the fatty acid composition of each seed type. Two extraction methods were compared: a shorter room-temperature hexane extraction and an extended Soxhlet hexane extraction. The seed oils were transesterified using a base catalyst to yield FAME (biodiesel). Transesterification was confirmed by IR and 1H NMR. Significantly different oil yields were found between seed types but not between extraction methods. The two varieties of sunflower seeds yielded the most oil (almost 50% by weight). The results of the FAME analysis will be presented and the suitability of the various seeds for biodiesel production compared.
John Q. Imholte Hall, Room #114, 3:45 p.m.

John Q. Imholte Hall, Room #114, 3:45 p.m.

Abstract:
This project is an application of narratological theory, a method which shifts the focus of literary analysis from issues of content to those of narration as a process, to Ramón Sampedro’s memoir Cartas desde el Infierno. This analysis of the strategies and techniques that the author employs to elicit empathy from the reader regarding his situation as a quadriplegic for almost 20 years, will demonstrate the effectiveness of Sampedro’s writing as a carefully constructed narrative that requires the reader to entertain his perspective on the controversial ethical issue of assisted suicide. For years after an accident, Sampedro considered and requested the right to end his life. His memoir not only presents an ethical challenge, but it is also challenging in terms of its structure; it is not a typical autobiography, but a hybrid of forms and perspectives. Sampedro incorporated many forms and techniques into his writing, including poetry, letters to friends, and legal and medical discourse, to provide multiple perspectives on his physical condition and its psychological implications. Analyzing these elements from a narratological perspective allows one to see beneath the surface elements of the text, such as its autobiographical nature and the ethical and political messages it conveys, to focus more precisely on the concrete means through which the text works its effects upon its readers.

Project Adviser: Tiffany Allison

Title: Narrative Literary Theory and Ethical Controversy in Cartas desde el Infierno

Oral

Type of Presentation: Oral

Presenter: Tiffany Allison

Poster Presentations

Presenter: Erin Aufderhar

Project Adviser: Marynel Ryan Van Zee (History)

Title: Statistical Success in Scotland: Factors Leading to the Success of the Old Statistical Account of Scotland and their Implications

Type of Presentation: Oral

Room #s: 101, 109, 111, 112, 113, 114, 115, 202, 217

Abstract:
In 1790 Sir John Sinclair of Ullster set out to gather information from every parish in Scotland. Seven years, seven months, and seven days after the commencement of the project Sinclair had received responses from every corner of the nation. By examining letters sent to and from Sinclair and noting rhetorical similarities, often referencing a sense of Scottish national pride, it can be seen that this Statistical Account of Scotland was a success because of shared goals of agricultural improvement and pride for both parish and nation. At a time when Scotland was struggling to find not only a place for itself in the United Kingdom, but also an identity, pride and patriotism were themes permeating Sinclair’s persuasions. These themes are also present in the letters of support sent to Sinclair, authored by ministers, Members of Parliament, and international heads of state. Examining and comparing the entries on the growth and decline in various sectors of economy and society of this original Statistical Account of Scotland for Edinburgh and Aberdeen with the entries in the later New Statistical Account of Scotland (1845) show the importance of such an undertaking. It can be concluded that a desire to make a place for Scotland in the United Kingdom, a yearning for “improvement” (at least in part of those who make decisions), and a passion for understanding the world that stemmed from the Enlightenment all contributed to the success of the Statistical Account of Scotland unveiled to the viewing public.

Presenter: Tiffany Allison

Project Adviser: James Wojtaszek (Spanish)

Title: Statistical Success in Scotland: Factors Leading to the Success of the Old Statistical Account of Scotland and their Implications

Oral

Type of Presentation: Oral

Presenter: Tiffany Allison

Poster Presentations

Presenter: Eric Aufderhar

Project Adviser: Marynel Ryan Van Zee (History)

Title: Statistical Success in Scotland: Factors Leading to the Success of the Old Statistical Account of Scotland and their Implications

Type of Presentation: Oral

Room #s: 101, 109, 111, 112, 113, 114, 115, 202, 217

Abstract:
In 1790 Sir John Sinclair of Ullster set out to gather information from every parish in Scotland. Seven years, seven months, and seven days after the commencement of the project Sinclair had received responses from every corner of the nation. By examining letters sent to and from Sinclair and noting rhetorical similarities, often referencing a sense of Scottish national pride, it can be seen that this Statistical Account of Scotland was a success because of shared goals of agricultural improvement and pride for both parish and nation. At a time when Scotland was struggling to find not only a place for itself in the United Kingdom, but also an identity, pride and patriotism were themes permeating Sinclair’s persuasions. These themes are also present in the letters of support sent to Sinclair, authored by ministers, Members of Parliament, and international heads of state. Examining and comparing the entries on the growth and decline in various sectors of economy and society of this original Statistical Account of Scotland for Edinburgh and Aberdeen with the entries in the later New Statistical Account of Scotland (1845) show the importance of such an undertaking. It can be concluded that a desire to make a place for Scotland in the United Kingdom, a yearning for “improvement” (at least in part of those who make decisions), and a passion for understanding the world that stemmed from the Enlightenment all contributed to the success of the Statistical Account of Scotland unveiled to the viewing public.

Presenter: Eric Aufderhar

Project Adviser: Marynel Ryan Van Zee (History)

Title: Statistical Success in Scotland: Factors Leading to the Success of the Old Statistical Account of Scotland and their Implications

Oral

Type of Presentation: Oral

Presenter: Tiffany Allison

Project Adviser: James Wojtaszek (Spanish)
Attention Restoration Theory states humans have a natural tendency to be attracted to aspects from the natural environments, such as foliage, water and animals. These various stimuli are theorized to help restore one’s attention capacity and improve mood better than other types of stimuli. The present study focused on varying the amount and type of natural stimuli to which participants were exposed and monitored effects on attention and performance during a fatiguing computer program. Participants were tested, allowed a break period and then tested again. The break period was when the stimuli manipulation took place. It was predicted that people do not need entire natural environments for restoration to occur, but rather components of them in their work or home can be effective. Particularly, the participants exposed to the most natural elements would do the best in regards to their moods and their performances on the second test.

Ethanol fuel production has been evaluated in terms of its energy efficiency and financial return, but these do not evaluate its environmental impact. In past studies, the only impact on water usage evaluated has been the use in ethanol production plants. We attempted to construct a comprehensive water budget for ethanol production in West Central Minnesota, where ethanol is a growing industry. We address four main inputs of water in the production process, including rainfall, irrigation, herbicide use, and ethanol production plant consumption. Approximately 36 gallons of water are used for every gallon of ethanol produced, about six times the amount used in ethanol production plants. We found rainfall is the largest input of water in ethanol production, followed by irrigation, then production plant use, and lastly the herbicide application process. However, assessing the long-term viability of ethanol production will require more complete data on inputs (e.g. water used in fertilizer production & application).

In 1937, Hitler and the Nazis held two concurrent art shows: the Great German Art Exhibition and the Degenerate Art Exhibition. The former featured works by obscure German artists, almost all of whom were inspired by the artwork of ancient Greece and Rome. The Degenerate Art Exhibition showcased works of art from several modern artistic movements, including Surrealism, Cubism, and Dadaism. The goal of the two exhibits was to demonstrate to the German people what “good” art was and to coerce them into wholly rejecting modern “degenerate” art that was supposedly inspired by Jews and Bolsheviks. This paper traces the theoretical sources of the Great German Art Exhibition and the Degenerate Art Exhibition. Sources such as Hitler’s speeches, his autobiography Mein Kampf, Propaganda Minister Joseph Goebbels’ semi-autobiographical novel Michael, and Max Nordau’s influential aesthetic theories give insight to Hitler’s ideas about art. The paper argues that, despite his firm convictions about what made “good” German art, Hitler had significantly stronger ideas about what made a work of art degenerate. In the end, Hitler was primarily concerned with the destruction of what he thought was unacceptable and therefore “bad” instead of a clear definition of what was acceptable and “good.” This paper expands the understanding of the theoretical ideas behind these two art shows, and more thoroughly links Nazi ideology as expressed with art and its sources of origin.
In the 21st century, few countries' foreign policy motives will be more important than those of China, the rapidly rising regional and possibly global power of Asia. Since the creation of the Shanghai Five in 1996 and the Shanghai Cooperation Organization (SCO) in 2001 there have been many academic observers who have speculated about the motives of those involved. The current academic debate is largely centered on this question: are China’s intentions for the SCO realist or liberal in nature? In other words, is China intending to counterbalance the North Atlantic Treaty Organization, or is its hope to foster economic cooperation and mutual aid in counter-terrorism operations? In my studies of China’s activities involving the SCO, I have found that China does not consider the Shanghai Cooperation Organization to be a legitimate military counterbalance to NATO. Moreover, I will argue that the Chinese desire to reduce international tensions has been its main rationale for being involved in the Shanghai Cooperation Organization. This research paper is intended to review the research that has been done so far on China’s foreign policy goals and expand upon it by analyzing China’s behavior with several revealing case studies. My hope is that this research will illuminate China’s current foreign policy goals to better guide future academic research and foreign policy.

