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4-20-2013

### 2013 Undergraduate Research Symposium Abstract Book

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The University of Minnesota, Morris

- 2013 -

UMM Undergraduate Research Symposium

Featuring student research, creative, and scholarly work from across campus

**Saturday, April 20, 2013**

9:30 a.m. - 2:00 p.m.	Registration, Science Atrium and John Q. Imholte Hall
9:30 a.m. – 11:00 a.m.	Poster/Visual Display, Science Atrium
10:00 a.m.	Welcome, Dillon McBrady, president, Morris Campus Student Association, Science Atrium
11:00 a.m. – 12:00 p.m.	Oral Presentations Science Building, Rooms #1020, 1030, 2190, 2200
12:00 p.m. – 1:00 p.m.	Lunch, Dining Hall (or on your own)
1:15 p.m. – 1:30 p.m.	Welcome, Becca Gercken-URS co-chair, and Jacqueline Johnson, chancellor, John Q. Imholte Hall #109
1:30 p.m.	Introduction of Featured Presentation-Bart Finzel vice chancellor for academic affairs and dean
1:30 p.m. – 2:15 p.m.	Featured Presentation, John Q. Imholte Hall #109 Samantha Bruno and Megan Fitzgerald “VIII: Unfolding the Possibilities in Stop-Motion Filmmaking and Bookbinding”
2:30 p.m. – 4:30 p.m.	Oral presentations: John Q. Imholte Hall, Room #s: 111, 112, 113 and 114
4:00 p.m. – 4:20 p.m.	Performance Presentation, HFA Recital Hall #160

The 2013 Thirteenth Annual UMM Undergraduate Research Symposium (URS) celebrates student scholarly achievement and creative activities.

Students from all disciplines participate in the URS.

Types of presentations include posters, oral presentations, and short or abbreviated theatrical, dance, or musical performances.

Presentations are accompanied by discussions and multimedia.

## Notes

## ORAL PRESENTATIONS

Science and Math Building, Room #s 1020, 1030, 2190, and 2200

## Room #1020

- 11:00 **Tamir Elnabarawy** (Political Science): **Political Source Cues: A Study of Partisan Opinion**  
(Adviser: Roger Rose), abstract pg. 13
- 11:20 **Evan C. Vogel** (Political Science): **Maintaining the Integrity of Minnesota Elections: An Investigation into the Effects Voter ID Legislation Could Have in Minnesota**  
(Adviser: Sheri Breen), abstract pg. 24
- 11:40 **Joshua Preston** (Political Science): **The President's Speech: Attention to Human Rights in Post-Cold War Presidential Rhetoric** (Adviser: Roger Rose), abstract pg. 19

## Room #1030

- 11:00 **Andy Rosenthal** (English): **The Concept of Free Will in Shakespeare's *Macbeth***  
(Adviser: Julie Eckerle), abstract pg. 20
- 11:20 **George/Anne Meyers-Welsch** (English): **The Mechanical Man for Modern Times: The New Nietzsche in Ralph Ellison's "Invisible Man" and Richard Wright's "The Outsider"**  
(Adviser: Michael Lackey), abstract pg. 17
- 11:40 **Rose Schwietz** (Philosophy): **Putting a Price Tag on Death: The Costs of Capital Punishment Considered** (Adviser: Daniel Demetriou), abstract pg. 21

## Room #2190

- 11:00 **Joana Di Meglio** (Psychology): **Life as an Avatar: the Self, Virtual Social Interaction, and Implications for Consumption** (Adviser: Dennis Stewart), abstract pg. 12
- 11:20 **Toni-Ann Flower, Alex Hoyt, and Amanda Wiener** (Psychology): **The Effects of Hypocrisy Induced Cognitive Dissonance on the Consumption of Fruits and Vegetables**  
(Adviser: Heather Peters), abstract pg. 14
- 11:40 **Zachary Ahlstrom, Haley Schwenk, and Lyndzie McIalwain** (Psychology): **Mental Illness Microaggressions: The Experiences of College Students with Mental Illnesses**  
(Adviser: Heather Peters), abstract pg. 8

## Room #2200

- 11:00 **Kristofor Gieske** (Digital Media): **The Film Look: Cinematic Image Quality on a Shoestring Budget** (Adviser: Barbara Burke), abstract pg. 14
- 11:20 **Collin Ireland** (Communication, Media, and Rhetoric): **Visualizing from Concept to Screen: Directing a Student Produced Short Film** (Adviser: Barbara Burke), abstract pg. 16
- 11:40 **Daniel Stoterau** (Visual Arts): **Lowering the Bar: Art, Athletes and Masculinity**  
(Adviser: Jessica Larson), abstract pg. 23

## ORAL PRESENTATIONS

John Q. Imholte Hall, Room #s 111, 112, and 113

## Room #111

- 2:30 **John Bliss** (English): **Bi-Gendered Cross-Dressing as Strength** (Adviser: Julie Eckerle), abstract pg. 10
- 2:50 **Cassandra Hall** (English): **Magic, Mothering, and A Woman's Voice in Shakespeare's *The Winter's Tale*** (Adviser: Julie Eckerle), abstract pg. 15
- 3:10 **Rachel Balzar** (English): **A Time and Place for Premarital Desire: Positive Uses of Lust in Edmund Spenser's *The Faerie Queene*** (Adviser: Julie Eckerle), abstract pg. 9
- 3:30 **Taylor Robert Barker, Joe Feely, Becky Wielenberg, Halee Morris, and Miranda Silewski** (Communication, Media, and Rhetoric): **Being Presidential: Rhetorical Analysis of Five Presidential Inaugurals Through History** (Adviser: Mary Elizabeth Benzanson), abstract pg. 9

## Room #112

- 2:30 **Andreana Saunders** (Political Science): **Deconstructing Unarticulated Ecofeminist Themes in the Design of NGO-led Sanitation Programs in Rural Egypt** (Adviser: Roger Rose), abstract pg. 20
- 2:50 **Sienna Nesser** (Interdisciplinary Studies): **Dead and Defecated Matters: An Analysis of the Human Aversion to the Darker Side of the Nutrient Cycle** (Adviser: Tammy Berberi), abstract pg. 19
- 3:10 **Julie Arhelger** (Honors): **Abandonment and Tourism at Petra, the Musée D'Orsay, and Eastern State Penitentiary** (Adviser: Tammy Berberi), abstract pg. 8
- 3:30 **Rebecca Erickson** (Biology): **Investigating Factors that Influence Hemlock Woolly Adelgid Settlement Density** (Adviser: Peter Wyckoff), abstract pg. 13
- 3:50 **Alissa Melberg** (Economics): **Natural Resources a Curse or a Blessing: Evidence from Williston, ND** (Adviser: Bibhudutta Panda), abstract pg. 17

## Room #113

- 2:30 **Kaj Benson and Marissa Wallenberg** (Psychology): **Religion, Peers, Parents, and Sex Education: Relationships with Sexual Awareness** (Adviser: Heather Peters), abstract pg. 10
- 2:50 **Kaitlyn Macheledt and Leah Monette** (Psychology): **Artistic Expressions: Interactions between Art-Based Interventions and Motivations of Interpersonal Forgiveness** (Adviser: Heather Peters), abstract pg. 16
- 3:10 **Haley Van Cleve** (Gender, Women and Sexuality Studies): **Sex-Rebels: Re-Examining Sexualities through Feminist Porn** (Adviser: Jennifer Rothchild), abstract pg. 23
- 3:30 **Adiroopa Mukherjee** (Honors): **Adoption and its Reflection of Society through the Ages** (Adviser: Tammy Berberi), abstract pg. 18
- 3:50 **Samantha Stegura** (Sociology): **The Complexities of Surrogacy: A Look at the United States and India** (Adviser: Jennifer Rothchild), abstract pg. 22
- 4:10 **Jenny Morris** (Communication, Media, and Rhetoric): **An American Perspective: Intercultural Communication in China** (Advisers: Barbara Burke and Anthony Ocaña), abstract pg. 18

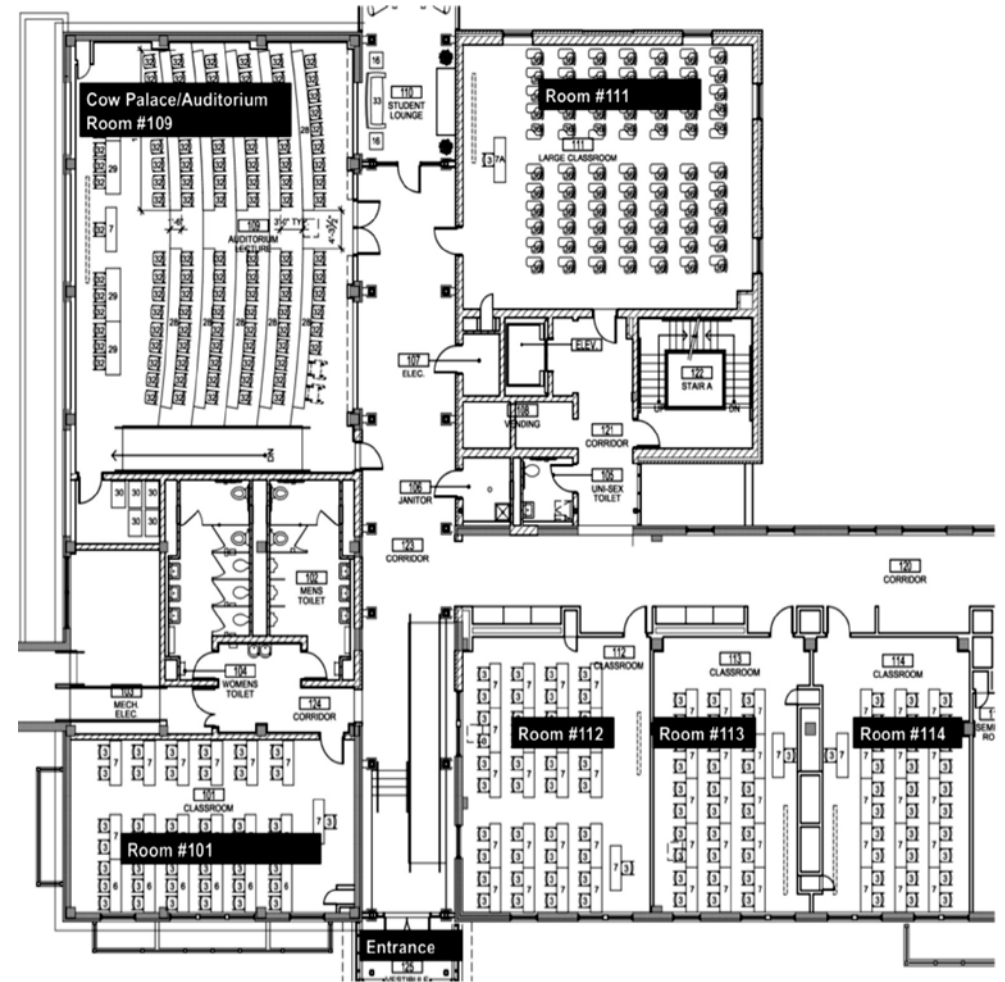
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**and**  
**HFA Recital Hall, #160**

**Room #114**

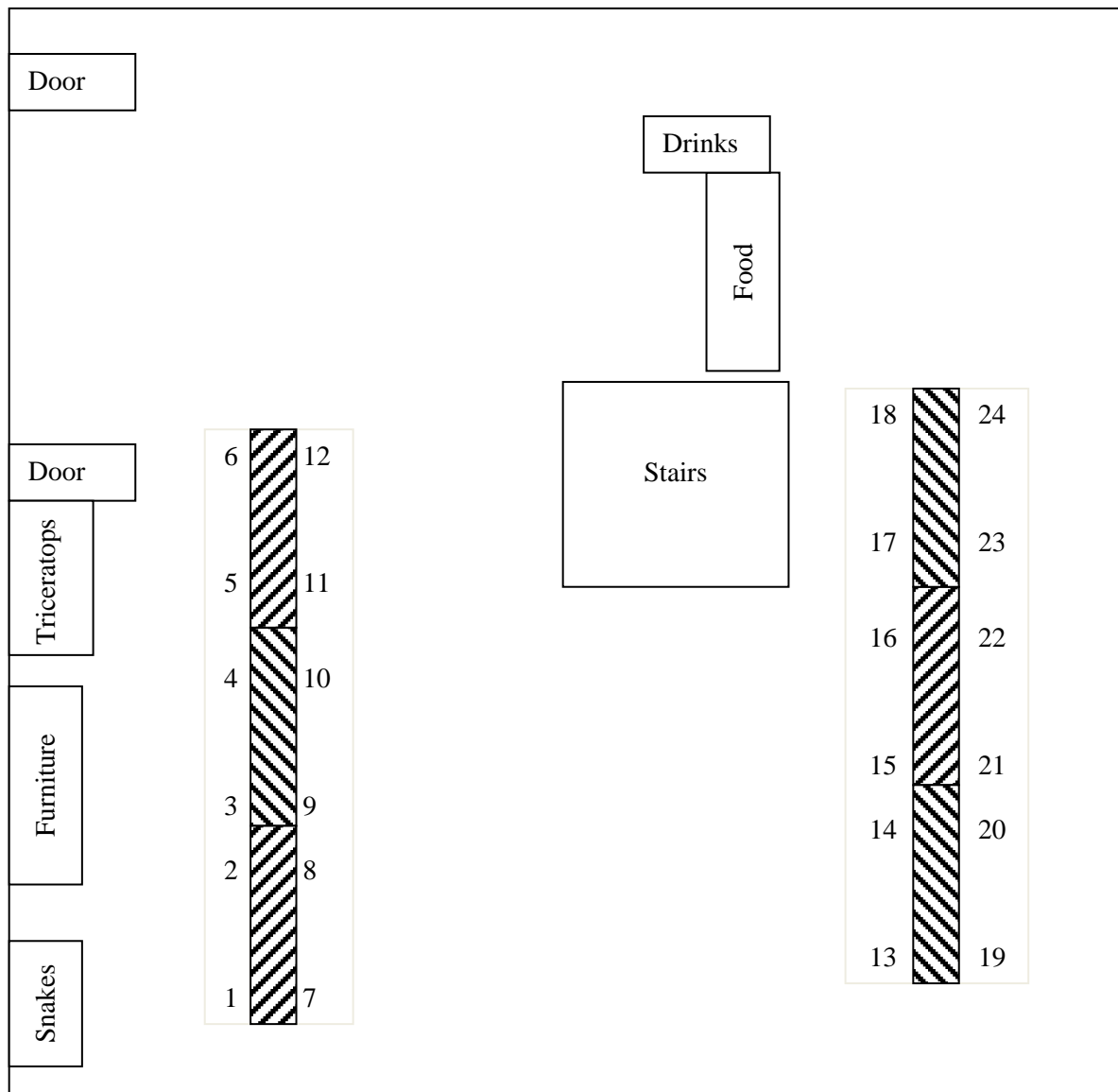
- 2:30 **Kourtni Danielson** (English): **Building an Effective Rural Community Writing Center**  
 (Adviser: Tisha Turk), abstract pg. 12
- 2:50 **Danielle Brown** (English): **Better Writing Means More Caring** (Adviser: Tisha Turk),  
 abstract pg. 11
- 3:10 **Rose Schwietz** (English): **Alive in the Writing: The Ubiquitous Audience**  
 (Adviser: Tisha Turk), abstract pg. 22
- 3:30 **Alexandra Callais** (History): **The Printing Press and Religious Texts in 15th Century England**  
 (Adviser: Brooks Jessup), abstract pg. 11
- 3:50 **Colin Scheck** (History): **Sire, er zijn geen Belgen: The Development of the Flemish  
 National Idea (1896-1946)** (Adviser: Benjamin Narvaez), abstract pg. 21
- 4:10 **Will Hanson** (History): **The Easter Rising and the Press: The Influence of Print Culture on  
 Nationalism in Ireland** (Adviser: J. Brooks Jessup), abstract pg. 15