Abstract:

In the 21st century, few countries’ foreign policy motives will be more important than those of China, the rapidly rising regional and possibly global power of Asia. Since the creation of the Shanghai Five in 1996 and the Shanghai Cooperation Organization (SCO) in 2001 there have been many academic observers who have speculated about the motives of those involved. The current academic debate is largely centered on this question: are China’s intentions for the SCO realist or liberal in nature? In other words, is China intending to counterbalance the North Atlantic Treaty Organization, or is its hope to foster economic cooperation and mutual aid in counter-terrorism operations? In my studies of China’s activities involving the SCO, I have found that China does not consider the Shanghai Cooperation Organization to be a legitimate military counterbalance to NATO. Moreover, I will argue that the Chinese desire to reduce international tensions has been its main rationale for being involved in the Shanghai Cooperation Organization. This research paper is intended to review the research that has been done so far on China’s foreign policy goals and expand upon it by analyzing China’s behavior with several revealing case studies. My hope is that this research will illuminate China’s current foreign policy goals to better guide future academic research and foreign policy.

Abstract:

In the 21st century, few countries’ foreign policy motives will be more important than those of China, the rapidly rising regional and possibly global power of Asia. Since the creation of the Shanghai Five in 1996 and the Shanghai Cooperation Organization (SCO) in 2001 there have been many academic observers who have speculated about the motives of those involved. The current academic debate is largely centered on this question: are China’s intentions for the SCO realist or liberal in nature? In other words, is China intending to counterbalance the North Atlantic Treaty Organization, or is its hope to foster economic cooperation and mutual aid in counter-terrorism operations? In my studies of China’s activities involving the SCO, I have found that China does not consider the Shanghai Cooperation Organization to be a legitimate military counterbalance to NATO. Moreover, I will argue that the Chinese desire to reduce international tensions has been its main rationale for being involved in the Shanghai Cooperation Organization. This research paper is intended to review the research that has been done so far on China’s foreign policy goals and expand upon it by analyzing China’s behavior with several revealing case studies. My hope is that this research will illuminate China’s current foreign policy goals to better guide future academic research and foreign policy.
2009 Undergraduate Research Symposium

Presenter: Seth Ferry
Project Adviser: Jennifer Goodnough (Chemistry)
Type of Presentation: Poster

Abstract:

N-Methylformamide (NMF) is a simple molecule used to model the hydrogen bonding within other larger, more interesting molecules, such as proteins and DNA. Hydrogen bonding is one of the most basic properties of life, involving repulsion and attraction forces of atoms within molecules (or multiple molecules). Specifically, NMF forms intermolecular hydrogen bonds which make clusters of NMF. These clusters can vary in size from two linear molecules to a complex multiple molecule chain. The variations in cluster size lead to variations in hydrogen-bond strength. The computer software package, Gaussian03, was used to calculate the hydrogen bond strength through the use of other more specialized calculations, namely the quadrupole coupling constants and the chemical shift. These ab initio calculations on NMF are faster (hours, PC) than on larger proteins mentioned earlier (weeks, supercomputers), allowing a less extreme time commitment. This data can also soon be compared to experimental NMR data at different temperatures to find the correlation between experimental and theoretical results.

2009 Undergraduate Research Symposium

Presenter: Kristin Lamberty (Computer Science)
Project Adviser: Katie Froiland (Computer Science)
Type of Presentation: Poster

Title: Calculation of quadrupole coupling constants for n-methylformamide.

Abstract:

N-Methylformamide (NMF) is a simple molecule used to model the hydrogen bonding within other larger, more interesting molecules, such as proteins and DNA. Hydrogen bonding is one of the most basic properties of life, involving repulsion and attraction forces of atoms within molecules (or multiple molecules). Specifically, NMF forms intermolecular hydrogen bonds which make clusters of NMF. These clusters can vary in size from two linear molecules to a complex multiple molecule chain. The variations in cluster size lead to variations in hydrogen-bond strength. The computer software package, Gaussian03, was used to calculate the hydrogen bond strength through the use of other more specialized calculations, namely the quadrupole coupling constants and the chemical shift. These ab initio calculations on NMF are faster (hours, PC) than on larger proteins mentioned earlier (weeks, supercomputers), allowing a less extreme time commitment. This data can also soon be compared to experimental NMR data at different temperatures to find the correlation between experimental and theoretical results.

2009 Undergraduate Research Symposium

Presenter: Jennifer Goodnough (Chemistry)
Project Adviser: Seth Ferry (Computer Science)
Type of Presentation: Poster

Title: How Environmental Issues in Transboundary Waters Have Stimulated Multilateral Cooperation

Abstract:

Clean and plentiful water is a necessary resource to all people and economies. Bodies of water hold power and sustenance for life. However, as populations grow and industrialization occurs, precious water resources are damaged. These valuable resources are depleted and contaminated by overuse and hazardous waste. The problem of acquiring sufficient water is further complicated when dealing with transboundary water, because cooperation from multiple states is required for effective action. The study of water as it relates to political action, or hydropolitics, is a relatively new phenomenon. Oftentimes it is difficult for scientists, communities, and politicians to agree and compromise on conflicts and solutions; making multilateral conflict more interesting when there is successful cooperation. By looking at two case studies, the Mekong River Commission and the Mediterranean Action Plan, we can analyze: the initial problems, who is affected by the environmental conflicts, the groups that are most involved with the cooperation efforts, existing motivations to cooperate, possible reservations for cooperation, and how the states worked towards multilateral transboundary water agreements. The results of the case studies show that transboundary environmental water conflicts can stimulate cooperation and successful action, despite their seemingly low priority level. By applying the model of political constructivism, there is theoretical support to explain why states cooperated and how similar conflicts can be solved in the future.

2009 Undergraduate Research Symposium

Presenter: Seung-Ho Joo (Political Science)
Project Adviser: Brittany Crocker (Political Science)
Type of Presentation: Oral

Title: Saving Faith in Languedoc: The Dominican Practice of Medieval "Doctors of Souls"

Abstract:

In my paper, I ask how St. Dominic de Guzmán and Bernard Gui, whose methods of converting heretics modern scholars generally categorize as being diametrically opposed, could both be labeled "doctor of souls." This examination of their methods offers a novel historical analysis of the practice of a doctor of souls. In the high and late Middle Ages, Catharism (and other heretical faiths) threatened the souls of Christians and worried the Catholic Church; this concern for the spiritual health of the masses stimulated the work of doctors of souls, whose vocation was to prevent the spread of and to cure the "disease" of heresy. I investigate contemporary source material to explore St. Dominic’s and Bernard Gui’s drastically different methods of treatment and to prove that despite their differences, both men had the interest of saving Christian souls at the heart of their treatment. This examination offers a historical analysis of the practice of a doctor of souls, and it substantiates that the differences between these men’s techniques do not undermine their pastoral care. Further, my research contributes to the understanding of the divide between “persuasion” and “coercion” (often associated with the evolution of the inquisition) and provides modern scholarship with a new understanding of the inquisitorial process.
Queen Elizabeth I of England utilized many personas throughout her reign but perhaps the most lasting is that of the Courtly Mistress. While already a popular literary device, this figure was used in Elizabethan literary circles to represent the Queen herself. While Elizabeth may have believed that her multiple identities were self-created, it is in reality the politically emasculated courtiers that constructed our image of the Queen and her reign in an attempt to regain their lost power. This paper delves into the way Elizabeth is represented in 16th Century sonnets by Sir Walter Raleigh, Sir Philip Sidney and Henry Constable and includes a brief overview of the traditional literary function of courtly love. Through an examination of the power of representation one may see how it has resulted in our modern perception of Queen Elizabeth I.