**PERFORMANCE PRESENTATIONS**  
**HFA Recital Hall, #160**

- 4:00 **Anika Kildegaard** (Music): **"You Have Cast Me Into Many Calamities" Text Painting and  
 Historical Context in Libby Larsen's Try Me Good King** (Adviser: Denise Odello),  
 abstract pg. 24



John Q. Imholte Hall, 1<sup>st</sup> Floor  
 Oral Presentations



Science Atrium

**POSTER PRESENTATIONS 9:30 a.m. – 11:00 p.m.  
Science Atrium**

- #1 **Alex P. Kleinfehn** (Biology): **Evolution of Protein Structure in a Biochemical Pathway** (Adviser: Christopher Cole), abstract pg. 30
- #2 **Katherine Schaefer** (Biology): **Human Influence on the Population Ecology of Weasel species in the Prairie Pothole Region** (Adviser: Heather Waye), abstract pg. 34
- #3 **Abdala Bashir, Obsa Bokku, Tiwa Ajibewa, Finhas Ogbazghi, and Melissa Denler** (Chemistry): **Natural bond orbitals related to the pKa of carboxylic acids and phenols** (Adviser: Joseph Alia), abstract pg. 25
- #4 **Obsa Bokku and Melissa Denler** (Chemistry): **Linear relationship between computed energies and pKa for carboxylic acids and amides** (Adviser: Joseph Alia), abstract pg. 26
- #5 **Samuel N. Gockel** (Chemistry): **Regioselective Suzuki-Miyaura Coupling to 2,4-Dibromoquinoline** (Adviser: Nancy E. Carpenter), abstract pg. 27
- #6 **LaNay Walker** (Chemistry): **Comparison of two methods of monitoring corn mash at Corn Plus Ethanol Plant** (Adviser: Jennifer Goodnough), abstract pg. 35
- #7 **Luciana B. Ranelli and Ruth S. Potter** (Biology): **Effects of plant community structure and experimental management of restored prairie on insect abundance and diversity** (Adviser: Margaret A. Kuchenreuther), abstract pg. 33
- #8 **Alice Toll and Sameeksha Mishra** (Biology): **Best management practices for native perennial plants grown as an alternative bioenergy feedstock** (Adviser: Margaret Kuchenreuther), abstract pg. 35
- #9 **Tim Ginader and Alice Toll** (Economics and Statistics): **Commercial Driver's Licence Medical Exam: How Well Does it Predict?** (Advisers: Stehen Burks and Jon Anderson), abstract pg. 27
- #10 **Andrew Lexvold, Connor Lewis, Hong (Betty) Liu, and Jiachen (Joyce) Ning** (Economics and Statistic): **Sleep Apnea and Accident Risk among Commercial Truckers** (Advisers: Stephen Burks and Jon Anderson), abstract pg. 31
- #11 **Jordan Wentz** (Economics): **Electric Vehicle Infrastructure Models for Grid Ancillary Services in Denmark** (Adviser: Arne Kildegaard), abstract pg. 36
- #12 **Nic Johnson** (Statistics and Economics): **Jobs Don't Grow On Trees: Hysteresis in Unemployment** (Adviser: Engin Sungur), abstract pg. 30

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**POSTER PRESENTATIONS 9:30 a.m. – 11:00 p.m.**  
**Science Atrium**

- #13 **Sarah Hanson** (Theatre): **Designing costumes for *The King Stag*** (Adviser: Siobhan Bremer), abstract pg. 28
- #14 **Robert Smith** (Physics): **Computational Study of Elastic Constants for 1,3,5-trinitro-1,3,5-triazacyclohexane** (Adviser: Sylke Boyd), abstract pg. 34
- #15 **Chad Reverman** (Physics): **Study on the Bulk Modulus of RDX Crystalline Structures** (Adviser: Sylke Boyd), abstract pg. 33
- #16 **Emma Molden** (Physics): **Using the Radial Velocity to Search for Orbiting Planets Around Mira** (Adviser: Gordon McIntosh), abstract pg. 31
- #17 **Zac Jesser and Rebecca Hanson** (Anatomy/Physiology): **Kinetic Chain injuries in the ACL injured patient: A preliminary report** (Adviser: Rich Hardy), abstract pg. 29
- #18 **Ashley Woods** (Geology): **Sediment analysis to determine nature and source of chemical input, Lake Wakanda, Willmar, MN** (Adviser: James Cotter), abstract pg. 36
- #19 **John Bliss** (English): **English Views of Foreigners as Reflected in the Stories of Sherlock Holmes** (Adviser: Becca Gercken), abstract pg. 25
- #20 **Laura Holland** (Sociology): **Disastrous Discrepancies: Women's Unique Challenges and Natural Disaster Recovery** (Adviser: Jennifer Rothchild), abstract pg. 29
- #21 **Elizabeth Pappenfus and Chelsae Walsh** (Psychology): **Psychological Factors, Health Care Knowledge, and Experiences and How They Impact a Student's Illness Behaviors on a Rural Campus** (Adviser: Jeffrey Ratliff-Crain), abstract pg. 32
- #22 **Emily Mutch, Sarah Kirchman, Rachael Blais, and Emily Szeliga** (Psychology): **Patterns of Jealousy as a Function of Gender and Sexual Orientation** (Adviser: Jeffrey Ratliff-Crain), abstract pg. 32
- #23 **Kristina Grundmanis and Elizabeth Munson** (Psychology): **Emotional Expression in First-Generation Students** (Adviser: Jeffrey Ratliff-Crain), abstract pg. 28
- #24 **Andrew Burroughs and Mitch Primus** (Psychology): **The Effects of Media Exposure on Male Body Satisfaction and Self Esteem** (Adviser: Heather Peters), abstract pg. 26
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**Featured Presentation**  
**John Q. Imholte Hall #109**  
**1:30 pm**

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**Presenter(s):** Samantha Bruno and Megan Fitzgerald

**Project Adviser(s):** Barbara Burke (Communication, Media, and Rhetoric) and Jessica Larson (Studio Art)

**Title: *VIII: Unfolding the Possibilities in Stop-Motion Filmmaking and Bookbinding***

**Type of Presentation:** Performance, Artist Statement

*Life's but a walking shadow...*

~William Shakespeare

Elegant silhouette images paired with the violent connotations of shadows inspired the volatile storyline of the pop-up book/stop-action film collaboration titled *VIII*. The project centers on a world lost in shadow where figures cannot talk or express themselves. Escaping the never ending cycles of the confining world becomes the main conflict for the characters, which is resolved by creating a pop-up book on screen and in reality. By entwining the physical object of the book with the film, a fusion is created that bridges both media while seamlessly joining two artists and ideas. The juxtaposition of a film playing within an interactive book is a visualization that has not been fully developed in the art world, one that we felt needed to be explored. Each aspect of the project can be appreciated and experienced alone, but they are stronger when viewed simultaneously. For the film, a group of actors performed the narrative of *VIII* while being photographically recorded with a high resolution camera. The 6,000+ still images were then loaded into video editing software and enhanced through digital effects to run fluidly as if they were filmed by a video camera. Developing the pop-up book addressed the definition of sculptural elements within a two-dimensional setting, moving the book form beyond traditional constructs. With technical influences from David Carter (1999), the designs of simple pop-ups were modified and applied to the original narrative of *VIII*. The book too introduces emotional context and characters and bonds the separate media by incorporating the film as the last page. *VIII* pushes the boundaries of both stop-motion film making and bookbinding providing a magnifying glass for the viewer to see expression as a way for individuals to escape their confining shell and explore new worlds and ideals.

Film Trailer: <http://www.youtube.com/watch?v=rwM5gPmv5NE>.

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## Oral Presentations

Science Building Room #s: 1020, 1030, 2190 and 2200

John Q. Imholte Hall Room #s: 111, 112, 113, and 114

**Presenters:** Zachary Ahlstrom, Haley Schwenk, and Lyndzie McIalwain

**Project Adviser:** Heather Peters (Psychology)

**Title:** Mental Illness Microaggressions: The Experiences of College Students with Mental Illnesses

**Type of Presentation:** Oral Presentation

Science Building, Room #2190, 11:40 a.m.

People living with mental illness are often faced with stigma and discrimination. Research has examined the similarities between stigmas faced by those with mental illnesses and racial and sexual minorities (e.g., Phelan, Link, & Dovidio, 2008). Other research has looked at a specific type of subtle discrimination known as microaggressions (e.g., Sue, 2010). To date research related to microaggressions has focused on people of color, people who identify as LGBT, and women. Our research seeks to extend the work on microaggressions to those who experience mental illnesses. The present study uses focus groups, a qualitative methodology, to collect data. The preliminary results provide evidence that support the existence of microaggressions towards individuals with mental illnesses. Several themes of microaggressions have been identified, such as the Misuse of Terminology, Assumption of Inferiority, Environmental Invalidations, and Expression of Stereotypic Beliefs (e.g., the belief that mental illnesses are used as an excuse for attention or laziness). Our study provides a base for future research related to mental illness and microaggressions. The results and implications for the general public as well as anyone who works with people who have mental illnesses will be discussed. For example, one implication for mental health professionals is gaining a better understanding of the subtle forms of discrimination faced by their clients. Future research could examine if this knowledge leads to improved effectiveness of treatment

**Presenter:** Julie Arhelger

**Project Adviser:** Tammy Berberi (Honors Program)

**Title:** Abandonment and Tourism at Petra, the Musée D’Orsay, and Eastern State Penitentiary

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #112, 3:10 p.m.

This essay gathers information about three very different tourist locations from a historical, architectural, and preservationist view, analyzes it, and examines what makes some destinations places of renewal, art, and learning, while others become disdained “tourist traps.” Detailed research into the tourism of many sites has already been done, but few scholars have drawn connections between sites in the way this essay does. Taken together, the sites reveal much more than they do alone. The essay argues that, by investigating and juxtaposing tourism sites, we can learn how to best preserve our history and culture through our places. The essay’s case studies include Petra in Jordan, a site of ancient ruins in the Middle East suffering from the effects of heavy tourism and poor preservation efforts; the Musée d’Orsay in Paris, France, a prominent museum in a retrofitted Beaux-Arts style train station; and Eastern State Penitentiary in Philadelphia, Pennsylvania, a prison-turned-museum. The fate of the Morris Elementary School is examined as an example of contemporary issues in preservation. Together, the sites provide success stories and problems that paint a picture of the preservation dilemma facing the world’s aging structures.

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\* denotes co-presenter(s)

**Presenter:** Jordan Wentz  
**Project Adviser:** Arne Kildegaard (Economics)  
**Title:** Electric Vehicle Infrastructure Models for Grid Ancillary Services in Denmark  
**Type of Presentation:** Poster or Visual Display #11

As the world's leader in electricity from wind power, Denmark is the first nation to confront the system constraints caused by generation intermittency. A proposed path forward to alleviate this constraint and add more wind to the grid is based on switching the transportation fleet from gas to electricity, thus simultaneously increasing electric demand and providing a possible decentralized means of battery storage to solve the intermittency problem. Based on personal interviews with Denmark's top energy systems researchers, and on written studies published at Risoe DTU, this study reports on and compares two proposals to implement infrastructure that would make the transformation of the transportation fleet to electricity possible. The first is a private-venture model pioneered by the Israeli company A Better Place. The second is a public sector model led by Energinet.dk. Key threshold levels of electric vehicle adoption necessary to realize grid savings on ancillary services are reported. Findings support Energinet.dk's infrastructure model, consisting of private battery ownership, smart net metering agreements, large storage facilities, and quick charge stations.

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**Presenter:** Ashley Woods  
**Project Adviser:** James Cotter (Geology)  
**Title:** Sediment analysis to determine nature and source of chemical input, Lake Wakanda, Willmar, MN  
**Type of Presentation:** Poster or Visual Display #18

This is an assessment of pollution entering Lake Wakanda via drainage ditch. In 1902, County Ditch 23A was excavated, transporting urban runoff and treated wastewater from Willmar, MN through 5.5km of agriculture land to Lake Wakanda, south of Willmar. Chemicals and sediments transported via runoff in the ditch enter the north side of the lake where suspended sediment is deposited, forming a delta. The lake association is concerned the input of sediment and chemicals are degrading lake water quality (specifically pesticides, fertilizers, and chemicals used to construct roads). In recent history the lake has undergone increased rates of fish kills and algae blooms, which maybe the result of cultural eutrophication. Delta sediment cores collected summer and fall, 2011 are being analyzed to determine if urban and/or agricultural runoff is contributing pollutants to the lake. Analysis of the cores includes: high-resolution magnetic susceptibility, heavy metal content; gamma radiation, clastic vs. organic content; and electrical conductivity to determine hardness. Visual analysis using high-resolution imagery, smear slide and sediment point counts and have also been conducted. Results show an abundance of diatoms in deeper, older sediments. Higher in the core there are fewer diatoms with less species abundance. Organic concentrations (plant material and shell fragments) increase upward in the core. Clastic sediment increases in size fraction from basal clays and silts to primarily sand containing abundant organics. These results suggest Lake Wakanda may be undergoing cultural eutrophication due to County ditch 23A inputs. Research supported by Center for Urban and Regional Affairs, CAP.

**Presenter:** Rachel Balzar  
**Project Adviser:** Julie Eckerle (English)  
**Title:** A Time and Place for Premarital Desire: Positive Uses of Lust in Edmund Spenser's *The Faerie Queene*  
**Type of Presentation:** Oral Presentation  
 John Q. Imholta Hall, Room #111, 3:10 p.m.