**Abstract:**
Queen Elizabeth I of England utilized many personas throughout her reign but perhaps the most lasting is that of the Courtly Mistress. While already a popular literary device, this figure was used in Elizabethan literary circles to represent the Queen herself. While Elizabeth may have believed that her multiple identities were self-created, it is in reality the politically emasculated courtiers that constructed our image of the Queen and her reign in an attempt to regain their lost power. This paper delves into the way Elizabeth is represented in 16th Century sonnets by Sir Walter Raleigh, Sir Philip Sidney and Henry Constable and includes a brief overview of the traditional literary function of courtly love. Through an examination of the power of representation one may see how it has resulted in our modern perception of Queen Elizabeth I.

**Type of Presentation:** Oral
John Q. Imholte Hall, Room #112, 2:55 p.m.

**Presenter:** Erin Demman
**Project Adviser:** Julie Eckerle (English)
**Title:** "Write thy Queen Anew": The Power of the Poet in Elizabethan Sonnets

---

**Abstract:**
No physiological data have been systematically collected from serial murderers, so there is no way of knowing if these individuals share any biological markers. However, psychopathic serial killers engage in antisocial behavior and may have similar risk factors as antisocial individuals, presenting one potential link for understanding underlying risks for serial murder. It is well documented that individuals who exhibit life-course persistent antisocial behavior share several physiological characteristics such as low resting heart rate and low cortisol reactivity. These characteristics may be indicative of low autonomic arousal in the individual. In the present literature review I propose a possible physiological model to explain the developmental and behavioral similarities found in people with antisocial behavior and serial murderers. The implications of this connection and suggestions for future research are addressed as well.

**Type of Presentation:** Oral
John Q. Imholte Hall, Room #202, 3:30 p.m.

**Presenter:** Nicole Dunlap
**Project Adviser:** Jeff Ratliff-Crain (Psychology)
**Title:** Antisocial Behavior Theory Applied to Serial Murder

---

**Abstract:**
 Nowadays, cancer classification is a very important topic in research areas. There are already several ways to do molecular classification of cancer cells. However, in this research, we use a new approach to analysis of cancer data----Java visualization. We combine this technique with statistical methods. Java is a programming language which is convenient to use for computer graphics. Visualization is an approach to transforming scientific data into understandable figure or graphs: the data is represented as images and graphs that are easy for people to understand. Our data set is based on gene expression data, which use human acute leukemias as an example case. First, we perform a Bayesian variable selection for finding meaningful genes from 7128 genes of acute leukemia data. And then with the selected genes, we create a graphical representation of the gene data for classification purposes. We have developed a program to visualize the cancer data and to perform the necessary statistical analysis. Our program is available on a website for researchers who work on molecular classification of cancer cells.

**Type of Presentation:** Poster

**Presenter:** Rui Ding
**Project Adviser:** Jong-Min Kim (Statistics)
**Title:** Molecular Classification of Cancer Using Java visualization

---

**Abstract:**
The truck load (TL) segment of the trucking industry has experienced average annual driver turnover rates over 100% for many years. The Truckers & Turnover Project studied a panel of new drivers at a cooperating trucking firm over a two year period to identify factors associated with driver retention. This panel of new drivers was given a quantitative reasoning examination prior to employment to measure the driver’s numerical and quantitative reasoning ability. We find this quantitative reasoning ability to be associated with driver retention in two interesting ways. First, quantitative reasoning is highly correlated with productivity (miles driven), and lower productivity is a statistically significant predictor of drivers quitting voluntarily. Second, we find evidence that drivers with lower quantitative reasoning scores are more likely to be fired (discharged) by the firm. We used a competing risks survival model, an extension of the Cox survival modeling technique, to simultaneously estimate predictor effects on quitting voluntarily and being fired by the firm. With this model we were able to distinguish a predictor’s effect on quitting voluntarily independent of its effect on being fired and vice versa. We also developed a screening procedure to examine the effects on retention that would be expected if the firm would screen drivers with lower quantitative reasoning scores. We find potential for increases in driver retention that will benefit the firm.

**Type of Presentation:** Poster

**Presenter:** Nicole Dobmeier
**Project Adviser:** Jon Anderson (Statistics)
**Title:** Cognitive Skills, Screening for Job Matches, and a Competing Risks Model of Quits versus Discharges Among Truckers

---

**Abstract:**
Among Truckers
Presenters: Timma Wykoff (Biology)
Project Adviser: Jim Davison and Jose Skala
Title: Surveillance of antibiotic susceptibility of Staphylococcus from a dairy herd during a transition to organic management
Type of Presentation: Poster

Abstract:
This is a geometrical proof and analytical definition of maximal Hausdorff dimensionality (a measure of a structure's dimensionality that allows for non-integer dimensions, used to classify fractals) of regular convex n-gonal fractals (Sierpinski fractals) via analytical definition of maximal contraction coefficient (the ratio of each successive smaller generation to its larger parent n-gon.) This is defined using the regular n-gram(s) of a regular, convex n-gon, to form a triangle comprised of vertices of neighboring regular, convex n-gons in each successive generation to analytically establish the maximal contraction coefficient. The geometrical intricacies of such non-integer-dimension forms may hold interesting implications for chaos theorists.

Presenters: Jeremy Davis
Project Adviser: Byungik Kahng (Mathematics)
Title: Sierpinski Fractals
Type of Presentation: Poster

Abstract:
Medicinal use of antibiotics is widespread throughout the world for bacterial disease treatment. However, the frequent use of antibiotics leads to antibiotic resistance among microorganisms, which then requires new antibiotics to be developed. In previous research, we determined that bacterial isolates resistant to several antibiotics are more common on conventional dairy farms, where antibiotics are routinely used for disease treatment, than on organic dairy farms, where antibiotics are forbidden. The data for the previous project were collected from sixteen farms at which the dairy cows had been either conventionally or organically managed for several years. However, the design of that study did not allow us to determine when the bacteria became susceptible to the antibiotics via a timeline. In September 2008, the University of Minnesota West Central Research and Outreach Center began to transition half of its conventional dairy herd to organic management. We have isolated staphylococcus from milk collected every 2-3 months starting in August 2008, and determined phenotypic antibiotic resistance of all isolates. We follow phenotypic antibiotic resistance of staphylococci throughout the one year transition and beyond. Here we will present preliminary results from our antibiotic resistance surveillance from the first six months of the transition.

Presenters: Timma Wykoff (Biology)
Project Adviser: Jim Davison and Jose Skala
Title: Surveillance of antibiotic susceptibility of Staphylococcus from a dairy herd during a transition to organic management
Type of Presentation: Poster

Abstract:
This is a geometrical proof and analytical definition of maximal Hausdorff dimensionality (a measure of a structure's dimensionality that allows for non-integer dimensions, used to classify fractals) of regular convex n-gonal fractals (Sierpinski fractals) via analytical definition of maximal contraction coefficient (the ratio of each successive smaller generation to its larger parent n-gon.) This is defined using the regular n-gram(s) of a regular, convex n-gon, to form a triangle comprised of vertices of neighboring regular, convex n-gons in each successive generation to analytically establish the maximal contraction coefficient. The geometrical intricacies of such non-integer-dimension forms may hold interesting implications for chaos theorists.

Presenters: Jeremy Davis
Project Adviser: Byungik Kahng (Mathematics)
Title: Sierpinski Fractals
Type of Presentation: Poster

Abstract:
Medicinal use of antibiotics is widespread throughout the world for bacterial disease treatment. However, the frequent use of antibiotics leads to antibiotic resistance among microorganisms, which then requires new antibiotics to be developed. In previous research, we determined that bacterial isolates resistant to several antibiotics are more common on conventional dairy farms, where antibiotics are routinely used for disease treatment, than on organic dairy farms, where antibiotics are forbidden. The data for the previous project were collected from sixteen farms at which the dairy cows had been either conventionally or organically managed for several years. However, the design of that study did not allow us to determine when the bacteria became susceptible to the antibiotics via a timeline. In September 2008, the University of Minnesota West Central Research and Outreach Center began to transition half of its conventional dairy herd to organic management. We have isolated staphylococcus from milk collected every 2-3 months starting in August 2008, and determined phenotypic antibiotic resistance of all isolates. We follow phenotypic antibiotic resistance of staphylococci throughout the one year transition and beyond. Here we will present preliminary results from our antibiotic resistance surveillance from the first six months of the transition.

Presenters: Timma Wykoff (Biology)
Project Adviser: Jim Davison and Jose Skala
Title: Surveillance of antibiotic susceptibility of Staphylococcus from a dairy herd during a transition to organic management
Type of Presentation: Poster

Abstract:
This is a geometrical proof and analytical definition of maximal Hausdorff dimensionality (a measure of a structure's dimensionality that allows for non-integer dimensions, used to classify fractals) of regular convex n-gonal fractals (Sierpinski fractals) via analytical definition of maximal contraction coefficient (the ratio of each successive smaller generation to its larger parent n-gon.) This is defined using the regular n-gram(s) of a regular, convex n-gon, to form a triangle comprised of vertices of neighboring regular, convex n-gons in each successive generation to analytically establish the maximal contraction coefficient. The geometrical intricacies of such non-integer-dimension forms may hold interesting implications for chaos theorists.

Presenters: Jeremy Davis
Project Adviser: Byungik Kahng (Mathematics)
Title: Sierpinski Fractals
Type of Presentation: Poster

Abstract:
Medicinal use of antibiotics is widespread throughout the world for bacterial disease treatment. However, the frequent use of antibiotics leads to antibiotic resistance among microorganisms, which then requires new antibiotics to be developed. In previous research, we determined that bacterial isolates resistant to several antibiotics are more common on conventional dairy farms, where antibiotics are routinely used for disease treatment, than on organic dairy farms, where antibiotics are forbidden. The data for the previous project were collected from sixteen farms at which the dairy cows had been either conventionally or organically managed for several years. However, the design of that study did not allow us to determine when the bacteria became susceptible to the antibiotics via a timeline. In September 2008, the University of Minnesota West Central Research and Outreach Center began to transition half of its conventional dairy herd to organic management. We have isolated staphylococcus from milk collected every 2-3 months starting in August 2008, and determined phenotypic antibiotic resistance of all isolates. We follow phenotypic antibiotic resistance of staphylococci throughout the one year transition and beyond. Here we will present preliminary results from our antibiotic resistance surveillance from the first six months of the transition.

Presenters: Timma Wykoff (Biology)
Project Adviser: Jim Davison and Jose Skala
Title: Surveillance of antibiotic susceptibility of Staphylococcus from a dairy herd during a transition to organic management
Type of Presentation: Poster

Abstract:
This is a geometrical proof and analytical definition of maximal Hausdorff dimensionality (a measure of a structure's dimensionality that allows for non-integer dimensions, used to classify fractals) of regular convex n-gonal fractals (Sierpinski fractals) via analytical definition of maximal contraction coefficient (the ratio of each successive smaller generation to its larger parent n-gon.) This is defined using the regular n-gram(s) of a regular, convex n-gon, to form a triangle comprised of vertices of neighboring regular, convex n-gons in each successive generation to analytically establish the maximal contraction coefficient. The geometrical intricacies of such non-integer-dimension forms may hold interesting implications for chaos theorists.
2009 Undergraduate Research Symposium

**Presenter:** Christopher Goebel  
**Project Adviser:** Ray Schultz (Theatre Arts)  
**Title:** Design and Stagecraft of the Renaissance  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #111, 4:10 p.m.

**Abstract:**
My research focused on the parallels of stagecraft and scene design between the Renaissance and today. The research is important because it helps us to understand the beginning of what has become modern theater design. Studying design methods of the past helps modern theatergoers grasp the evolution of both technology and technique. The research methods used were a study of translated stagecraft documents. I followed these primary sources with further research into academic and historical books on the subject. First, my presentation will be an overview of the both the perils and limitations of research and historiography on this subject. Second, I present my own analysis of the researched documents relating to designers Sebastiano Serlio, Nicola Sabbatini, and Joseph Furtenbach. The presentation will be image oriented, showing clear similarities between modern theater technology and its past. My conclusion will show how the technological innovations of the Renaissance era laid the ground work for modern theater craftsman.

**Presenter:** Kelsey Hagen  
**Project Adviser:** Thomas Turner (Spanish)  
**Title:** Cultural Repression and Collective Amnesia in Francoist and Contemporary Spain  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #114, 2:55 p.m.

**Abstract:**
This paper examines the lingering social and psychological effects of the Spanish Civil War and the culture of repression which was installed by the dictator Francisco Franco in the war’s immediate aftermath. By investigating the physical, economic, psychological and cultural repression that occurred in Francoist Spain, as evidenced by contemporary historical texts and the films and literature produced during the dictatorship, it is apparent that the social and psychological concerns of this time period were effectively silenced, leading Spanish society into a state of “collective amnesia” about Franco and the violent aftermath of the war. Burying the memories of this painful time period offered Spanish society a means of surviving the repressive postwar years and avoiding altogether those subjects that caused them the most mental anguish. Spain’s policy of “forgetting” the recent past, however, was not confined to the duration of the dictatorship. Its influence is still markedly visible in present day Spain through the people’s continued collective silence surrounding the dictator and the repression, the political controversy over recent historical memory laws, the daily tensions visible amongst the population, and the absence of official reparations or retribution to those involved or affected by the atrocities committed. This study therefore juxtaposes the historical roots of Spain’s “collective amnesia” with modern Spain’s struggles to break their tradition of silence in an effort to determine whether the country has come to terms with its fascist past and is ready to move towards a state of self-acceptance and internal reconciliation.

**Presenter:** Matthew Bombyk, Brooke Knick, Jamie Nohl, and Monica Sweeney  
**Project Adviser:** Chris Cole (Biology)  
**Title:** The effect of rising corn prices on the Conservation Reserve Program in Minnesota.  
**Type of Presentation:** Poster

**Abstract:**
The Conservation Reserve Program (CRP) is a federally funded government program that offers annual payments for 10-15 year contracts to participants who establish grass, shrub or tree cover on environmentally sensitive lands. Since its establishment in 1986, it has been the most successful conservation program in the U.S. in terms of improving water quality, soil quality and building wildlife populations, enrolling over 30 million acres nationwide. We sought to discover whether the rising corn prices in the past two years, due to increased ethanol demand, would threaten to cause farmers to withdraw their land from CRP, causing an adverse impact on wildlife populations. We found a strong negative correlation between corn prices and changes in CRP acreage in Minnesota, and the point at which annual changes in CRP acres become negative appears to be at corn prices of around $2.50/bushel. Corn prices have been above this level since 2006, and many CRP acres will be up for re-enrollment in the next several years, so the future of the program is very uncertain.