Lust plays a large role in Edmund Spenser's famous 1590 poem *The Faerie Queene*—this much Early Modern scholars can agree on. Surrounding the purpose lust serves in this didactic tale, however, there is a good deal of contention. Some academics argue that Spenser uses his lurid descriptions of lust to reveal to readers their own sinful preferences. Others claim that Spenser uses lust simply to attract an audience. The list of differing interpretations of the text goes on. But one overarching theme can be seen in all of these unique analyses of lust: each operates on the assumption that Spenser intended lust to be an entirely wicked force in his romance. In my essay, I seek to challenge this assumption. I believe that in order to create more nuanced theories regarding desire in Spenser's poem, it is necessary to move beyond the tendency to take the evil of lust as a given. Thus, in my own research, I have attempted to keep an open mind regarding the nature of desire in *The Faerie Queene*. Through close analysis of the tale's wealthy heroes, who channel their sexual energies toward a higher cause, I assert that Spenser is proposing that lust can have a positive use when experienced by members of the upper-class. My theory is a unique but illuminating means of understanding Spenser's poem

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**Presenters:** Taylor Robert Barker, Joe Feely, Becky Wielenberg, Halee Morris, and Miranda Silewski  
**Project Adviser:** Mary Elizabeth Bezanson (Communications, Media, and Rhetoric)  
**Title:** Being Presidential: Rhetorical Analysis of Five Presidential Inaugurals Through History  
**Type of Presentation:** Oral Presentation – Panel Discussion  
 John Q. Imholte Hall, Room #111, 3:30 p.m.

This set of presentations explores the rhetorical dimensions of first inaugurals given by U.S. presidents. A private individual becomes president by taking the oath of office. The new president becomes presidential in giving his first inaugural. Panel participants examine five presidential inaugurals through history by considering their rhetorical situations, textual characteristics, and genre membership. Inaugurals to be explored include, Andrew Jackson, March 4, 1829 analyzed by Joe Feely; Herbert Hoover, March 4, 1929 analyzed by Becky Wielenberg; Franklin Delano Roosevelt, March 4, 1933 analyzed by Halee Morris; Harry S. Truman, January 20, 1949 analyzed by Taylor Barker; and Dwight Eisenhower, January 20, 1953 analyzed by Miranda Silewski. While each presentation analyzes a different inaugural, those attending will see the shared features that constitute the genre of presidential inaugurals. Please join us for an enlightening panel.

**Presenters:** Kaj Benson and Marissa Wallenberg

**Project Adviser:** Heather Peters (Psychology)

**Title: Religion, Peers, Parents, and Sex Education: Relationships with Sexual Awareness**

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #113, 2:30 p.m.

As research in the area of sexuality expands, more interest has grown in understanding how various social influences relate to people's sex practices (e.g., Ahrold & Meston 2010; Davis & Friel 2001; Meier 2003; Potard, Courtois, & Rusch 2008). However, very little research has been done on how these factors influence cognitions about sexuality. Therefore, this study examined the relationships between peer and parental attitudes toward sexuality, experiences with sex education, religiosity, and participants' awareness and acceptance of their own sexuality. A convenience sample of 77 college students completed eight surveys related to the above topics. All scales used a 5-point scale. Results indicate a positive correlation between peers' attitudes toward sexuality and participants' sexual awareness, as well as a negative correlation with participants' religiosity. Religiosity negatively correlated with sexual monitoring and sexual preoccupation. Surprisingly, parental attitudes toward sexuality did not significantly correlate with anything. Additionally, there was a positive correlation between religiosity and sex education. These results suggest that social factors have varying degrees of influence on how people perceive their sexuality. The results and their implications will be discussed.

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**Presenter:** John Bliss

**Project Adviser:** Julie Eckerle (English)

**Title: Bi-Gendered Cross-Dressing as Strength**

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #111, 2:30 p.m.

Many interpretations of the character of Britomart in Edmund Spenser's *The Faerie Queene* portray her cross-dressing in armor as an artistic choice meant to supplant her female authority with masculine ideas of mainstream purity. The prevailing theory is that Spenser made this choice in order to criticize the rule of Queen Elizabeth I. However, while I believe that Spenser was critical of some of Elizabeth's decisions, notably in remaining a virgin, I do not believe that he intended to criticize his queen through his heroine's cross-dressing. Instead, I believe that Britomart's dressing in armor was intended to show the weakness inherent in the traditional protection of chastity and to propose a new and more powerful substitute through a blending of the genders. The allegorical nature of Spenser's text allows Britomart's donning of the armor to be viewed as combining masculine traits with her naturally feminine identity. While she is dressed in armor, she is nigh unstoppable in her quest to protect her own virtue, or the virtue of those around her. However, once she removes her armor, becoming wholly feminine, she is wounded by lust, the same lust that plagues all of the men in the text. This rampant lust can only be contained by a bi-gendered defender: Britomart. The rhetorical use of a bi-gendered warrior is not unusual, as other scholars have devoted similar examination to other literary figures, determining that they also excel once they are able to become a bi-gendered being.

**Presenters:** Alice Toll and Sameeksha Mishra

**Project Adviser:** Margaret Kuchenreuther (Biology)

**Title: Best management practices for native perennial plants grown as an alternative bioenergy feedstock**

**Type of Presentation:** Poster or Visual Display #8

Native perennial prairie plants are an alternative bioenergy feedstock. Unlike popular monocrops, such as corn and soybeans, prairie plants preserve biodiversity and provide ecological services. We explored the effects of nitrogen fertilizer and annual harvest in an attempt to develop on-farm management practices that make the stand economically productive while maintaining native diversity. Experimental plots are located on a farm in Starbuck, MN in a restored prairie planted in 2008 with a mix of 10 native grasses and forbs (wildflowers). In June 2011 we applied four nitrogen treatments (full recommended, half recommended, manure, none) and have annually applied two harvest treatments (harvest, no harvest) to 32 plots in a randomized split plot design. In early August we sampled the plots, estimating plant cover by species (later used to calculate frequencies) and aboveground biomass with legumes separated from other species. Results from summer 2012 represent the third year of a five-year study. Biomass, percent cover, and frequency measurements statistically support the conclusion that the presence of nitrogen fertilizer removes the ability of legumes to compete against grass species, thereby reducing the biodiversity of those plots. Harvest significantly increased the cover and frequency of native legumes, helping to preserve diversity. Additionally, across all fertilizer levels we observed that harvest produced significantly more biomass than the no harvest treatments. The full nitrogen treatment also produced the greatest biomass, but the difference in treatment means was fairly small, causing us to question the economic benefit to the farmer of purchasing and applying expensive fertilizers.

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**Presenter:** LaNay Walker

**Project Adviser:** Jennifer Goodnough (Chemistry)

**Title: Comparison of two methods of monitoring corn mash at Corn Plus Ethanol Plant**

**Type of Presentation:** Poster or Visual Display #6

In the ethanol industry, several variables affect the amount and grade of ethanol that is produced which affects a plant's ability to make a profit. This research is focused on one of those variables, 'corn mash solid content', which must be closely monitored before the fermentation step. If the mash out of the mix tank is the wrong consistency, the alpha-amylase and gluco-amylase enzymes will not efficiently break the starch into simple sugars that yeast can consume which will decrease the amount of ethanol produced. The mash solid and moisture content is measured daily in order to ensure that the plant will produce on average 2.8 gallons of ethanol for every bushel of corn ground. This places a large significance on the accuracy of the instruments used to analyze these samples. This research involved ten days of data collection followed by statistical analysis to compare the accuracy of an infrared light instrument with a forced air drying oven used at Corn Plus Ethanol Plant in Winnebago, MN. The results of this study determined that the two instruments were not consistent with each other. This led to further investigation and consultation with the instrument manufacturer and ultimately the infrared light instrument was re-calibrated. By correcting an instrument that the plant depended on for data, the operators were able to more confidently and efficiently make adjustments throughout ethanol production process and ensure more consistent ethanol quantities and quality.

**Presenter:** Katherine Schaefer

**Project Adviser:** Heather Waye (Biology)

**Title:** Human Influence on the Population Ecology of Weasel species in the Prairie Pothole Region

**Type of Presentation:** Poster or Visual Display #2

Unlike most carnivores, little is known about the ecology of the Long-tailed weasel and Short-tailed weasel. Although there is minimal data throughout much of their range, they are thought to play an important role in their ecosystems. Weasels are an indispensable species due to their regulatory effects on the meadow vole, their major source of prey. The meadow vole is a common North American rodent species which has been noted as an agricultural pest in high numbers, but is an important species with regard to the spreading of wild grass seed and impeding the succession of tree species by consumption of the seedlings. Discovering more about the habitat preferences of weasels and the consequences of human land use and non-consumptive recreation is necessary for a comprehensive understanding of the ecosystem. Without knowledge of all elements, an effective conservational approach cannot be developed. I looked for weasel tracks in the snow in areas of differing human use. I will proceed to place tracking tunnels in the aforementioned areas and areas of differing habitat types, then I will analyze relative track frequency for different habitats and human use. Overall frequency will be used to explore species composition and total population estimates. The findings will indicate which habitats and micro-environments are of greatest importance to the conservation of weasel species, and whether human influences are important to take into consideration for land management. These results will contribute to the minimal information existing for the Long-tailed weasel and Short-tailed weasel in west central Minnesota.

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**Presenter:** Robert Smith

**Project Adviser:** Sylke Boyd (Physics)

**Title:** Computational Study of Elastic Constants for 1,3,5-trinitro-1,3,5-triazacyclohexane

**Type of Presentation:** Poster or Visual Display #14

Research Development Explosive (1,3,5-trinitro-1,3,5-triazacyclohexane), commonly referred to as RDX, is one of the most widely used energetic compounds. With applications in explosive technologies, it is important to better understand the physical properties of RDX and how they relate to stability and initiation. One physical property that is of current interest are the elastic constants; collectively known as the elasticity tensor. The goal of this research project was to computationally investigate the role of defects in RDX and their influence on the elastic properties at various temperatures. Molecular dynamics simulations were performed, using the resources at the Minnesota Supercomputing Institute, by monitoring the response of the potential energy to variations in one-dimensional strain. Strain refers to imposed spatial stretching and compressing along an axis. The resulting stress modifies the potential energy of the solid. Each point on these potential energy curves is a result of a sequence of annealing and geometry optimizations. From these data we can extract the elastic constants using the curvature of the potential energy with respect to the strain. Methods and preliminary results for an ideal RDX crystal and an RDX crystal containing a void are presented.

**Presenter:** Danielle Brown

**Project Adviser:** Tisha Turk (English)

**Title:** Better Writing Means More Caring

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #114, 2:50 p.m.

This project primarily considers Thomas Lee Hilgers and Mervyn L. Cadwallader & Allen Scarborough's research in problem-solving skill acquisition in an academic setting. Both studies claim that it is in teaching problem-solving skills that students learn to produce better writing. This project furthers their claims by asserting that it is not just problem solving that is necessary in the production of writing that is of a higher quality, but that necessary also is giving students control over the pace and method of generating original problem-solving ideas through the technique of freewriting (writing without an end product in mind). This project claims that freewriting allows students to feel more intrinsically attached to their ideas (i.e. to care more about their ideas), which in turn increases enjoyment in implementing problem-solving through writing, and therefore, allows students to produce writing of a higher quality. The evidence for this project is primarily based on Mina Shaughnessy and Peter Elbow's research on student writing, in which students are not taught to use the freewriting or any similar technique, and instead apply a critical eye to original ideas before those ideas have been fully explored.

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**Presenter:** Alexandra Callais

**Project Adviser:** Brooks Jessup (History)

**Title:** The Printing Press and Religious Texts in 15th Century England

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #114, 3:30 p.m.

My paper, "The Printing Press and Religious Texts in 15th Century England," argues that the printing press had the unintentional consequence of assisting the Church in establishing a power hold over the laity of the late 15th Century. The primary documents consulted for this paper include a catalogue of works printed by the pioneering English printer William Caxton from the years 1476-1500, as well as representative works that he printed in the genre of religion. The wider availability of these texts through vernacular print brought unprecedented access to Church doctrine for the laity. Some historians, such as Alexandra da Costa and H.M. Godden agree that print assisted the Church in establishing doctrinal control over the laity, but simultaneously encouraged a growth in the literacy rate and a personalized relationship with God. My research extends this argument, stating that the personal relationship with God via print allowed the Church to flourish, but eventually resulted in the laity reading and questioning scripture. The later schism, beginning in 1517 with Martin Luther, would rise from disagreeing interpretations.

**Presenter:** Kourtni Danielson  
**Project Adviser:** Tisha Turk (English)  
**Title:** Building an Effective Rural Community Writing Center  
**Type of Presentation:** Oral Presentation  
 John Q. Imholte Hall, Room #114, 2:30 p.m.

Although there has been the beginning of a conversation amongst composition studies experts that blends both service learning and composition studies together with the intent to create social change within a community through writing centers, the conversation has excluded the prospect of the construction of a community writing center in a rural location and the benefits and struggles it may face during its establishment. A community writing center in a rural town such as Morris, Minnesota would open the doors for intercultural inquiry in the form of dialogue among the diverse demographics and allow for a stronger bond within the small community. My presentation advocates for the development of a community writing center in Morris, Minnesota that may help create a multicultural discourse that ultimately helps solve local social issues. First, my presentation analyzes the four fundamental principles that successful writing centers should be founded on including: intellectual inquiry, community literacy, multiculturalism, and the search for a public discourse that reaches out to all members. After an explanation of why these four elements are crucial in the construction of a community writing center, I then examine logistical aspects involving administrative issues, geographical space, the community and university relationship, and member outreach. Finally, using the four fundamental principles and logistics together, I construct a hypothetical, functioning rural community writing center for Morris, Minnesota.

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**Presenter:** Joana Di Meglio  
**Project Adviser:** Dennis Stewart (Psychology)  
**Title:** Life as an Avatar: the Self, Virtual Social Interaction, and Implications for Consumption  
**Type of Presentation:** Oral Presentation  
 Science Building, Room #2190, 11:00 a.m.

Internet and subsequent virtual environment consumption has increased in the past two decades. As a result, humans are being represented more online. This literature review seeks to analyze the underlying factors of avatar influence on human behavior. Avatars are human-controlled customizable graphical representations of humans capable of interacting within a virtual environment. There is no existing literature review of avatars available; therefore this review is a compilation of most applicable avatar research completed thus far. Results and theoretical backgrounds of 36 avatar-related peer-reviewed studies were synthesized and organized by area of psychological interest, namely the self, social interaction, and consumer behavior. Synthesis of the current literature shows evidence is available in existing psychological theory that can be used to explain the relationship between human behavior and avatar behavior in virtual environments. This research gives an overview of avatar psychology but its limited scope enforces the need for further avatar research.