**Presenter:** Zach Boser  
**Project Adviser:** Ted Pappenfus (Chemistry)  
**Title:** Synthesis and characterization of nonathiophene oligomers and the effects of oxidation patterns  
**Type of Presentation:** Poster

**Abstract:**
Organic materials are an important class of molecules for a wide variety of applications related to electronics and energy. This research involved synthesizing nine ring thiophene oligomers (a particular class of organic materials) and observing how oxidation patterns affect the electronics of the molecule. Four nine ring systems were synthesized for this study. The non-oxidized nine ring thiophene oligomer was prepared by catalysis. Oxidation of this molecule yields the expected tris-sulfone molecule, consistent with the reactivity of the analogous trimer and hexamer. The mono- and bis-sulfone nine ring systems were prepared by the catalysis of the appropriate trimers. The oligomers were then characterized by several analytical methods. The data from this study suggests that the oxidation pattern significantly affects the electronic properties for this series of oligomers. These novel materials shed interesting light on the electronic modulation of organic materials for use in electronics applications as nine ring systems have not been studied previously.
2009 Undergraduate Research Symposium

Poster Presentations
Science Atrium
5:00 – 7:00 p.m.

Presenter: Anthony Anderson
Project Adviser: Joseph Alia (Chemistry)
Title: Valency Interaction Formulas Introduced and Applied to Singlet Carbenes and Their [1,2] H-shift Transition Structures
Type of Presentation: Poster

Abstract:
The Valency Interaction Formula method, VIF, a pictorial version of molecular orbital theory, is a pencil and paper method that describes various important molecular properties. It shows how hybridization is incorporated into simple pictures that look like structural formulas, but represent one-electron Hamiltonian operators. The pictures are simplified using two pictorial rules and classified according to numbers of bonding, nonbonding, and antibonding electrons that are also found using the same rules. Energy barriers are predicted when there is a shift from bonding to nonbonding or antibonding, or from nonbonding to antibonding. As such, deductions can be made as to whether a chemical reaction is allowed or forbidden. This easy to use method is applied to methyl shifts on an imidazol ring and a silylene compound. In particular for this research, [1,2] hydrogen shift reactions were studied for carbene elements with a variety of organic substituents. Allowed and forbidden carbene insertion reaction pathways as well as methyl shifts are thusly distinguished and described. Although in some cases, such as a carbene with an imine ligand, there is a somewhat large reaction barrier, significantly large reaction barriers are not predicted in these examples. This is consistent with the results of MP2/6-311++Gdp computations.

Presenter: Jeff Aday
Project Adviser: Peter Wycokoff (Biology)
Title: Impact of deer browsing on tree seedlings in west central Minnesota
Type of Presentation: Poster

Abstract:
This study examines the effects of deer on the growth of tree seedlings of European buckthorn (Rhamnus cathartica), a worrisome biological invader, and two native tree species, green ash (Fraxinus pennsylvanica) and bur oak (Quercus macrocarpa). We seek to determine the impact of deer browsing (leaves eaten) on potential future forest composition and ask whether deer may hinder or help the invading buckthorn. In May 2008, we planted seedlings of the three species across 10 different sites at a forested park near Hermann, MN. At each site, half of the seedlings were planted in a fenced-off enclosure for protection from deer. Light and soil moisture readings, as well as seedling height and health surveys were taken throughout the growing season. By the end of the season, the seedlings throughout our sites had been browsed, some severely. Ten percent of the buckthorn, 32% of the bur oak and, 27% of the green ash seedlings in the control plots had >50% foliage reduction due to browsing. Surprisingly, bur oak and green ash grew significantly faster than buckthorn (avg height growth: 5.042 cm, 8.453cm, and -2.744cm respectively), and deer browsing had more of an impact on buckthorn height growth. Also, seedlings in plots with initial lower soil moisture grew better than seedlings in high moisture plots. These initial results suggest that, contrary to conventional wisdom, deer provide a modest check on the buckthorn invasion. We will continue to track our seedlings during the summer of 2009.

Presenter: Kathy Julik-Heine
Project Adviser: Pareena Lawrence (Economics)
Title: Reservation policy: An evaluation of its effectiveness in generating women’s empowerment and diversifying real leadership in India
Type of Presentation: Oral

Abstract:
This study examines the practice of reservation for women in local government, established by the Panchayat Raj Act of 1992, in India. Reservation, in this context, refers to the government policy whereby a percentage of elected government positions are reserved specifically for women. Although the impact of reservation in empowering women has been researched in a broader context, this is the first large in-depth study at the local level. The two states studied were Himachal Pradesh and Haryana, both in northern India, and were chosen specifically because of their cultural and geographical differences. The primary data source for this survey is analysis of 489 surveys of local leaders, both male and female, in these two states. Secondary data used has been obtained through research of current literature and data on the states themselves as well as the state specific pieces of legislation. The study reveals that the effectiveness of the reservation policy is determined by the cultural climate within a region as well as the institutional arrangement of powers outlined in the acts. These findings suggest that, when applied universally across cultures, this type of gender-based public policy fails to be universally effective and subsequently a more holistic approach is necessary for the sound achievement of gender parity and women’s empowerment.

Presenter: Katrina Heimark
Project Adviser: Paula O’Loughlin (Political Science)
Title: Sendero Luminoso. Terrorism and Political Instability: A Closer Look at Changing Rhetoric
Type of Presentation: Oral

Abstract:
Sendero Luminoso, or the “Shining Path,” is a terrorist organization that formed in Peru in the late 1960s. The scholars who study Sendero Luminoso divide themselves into two groups; one that focuses upon the political and cultural factors that prolonged the organization’s existence, and one that focuses upon the organization’s failure, due to its leadership. This research combines these two areas and focuses specifically upon the organization’s rhetoric as key for both its longevity and eventual collapse. By examining the writings of Sendero’s leaders, as well as the organization’s philosophical principles, this research suggests that Sendero’s rhetoric mirrored governmental rhetoric at the same time it attempted to subvert its influence. By imitating the government while simultaneously proposing a possible “other way” to lead the country, Sendero was able to impede governmental action and reaction. However, the organization was nearly destroyed in the early 1990s due to the capture of their leader, which resulted in a drastic change in their previously consistent rhetoric. While the organization was initially able to become a threat to the Peruvian state once again, it will only have the power to do so if its leadership can develop a rhetoric that reflects the present day social and political realities of Peru.
2009 Undergraduate Research Symposium

Presenter: Justin Kemppainen
Project Adviser: Barbara Burke (Communication, Media, and Rhetoric)
Title: Failure and Frustration: Discovering Reasons for Aggressive Behavior inGamers
Type of Presentation: Oral
John Q. Imholte Hall, Room #202, 2:55 p.m.

Abstract:
Several research studies suggest video games increase aggression for the people who play them. It is often insinuated that this aggression comes from the violent content of the game, but there is seldom conclusive evidence to support this idea. In addition, thus far there has been little or no attempt to discover the reasons why the person who plays the game experiences an increase in hostility. The question of this experiment is: Does a person experience hostility based upon frustration, regardless of violent content? My hypothesis is that frustration results from failure, which in game terms means losing, dying, etc, and this can in turn lead to behaviors that could be or could seem aggressive/hostile. In this study, research subjects played selected similar video games, one violent and one nonviolent, in five sessions. In the first, they acclimated themselves to the game’s controls and objectives. In the next two sessions, the subjects played the nonviolent game on the easiest and most difficult settings. In the final two sessions, the same occurred for the violent game. Player response survey data was collected to determine which sessions produced the highest level of aggression for the participant. A study of this variety could pioneer a more efficient method for video game research, one that discriminates by genre and provides reasoning for observed behavior. It could also suggest new areas of study, considering player-focused research questions.

 Presenter: Sara Lahr
Project Adviser: Nic McPhee (Computer Science)
Title: Evolving a Solution: Developmental Plasticity in Genetic Programming
Type of Presentation: Oral
John Q. Imholte Hall, Room #115, 3:20 p.m.

Abstract:
Evolutionary Computation (EC) is a problem solving process inspired by the biological theory of evolution. EC iteratively finds solutions to a given problem through a series of operations such as growth and mutation acting on an initially random population of solutions. An important property of biological development is plasticity, where the development of features in many organisms may vary depending on environmental conditions. The majority of EC systems, however, are rigid and do not adapt to outside conditions even though this ability is a large part of the biological processes they are based on. Genetic Programming (GP) is a subset of EC where each individual represented is a computer program. N-gram GP is a recently introduced branch of GP that represents programs as linear sequences of instructions. In this work we introduce a new technique called Incremental Fitness Development (IFD) which is an extension of the N-gram GP system inspired by biological plasticity. IFD is more flexible and generates more accurate solutions than the standard N-gram GP system. We compared IFD to standard N-gram GP on eleven different problems, and IFD consistently did as well or better on all these problems. For the seven problems that N-gram GP did not consistently solve, IFD achieved higher success rates on five and tied on the remaining two. This presentation discusses the early stages of IFD research, but similar techniques have been the basis for evolving antennas, analog circuits, and camera lenses.