**Presenters:** Luciana B. Ranelli and Ruth S. Potter  
**Project Adviser:** Margaret A. Kuchenreuther (Biology)  
**Title:** Effects of plant community structure and experimental management of restored prairie on insect abundance and diversity  
**Type of Presentation:** Poster or Visual Display #7

Farmland restored from monocultures to diverse, native perennials can serve multiple purposes. Benefits of restoration include an alternative biomass energy source, farm income, and diversity in the landscape that provides ecosystem services such as supporting insects, which serve as natural predators and pollinators. We surveyed insect communities to: (1) evaluate arguments for growing native perennial plants in the landscape from an insect perspective, and (2) measure insect response to management strategies likely to be employed in a crop slated for biofuel production. To do so, we compared insects in: (1) conventional soybeans and native perennial plant communities (native prairie, low-diversity restored prairie, high-diversity restored prairie) and (2) experimental plots of different fertilizer and harvest treatments within the low-diversity restored prairie. We trapped ground-dwelling insects in pitfall traps once in August 2012, and sampled canopy-associated insects with sweep nets in both early August 2012 and in mid-September. Insect abundance and diversity was greater in native perennial plants than in soybeans. Native plants hosted herbivores (i.e. grasshoppers, seed bugs, leaf beetles, plant hoppers) and also beneficial groups of insects like pollinators (i.e. hover flies, honey bees, bumble bees), predators (i.e. assassin bugs, ground beetles, parasitoid wasps) and decomposers (i.e. carrion beetles). Within the experimental management area, we predict that ground-dwelling insects will be more abundant in non-harvested plots. It is harder to predict differences in insects based on nitrogen application: insect abundance and diversity could increase with the increased plant biomass or it could decrease with the decreased plant species richness.

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**Presenter:** Chad Reverman  
**Project Adviser:** Sylke Boyd (Physics)  
**Title:** Study on the Bulk Modulus of RDX Crystalline Structures  
**Type of Presentation:** Poster or Visual Display #15

The primary focus of our research is an explosive material, cyclotrimethylene trinitramine, more commonly known as RDX. Detonation of RDX usually requires an impact on its crystalline structure. The mechanisms that initiate detonation are poorly understood. Sensitivity characterizes an energetic barrier to initiation. It has been shown that sensitivity is closely linked to defects in the crystalline structure. Voids are a common type of defects. They are clusters of lattice points not occupied by molecules. These voids are the subject of our questions. We are analyzing the bulk modulus of the RDX crystalline structure, which is associated with the variation of the binding energy during uniform compression and expansion. We have been using a computer model to calculate the binding energy of geometry-optimized models of RDX in order to use the curvature of the energy as a measure of the bulk modulus. This project investigates the bulk modulus of RDX containing voids of sizes between 4 and 15 molecules. The simulations were run on computers of the Minnesota Supercomputing Institute.

**Presenters:** Emily Mutch, Sarah Kirchman, Rachael Blais, and Emily Szeliga  
**Project Adviser:** Jeffrey Ratliff-Crain (Psychology)  
**Title: Patterns of Jealousy as a Function of Gender and Sexual Orientation**  
**Type of Presentation:** Poster or Visual Display #22

The present study sought to update DeSteno and Salovey's (1996) double-shot hypothesis as a function of gender and sexual orientation. Specifically, we hypothesized that homosexual males and heterosexual females would react more strongly to their partners having emotional infidelities (concluding the partner must also be sexually intimate) while heterosexual males and homosexual women would react more strongly to their partners having sexual infidelities (assuming the partner must also be emotionally attached). The second hypothesis was that females, regardless of sexual orientation, would be more threatened by competitors who are considered to be highly attractive while males, regardless of sexual orientation, would be more threatened by competitors who are perceived as having more resources. Surveys were given to students, aged 18 or older, at two Midwestern universities. Participants included heterosexual men (N = 116), heterosexual women (N = 240), homosexual men (N = 26) and homosexual women (N = 45). The main hypotheses were tested using repeated measures analyses of variance (ANOVA). Results do not support predictions by evolutionary psychologists with gender failing as a predictor for jealousy patterns. Instead jealousy was a socially shaped construct where the partner's gender tended to determine reactions to infidelity.

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**Presenters:** Elizabeth Pappenfus and Chelsae Walsh  
**Project Adviser:** Jeffrey Ratliff-Crain (Psychology)  
**Title: Psychological Factors, Health Care Knowledge, and Experiences and How They Impact a Student's Illness Behaviors on a Rural Campus**  
**Type of Presentation:** Poster or Visual Display #21

Our research objective was to examine factors that contribute to students' illness behavior, particularly in the transition phase of independent living and to a rural setting. Illness behavior is defined as the manner in which a person monitors their body, interprets their symptoms, and how they react to those symptoms. To measure illness behavior, the Theory of Planned Behavior (TPB) (Ajzen, 1985) is a model that guides the direct measurement of health decision-making behavior that combines attitude, subjective norms, and perceived control. In addition to measuring TPB-based decision making, we assessed how a rural setting might be counterproductive because of the lack of accessibility to services and knowledge about health resources (Bolin-Reece, 1994). For our study, 198 participants completed a survey that we adapted from Ratliff-Crain et al. (1998) which applied the TPB in order to predict health behavior intentions. We hypothesize that a high knowledge about health care, positive health care experiences, strong social support, and stable psychological variables (i.e. attitude) will better predict a student's illness behavior choices; while a rural setting could create negative barriers and predict lower health care utilization. By assessing influences of behavioral intentions, we will be better able to understand effects on students' illness behavior choices which may serve as predictors for college students' behaviors with health care. If these predictors have strong relationships with using health care, we will be able to apply this information on our campus.

**Presenter:** Tamir Elnabarawy  
**Project Adviser:** Roger Rose (Political Science)  
**Title: Political Source Cues: A Study of Partisan Opinion**  
**Type of Presentation:** Oral Presentation  
 Science Building, Room #1020, 11:00 a.m.

My research will examine whether Democrat support for extrajudicial killings varies by whether Republican Attorney General John Ashcroft, or Democratic Attorney General Eric Holder endorses the policy. My research thus far, including Stephen Nicholson's Polarizing Cues (2011), has led me to expect that that Democrats will be more opposed to a policy (extrajudicial killings) endorsed by a Republican official than they would the same policy if endorsed by a Democrat. The idea of social identity is critical to my examination of partisan division. In order to better understand this phenomenon, I referenced Marilynn Brewer's *The Importance of Being We: Human Nature and Intergroup Relations* (2007), as well as Heit, Evan, and Nicholson's *The Opposite of Republican: Polarization and Political Categorization* (2010). All of my research to this point (about 9 sources) is included in my literature review. I will ask respondents for their opinion on three issues in a survey that I have created. I have restricted my choice to partisan issues in which office holders held the same position. The issue content and the position taken by the office holders will be held constant, and only the source cues will vary. Respondents are to be assigned into three groups: the control group, and two treatment groups. The control group will receive no source cue. One treatment group will receive a cue that Holder supported the policy; while the other receives a cue that Ashcroft supported the policy. The issue that will be manipulated in my experiment is extrajudicial killings. An extrajudicial killing is the overseas killing of a person by governmental authorities without the sanction of any judicial proceeding or legal process.

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**Presenter:** Rebecca Erickson  
**Project Adviser:** Pete Wyckoff (Biology)  
**Title: Investigating Factors that Influence Hemlock Woolly Adelgid Settlement Density**  
**Type of Presentation:** Oral Presentation  
 John Q. Imholte, Room #112, 3:30 p.m.