 Presenter: Benjamin Wheeler
Project Adviser: Tisha Turk (English)
Title: Talking Across Our Boundaries: A Case for Creative Nonfiction
Type of Presentation: Oral
John Q. Imholte Hall, Room #112, 3:45 p.m.

Abstract:
Bronwyn T. Williams has noted that creative nonfiction poses problems for English departments because it “sprawls across the contested terrains of creative writing, composition, journalism, and literature.” While Williams argues that creative nonfiction can be a legitimate discursive technique, scholars such as Jim Corder, argue that the genre merely reports “chunks of actuality,” and is thus of less literary merit than fiction. I will examine the current status of creative nonfiction and suggest a reconsideration of our criteria for academic merit, one that will acknowledge the rich possibilities in marginalized discourse modes such as the personal essay. With this new inclusive criteria as a framework, I will then argue for the personal essay’s reinstatement into introductory writing courses by examining the unique discursive and intellectual potential of the personal narrative. By balancing traditional academic discourse with creative nonfiction, students will have a more holistic understanding of the possibilities writing offers.
2009 Undergraduate Research Symposium

Presenter: Tom Vail
Project Adviser: Jeff Ratliff-Crain (Psychology)
Title: Dimensions of Jealousy
Type of Presentation: Oral
John Q. Imholte Hall, Room #202, 2:30 p.m.

Abstract:
The causes and motives underlying romantic jealousy may come from a wide array of factors, and the very characteristics of jealousy are openly discussed amongst the community of psychological practitioners and academics. Amazingly, relatively few research studies have been undertaken to assess and categorize the characteristics related to jealousy as understood by the general population. Therefore, with University Research Opportunity Program funding a two-phase study was conducted in an attempt to further illuminate how average people conceive of jealousy. Through techniques of multivariate statistical analysis participant responses have been grouped and categorized into subsets which appear recognizable and usable. The study’s first phase asked participants to generate a list of terms which they most closely associate with jealousy along with a few questions and independently from several rural areas of the nation in the 1870s in response to agrarian dissatisfaction. It is perplexing that the variants of self-identified Populism which have periodically emerged and gained resonance throughout the past century seem not to have a solid historiographical trail that ties them to their obvious 19th century predecessor. My research is an attempt to identify at least one of the channels of continuity in Populism’s long course. In reviewing newspaper accounts and editorials from several counties of western Minnesota, focusing in particular on the issues surrounding the touchstone presidential election of 1912, I have found that a strong strain of unambiguously Populist sentiment continued to exist, along with examples of overt activism on behalf of Populist issues. This research is an attempt to document instances of Populism’s periodic resurgence, and to place the evidence of its continued existence within a meaningful, and previously unaccounted for, historical context.

2009 Undergraduate Research Symposium

Presenter: Lisa Lenzmeier
Project Adviser: Stephen Burks (Economics)
Title: Modeling Customer Survival in the Trucking Industry
Type of Presentation: Oral
John Q. Imholte Hall, Room #115, 4:10 p.m.

Abstract:
All service companies depend upon a strong customer base to survive. We studied a large truckload motor carrier traditionally focused on satisfying its largest customers. The carrier was interested in understanding the factors that affect retention for its smaller customers who historically have turned over at a higher rate than the larger ones. As an extension of the multi-year ongoing research collaboration UMM has with this firm, we investigated the factors influencing retention for 1,231 smaller customers during 2006, 2007, and the first quarter of 2008. We identified specific characteristics and circumstances that elevated the risk of a shipper leaving after any specific duration as a customer. We used the statistical method of survival analysis, which correctly accounts for censored cases, that is, for customers whose length of tenure is unknown because they are still retained at the end of the data. Our descriptive results exhibit how survival curves vary by fixed characteristics of customers. Our multivariate analysis models a hazard function, which shows the time pattern of risk, in a way that quantifies the effect which shows the time pattern of risk, in a way that quantifies the effect which reduces the risk of leaving given their characteristics or circumstances, which can reduce customer turnover and increase profits. This research contributes to the academic fields of operations and sales management by deepening our understanding of how market relationships between suppliers and customers work in an approximately $100 billion segment of the motor freight industry.
2009 Undergraduate Research Symposium

**Presenter:** Whitney Thesing  
**Project Adviser:** Arne Kildegaard (Economics)  
**Title:** The Economics of Harvesting Diverse Mixtures of Prairie Grasses for Cellulosic Biofuels  
**Type of Presentation:** Oral  
**Location:** John Q. Imholte Hall, Room #112, 4:10 p.m.

**Abstract:**  
In recent years the harvest from diverse prairie has emerged as a potential feedstock for the production of cellulosic biofuels. Diverse prairie is defined as a mixture of legumes, forbs, C-3 grasses and C-4 grasses. It has many environmental advantages over common commercial agriculture crops, which make it an attractive option to pursue. This study employs crop productivity and input data from the FINBIN database, as well as recent results from the literature on prairie productivity, to analyze the economic viability of switching from a corn crop to a prairie hay crop. Economic analysis and present value calculations reveal many distinct challenges with respect to growing prairie. After factoring in start up costs, opportunity costs, harvesting fees and profits received after harvesting, our study shows that it is not currently economically viable for farmers to grow diverse prairie as a biofuel crop. We also analyze the government incentives for planting prairie included in the Thune Nelson Bill and the Biofuels Innovation Program. Even with these programs, however, we still demonstrate a negative present value from the choice to switch crops. Only when we include charges for negative externalities of corn production as well as payments for external environmental services associated with prairie crops does diverse prairie become an economically feasible candidate for cellulosic biofuels.

---

**Presenter:** Michael McBride  
**Project Adviser:** Paula O'Loughlin (Political Science)  
**Title:** What's in a name?  
**Type of Presentation:** Oral  
**Location:** John Q. Imholte Hall, Room #101, 3:20 p.m.

**Abstract:**  
Contemporary mediated images of women often present stereotypic concepts of beauty. The Lifetime Television show “How to look good naked” is very popular among women ages 12-44. The women appearing on this show represent issues that real women have about their body and weight. This project questions: Do the ways the women on the show perceive their own body image seem to be realistic, or are perceptions often distorted because of media images? The distorted views that these women have all vary but can be related to unhappiness because of the thinness of the models that they see in magazines. To find patterns in the program guests’ ideas about their own body images this project applies social comparison theory and uses two research methods. In social comparison theories the researcher examines if people looking at one possible factor relate it to another factor and demonstrate patterns of behaviors that show conclusions of similarities. The first research method focuses on the nature of popular programs like “How to look good.” It examines the messages that the presenter and how he interacts with the guests and the audience. The second method analyzes “the text and talk” and looks for patterns and sequences, to create contrasts among all of the guests on the show. These methods used to examine an entire season of “How to look good naked” (13 episodes), suggest the women on the show have a distorted view of what their body really looks like. They also state that they have more positive feelings about their bodies after appearing on the show. This information can be used to enhance concepts of media literacy in regards to healthy body images for women.

---

**Presenter:** Jena Magee  
**Project Adviser:** Barbara Burke (Communication, Media, and Rhetoric)  
**Title:** “How to look good naked”: The effects of thinness in media images and the perceptions of adult women.  
**Type of Presentation:** Oral  
**Location:** John Q. Imholte Hall, Room #111, 3:20 p.m.

**Abstract:**  
This study analyzes “the text and talk” and looks for patterns and sequences, to create contrasts among all of the guests on the show. These methods used to examine an entire season of “How to look good naked” (13 episodes), suggest the women on the show have a distorted view of what their body really looks like. They also state that they have more positive feelings about their bodies after appearing on the show. This information can be used to enhance concepts of media literacy in regards to healthy body images for women.

---

**Presenter:** Todd Thielien  
**Project Adviser:** Barbara Burke and Neil Leroux (Communication, Media, and Rhetoric)  
**Title:** The Rhetorical Situation of Billy Graham's Class Crusades  
**Type of Presentation:** Oral  
**Location:** John Q. Imholte Hall, Room #217, 2:55 p.m.

**Abstract:**  
Reverend Billy Graham, one of the most well known evangelical preachers in America, has used television broadcast technology to broaden his audience while addressing his message with specific solutions aimed toward individual and societal problems. Three theories, the “rhetorical situation,” by Lloyd Bitzer, “generic constraints and the rhetorical situation,” by Kathleen Jamieson and “language as sermonic,” by Richard Weaver will be utilized to explore the questions, “By what means does Rev. Billy Graham use rhetorical discourse?” And, how does he define the specific exigence in relationship with the rhetorical situation?” According to Lloyd Bitzer, “an exigence is an imperfection marked by urgency; it is a defect, an obstacle…(It) is rhetorical when … positive modification requires discourse or can be assisted by discourse.” Analysis includes three sermons by Graham during his “Classic Crusades” from the period of the 1960s-80s, which are currently broadcast via the Trinity Broadcast Network. While Graham may change his main topics of discourse and the usage of scripture from each sermon, his message is the same. Graham suggests the same exigence and offers the same solutions, which would make his rhetorical discourse an invitation for any rhetorical situation.
2009 Undergraduate Research Symposium

Presenter: Clare Stover
Project Adviser: Tammy Berberi (French)
Title: The Unique Case of Language and Identity in Belgium: How Language Usage has Created Contemporary Belgium
Type of Presentation: Oral
John Q. Inholt Hall, Room #114, 2:30 p.m.

Abstract:
This presentation considers the nexus of language, identity, and culture in contemporary Belgium. The project examines the long history of the coexistence of French and Flemish-speakers, from the Renaissance to the present day. The project then focuses on the questions of identity and language as they are explored in political cartoons and film by modern Belgian authors and song writers—most notably in the songs of Jacques Brel, the novels of Arthur Masson and Amélie Nothomb, and the film Ma Vie en rose. These examples suggest a better understanding of subjective points of view about existing within and across identities. Other current research in this arena is largely historical or geopolitical in nature: very little research has been devoted to the ways that language and identity shape Belgian culture. The presentation will focus on the ways how contemporary art and culture actively examine and transcend the boundaries that have sharpened linguistic division in Belgium.

2009 Undergraduate Research Symposium

Presenter: Katherine Struss
Project Adviser: Barry McQuarrie (Mathematics)
Title: A Chaotic Image Encryption
Type of Presentation: Oral
John Q. Inholt Hall, Room #115, 2:30 p.m.

Abstract:
Throughout the years, there has been significant technological expansion, and with this the need for keeping information secure has also grown. The Internet has made it easy to send and receive pictures, but it has also made it relatively uncomplicated for others to find and view those images. This creates a problem with security, and therefore the issue of encoding pictures has increased in popularity. This presentation will focus on an image encryption that uses ideas from linear algebra and dynamical systems. More specifically we will change the image, which is stored as an n x n matrix, by employing an encryption that involves shuffling elements of the matrix and then changing the values of the elements. The encrypted image can only be decrypted if the correct keys are known. The keys in this case will be numbers that we pick to run the encryption. We will demonstrate an actual example of the encryption method using Mathematica.

2009 Undergraduate Research Symposium

Presenter: John Q. Inholt Hall, Room #101, 3:20 p.m.
Type of Presentation: Oral
Title: Heretic or Brother? Pragmatism and Ideology in Iranian Foreign Policy toward Iraq
Project Adviser: Seung-Ho Joo (Political Science)

Abstract:
The Islamic Republic of Iran waged a harsh, ideological war with Iraq in the early years of its existence and persisted despite little chance of victory and massive costs. In the 1990s, reformist politicians in Iran altered its foreign policy toward many Persian Gulf states. These politicians implemented a pragmatic approach in the interest of seeking stability rather than the export of the Iranian revolution. Takeyh (2006) discussed this increasing pragmatism in the context of the compartmentalization of Iranian foreign policy into the East, the Persian Gulf, and the broader Middle East and the West. However, Takeyh did not include Iraq in his discussion of the Persian Gulf compartmentalization of Iranian foreign policy, primarily focusing on Gulf sheikdoms. Following the U.S. invasion of Iraq, it has been popularly asserted that Iran’s goal is to undermine the democratic government of Iraq and establish an Islamic state in the mold of Iran. While this goal would be consistent with Iran’s Islamic Fundamentalist ideology, the policies it has implemented toward Iraq have been based on accomplishing pragmatic policy goals. This paper demonstrates the alignment of Iranian policies toward Iraq with its policies toward the rest of the Gulf by analyzing recent interactions between the two states. Iran’s engagement in policies like the funding of various Shi’ite and Kurdish political parties are evidence of a new approach to Iraq that addresses pragmatic rather than ideological concerns.

2009 Undergraduate Research Symposium

Presenter: Cody Miller
Project Adviser: Paula O’Loughlin (Political Science)
Title: Valued: A Study of the Acquisition of Values, Frames and Party Identification
Type of Presentation: Oral
John Q. Inholt Hall, Room #101, 3:20 p.m.

Abstract:
This project addresses what drives party identification. Current research focuses on sociological models to explain observed long-term stability and aggregate change, often focusing on the influence of the family on one’s political preference. The goal of this project is to dive more deeply into this relationship and uncover more information about partisan identification. I hypothesize that party choice is an effect of the values, frames, and biases acquired through social interactions at a young age. Using demographic, event, and politics-based questions, we can decipher evidence of the thesis. Data was obtained through exit polling on Election Day 2008. Correlation, significance, ANOVA and other tests were used with proxies for self-identified values and frames (such as religion, education, and salience of current issues) to assess the hypothesis, and National Election Survey questions were also used to find patterns of commonality. Surprisingly, the proxies were found to have no statistical significance in predicting party preference, but as research by Zukerman (The Social Logic of Bounded Partisanship in Germany and Britain 2007) found, the mother’s political ideology is a statistically significant predictor of the child’s. Unlike Zukerman’s research, which surveyed the UK and Germany, the mother-child relationship appears to hold true even for the Independent party identification. A regression model testing the mothers’ political beliefs against the subjects’ yields a significance of 0.022. These findings suggest that social interactions frame our views of society and help us choose our political party. This evidence also proposes the existence of third party identification, which to date has not been deeply researched.
2009 Undergraduate Research Symposium

**Presenter:** Prash Naidu  
**Project Adviser:** Julia Pelletier (Anthropology)  
**Title:** "Food Fight" - Genetically Modified Food and Health in East Timor  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #112, 4:35 p.m.

**Abstract:**  
I examine the role and distribution of genetically modified (GM) food aid from Australia and the U.S. to post-democratic East Timor. My hypothesis is that GM food consumption has a negative impact upon the food culture of the consumer. I have applied critical medical anthropology as a theoretical perspective to analyze the impact of food imports generally and in this region specifically. By examining the role of GM food, I have clarified the process by which East Timor transforms its economy and social structure under the constraints of malnutrition and Western laissez-faire trade policies. I use two major research strategies: (1) a qualitative analysis of country-level data and (2) analysis of colonial and post-democracy period literature. Data have been collected from published reports and interviews, primary and secondary texts, newspapers and archives, including reports on the current health status of the East Timorese people. The relevance of my research is presenting a critique of the role of food aid in the sovereignty of food production in East Timor. This analysis can be applied to a variety of emerging economies and therefore has relevance beyond the East Timor case study.

**Presenter:** Saba Nasseri and Jesh Livstrom  
**Project Adviser:** Paula O’Loughlin (Political Science)  
**Title:** The bounds of political culture on the elites, media, and public: a comparative study  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #101, 4:35 p.m.

**Abstract:**  
The role of the media in a democracy is generally interpreted in three major ways; some consider the media to be an elite tool for governance while others view it as an independent political institution that remains unbiased, and yet others propose that the media’s role is to inform citizens and increase political participation. This approach has prompted ongoing deliberation within the limits of political science discourse, and has revealed persistent disagreement among researchers. Taking a different outlook, we argue that the elites, the media, and the public are one single entity; an entity that shifts with and is bounded by political culture. Thus, we move beyond the conventional paradigm and offer an alternative approach to address these questions. To investigate these points, we examine the frames of newspaper headlines from various African countries in the wake of the most recent Iraq War. One single entity; an entity that shifts with and is bounded by political culture. Thus, we move beyond the conventional paradigm and offer an alternative approach to address these questions. To investigate these points, we examine the frames of newspaper headlines from various African countries in the wake of the most recent Iraq War.

**Presenter:** Sarah Schweitering  
**Project Adviser:** James G. Schryver (Art History)  
**Title:** Emotion in Byzantine Art  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #109, 2:30 p.m.

**Abstract:**  
Emotion in Byzantine art is as emotionally complex as any created in the Western world. It is important to understand this to cleanse preconceived notions of what this art should look like and break free from the ignorance surrounding the Byzantine artistic world. My research addressed the following question: How is emotion depicted in the art of the Byzantine empire? Resources for this study included the utilization of the library and knowledge gained in art history coursework. By exploring, analyzing, and synthesizing these resources, I discovered that the art of Byzantium contains four principle emotions: sorrow, anger, adoration, and fear or anxiety. A survey of the portrayal of these emotions shows that they are an important aspect of certain scenes such as the Lamentation and Deposition from the Cross. What is more, the gestures used to convey these emotions are often central to the composition itself. This presentation will walk the audience through the results of my research by discussing the depiction of these four emotions and demonstrating that Byzantine art is not void of emotion. On the contrary, it embraces it. By gaining this understanding the audience will broaden their perspective of Byzantine art.
**Presenter:** Matt Privratsky  
**Project Adviser:** Hao Sun (Communication, Media, and Rhetoric)  
**Title:** Energy Diversity  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #111, 2:55 p.m.

**Abstract:**  
This research focused on what kinds of energy diversity that the Morris Community has. My methods involved independent research of energy statistics and important locations, as well as interviews with some significant individuals involved in energy initiatives. My findings were then produced into a video, which is a compilation of interviews, photos, and findings from the research. The goals of the project were to inform people about the kinds of energy initiatives that take place in our area, and also the work and creativity that goes into them.

**Presenter:** Peter Ray, John Eisenrich, Jessie Hennen, Matt Privratsky, and Sam Krump-Johnson  
**Project Adviser:** Barbara Burke (Communication, Media, and Rhetoric)  
**Title:** Making sketch comedy for television: Learning about writing, acting & producing  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #111, 2:30 p.m.

**Abstract:**  
To further their knowledge and experiences in theatre and media beyond class activities and to explore a genre of television in depth, during Spring semester 2009 five UMM students who formed the “Itty Bitty City Committee” production team created a sketch comedy video program, containing several short comedy skits and some “behind the scenes” vignettes. Their finished show covers a variety of topics, comments on the absurdities of everyday life, and presents realistic or almost-realistic settings and encounters. This URS presentation will include an overview of the stages the students completed during their media production process—describing concept creation, collaborative script writing (and re-writing), casting, costuming, staging, recording, editing and producing. Additionally, two video segments of the comedy program will be shared and discussed by their creators.

**Presenter:** Matthew Nelson  
**Project Adviser:** Steve Gross (History)  
**Title:** Productivity and Sustainability of Northern US Agriculture in 1860  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #115, 3:45 p.m.

**Abstract:**  
This research examines patterns of sustainable agriculture in the northern United States in the late antebellum period. Scholars of environmental history have consistently emphasized the deleterious effects of capitalism on the environment but have so far failed to examine how this played out among commercially-oriented small farmers, the backbone of the North’s farm economy. With continual threats of environmental degradation, it is important to try and see how our system of agriculture moved from a mixed economy into a more specialized, monoculture agriculture. As farmers engaged the market were their decisions on how to manage their farms more based on sustainability or the desire for quick profits? A statistical random sample of the 1860 Agricultural Census created by Fred Bateman and James Faust which offers measurements of crop mixtures, wheat to livestock ratios, manure production and farm size is used to analyze the sustainability of farms along regional and ethnic lines. Although there are some problems with this methodology, this is an approach that can help determine more clearly how US Northern Agriculture evolved.

**Presenter:** Sheila Nezhad  
**Project Adviser:** Pareena Lawrence (Economics)  
**Title:** Accountability, Transparency, and Government Co-option: A Case Study  
**Type of Presentation:** Oral  
John Q. Imholte Hall, Room #217, 2:30 p.m.

**Abstract:**  
Non-governmental organizations (NGOs) are growing in importance on the international development scene; The number of international NGO’s grew 20-fold from 1964 to 1998, and currently 3,187 NGOs have consultative status with the United Nations, up 30% from 2003. The growing influence of NGOs requires that donors, academics, and policy makers start carefully examining the concepts of transparency, accountability and government co-option on both a micro and macro level. Three prominent questions arise in the face of a growing NGO sector. First, who are NGOs accountable to? Secondly, what transparency methods are NGOs using to demonstrate accountability? Finally, how are governments co-opting NGOs and how does this affect NGO accountability and operations? To answer these questions, six NGOs from around the world completed a written questionnaire about accountability and transparency methods within their organization. The results outlined differing transparency techniques and revealed the varying degrees in which NGOs and government work together.
In order to fully appreciate any piece of architecture, it is important to understand its origins. One example is the church of Hagia Sophia, built by the emperor Justinian. This is one of the greatest architectural undertakings in history, and is considered to be the epitome of Byzantine style. Never before had a monument been constructed that was so daring in its innovation and grandeur, especially the dome and interior decoration. However, the design of this progressive structure had its foundations in other contemporary European and Byzantine monuments. It is important to realize that these innovations come from a long line of structural experiments. Certain aspects of the church, such as the ability to support the largest masonry dome in existence for the next one thousand years, were only possible because of various preceding architectural advancements. Such a building could not have been rendered without conceptual roots in other edifices such as the Church of San Vitale in Ravenna and the Church of SS. Sergius and Bacchus. In conclusion, the innovations made in the construction of Hagia Sophia would not have been possible without the preceding developments of other contemporary monuments in the region. This presentation will describe Hagia Sophia’s structure and decoration, in relation to these preceding monuments found both locally and around Europe. It will also look at specific features, such as the dome and interior decoration, of the monument and compare them to those of various structures found within the region.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Type of Presentation:
Title: Agency, Autobiography, and the Puzzle of Maggie Tulliver
Project Adviser: James G. Schryver (Art History)
Title: The Gods of Westminster
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Abstract:
Kate Novotny
Presenter:
Project Adviser: Bradley Deane (English)
Title: Agency, Autobiography, and the Puzzle of Maggie Tulliver
Type of Presentation: Oral
John Q. Imholte Hall, Room #112, 3:20 p.m.

Abstract:
Kate Novotny
Presenter:
Project Adviser: Bradley Deane (English)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #101, 3:20 p.m.

Abstract:
Kate Novotny
Presenter:
Project Adviser: Bradley Deane (English)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #101, 3:20 p.m.

Abstract:
Kate Novotny
Presenter:
Project Adviser: Bradley Deane (English)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #101, 3:20 p.m.

Abstract:
Kate Novotny
Presenter:
Project Adviser: Bradley Deane (English)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #101, 3:20 p.m.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.

Abstract:
Destinee Oitzinger
Presenter:
Project Adviser: Jimmy Schryver (Art History)
Title: Hagia Sophia: The Architectural Genesis of the Greatest Monument in Eastern Christendom
Type of Presentation: Oral
John Q. Imholte Hall, Room #109, 3:20 p.m.