The invasive hemlock woolly adelgid (*Adelges tsugae*, HWA) is threatening stands of eastern hemlock (*Tsuga canadensis*) across its range. The adelgid leads to progressive decline in tree vigor and eventual mortality, and is capable of killing a single tree within 4 years of initial infestation. Changing environmental conditions such as increasing temperatures and less consistent rainfall patterns will undoubtedly affect vegetation, but the impacts of such changing conditions on HWA have not been studied in detail. Further, the effects of HWA-induced needle loss and consequent increases in light entering the canopy and lower branches are not understood either. There is also reason to believe that higher infestation densities could lead to quicker death, so understanding factors that influence settlement and development in HWA is crucial to understanding infestation and mortality risks for remaining hemlock stands. This study investigated site location and light availability as factors that may impact the timing and density of HWA settlement, either directly or indirectly. Branch samples were collected twice from field sites at the Cary Institute of Ecosystem Studies in Millbrook, NY and analyzed to determine a settlement density and developmental classification. Linear mixed effect models were used to determine that samples in the sun had significantly faster development than those in the shade, though light was not a significant predictor of settlement density. Branches with later development classifications had significantly higher settlement, as did samples at the higher and drier site compared to the lower and wetter site.

**Presenters:** Toni-Ann Flower, Alex Hoyt, and Amanda Wiener

**Project Adviser:** Heather Peters (Psychology)

**Title:** The Effects of Hypocrisy Induced Cognitive Dissonance on the Consumption of Fruits and Vegetables

**Type of Presentation:** Oral Presentation

Science Building, Room #2190, 11:20 a.m.

Previous research suggests that exposure to hypocrisy will increase pro-social behaviors such as increased condom use (Stone, Aronson, Crain, Winslow, & Fried, 1994). The present study explored whether hypocrisy can be used to increase the pro-social behavior of consuming fruits and vegetables. Hypocrisy is the combination of a public commitment to support consumption of fruits and vegetables (i.e., creating a video message to be shown to the public) and being made mindful of past failures to do so (i.e., identifying reasons why they failed to eat fruits and vegetables in the past). This exposure to hypocrisy creates a psychological discomfort from the two conflicting cognitions, which is called cognitive dissonance. This present study used a 2 x 2 factorial design. Combining the two factors produced four groups: 1) committed and mindful (hypocrisy); 2) commitment only; 3) mindful only; 4) a control group (i.e., neither mindfulness nor commitment). The dependent variable was type and quantity of snacks taken: fruits, vegetables, crackers, and candy. Contrary to previous literature cognitive dissonance did not increase the targeted healthy behaviors, in that there were no differences found between the groups in the amount of fruits and vegetables taken by participants. Surprisingly, preliminary results suggest that cognitive dissonance increased the likelihood of participants taking crackers and candy. Explanations and implications of these findings will be discussed.

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**Presenter:** Kristofor Gieske

**Project Adviser:** Barbara Burke (Digital Media)

**Title:** The Film Look: Cinematic Image Quality on a Shoestring Budget

**Type of Presentation:** Oral Presentation

Science Building, Room #2200, 11:00 a.m.

Most moviegoers recognize that the films they see on the big screen somehow look “better” than the average home video. However, the visual characteristics of film - lower frame rate, wide color and light reproduction, and shallow depth of field, to name a few - are not only aesthetically pleasing, but are also important tools in narrative filmmaking, allowing filmmakers to subtly direct and control the audience’s attention. The often-termed “Film Look” (Lancaster, 2010) is a set of techniques that can emulate the cinematic effects of film without the high costs and complexity associated with shooting on actual film. Recent developments in digital camera technology have led to cameras that closely approximate the look of film at a fraction of the cost of previous options, making cinematic image quality an option for more aspiring filmmakers than ever before. No matter the budget, movies and videos now have the potential to be more visually creative, engaging, and cinematically significant. In my presentation today, I will be showing a preview of my latest short film that utilizes the results of two years of research and practice in cinematography, sharing what goes into creating the “Film Look,” and discussing how aspiring filmmakers can use technology and ingenuity to create beautiful images and take full control of the narrative tools offered by cinematography.

**Presenters:** Andrew Lexvold, Connor Lewis, Hong (Betty) Liu, and Jiachen (Joyce) Ning

**Project Advisers:** Steve Burkes, Jon Anderson (Economics and Statistics)

**Title:** Sleep Apnea and Accident Risk among Commercial Truckers

Type of Presentation: Poster or Visual Display #10

The Institute of Medicine (IOM) has identified chronic sleep disorders, such as obstructive sleep apnea (OSA), as a major public health problem in the United States. OSA is a condition in which the individual's airway repeatedly closes during sleep and the brain is required to partially awake to open it, preventing the sufferer from ever getting fully restful sleep. Among 14 million US commercial driver license (CDL) holders, 2.4-3.9 million (12-28%) are likely to have OSA, making it the most common medical cause of excessive daytime sleepiness in this population. The Truckers and Turnover Project (T&T) has for three years been developing a study of drivers from a cooperating trucking firm which has an industry leading program to screen, diagnose, and treat its employee drivers for OSA, with the goal of understanding how OSA status affects accident risk. A significant problem is that it is not ethical to randomly assign some drivers to be untreated, and the driver population is subject to very significant selection effects, such that those who are diagnosed (and thus treated) tend to be those who have not been fired for unsafe behavior. This selection process confounds standard methods of analysis. We report the latest generation of our results, which in part overcome this challenge. Our work is in preparation for medical journal submissions intended to influence the public policy debate on prospective regulatory requirements for OSA screening in commercial drivers. Sponsors include the Truckers and Turnover Project and Morris Academic Partners.

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**Presenter:** Emma Molden

**Project Adviser:** Gordon McIntosh (Physics)

**Title:** Using the Radial Velocity to Search for Orbiting Planets Around Mira

**Type of Presentation:** Poster or Visual Display #16

We researched radio astronomical data from the star Omicron Ceti to determine if there is evidence for orbiting planets. There is a variation in the silicon monoxide maser radial velocity of Omicron Ceti that could have been due to the effect of orbiting planets. We analyzed the radial velocity data collected from Omicron Ceti over the past forty years. The data were examined for periodicities. A periodicity refers to a repeating pattern within the data. Three possible frequencies were found. Each frequency within the star had the potential to be a pattern caused by an orbiting planet. The three frequencies were represented with three sine waves. The radial velocity versus time was fit with a curve that was the sum of the three sine waves. The amplitudes of the fit sine waves model the velocities of the possible planets. From the wave amplitudes the masses of the suspected planets were estimated. If the periodicities of Omicron Ceti were caused by orbiting planets, two of the “planets” would be about one eighteenth the mass of Omicron Ceti and the other “planet” would be about one sixth the mass of Omicron Ceti. The amplitudes of the three fit sine waves are too large to be caused by orbiting planets. The changes in the velocity of Omicron Ceti are probably due to periodicities within the star.

**Presenter:** Nic Johnson

**Project Adviser:** Engin Sungur (Statistics and Economics)

**Title: Jobs Don't Grow On Trees: Hysteresis in Unemployment**

**Type of Presentation:** Poster or Visual Display #12

Most contemporary macroeconomic models account for unemployment by making the simplifying assumptions that 1) there is an equilibrium level of unemployment and that 2) when the economy is not at that level it will tend towards equilibrium. Implicit in these models is also the assumption that the actual behavior of unemployment does not affect the equilibrium level. This paper joins a growing number of economists pointing out that such assumptions are false: the equilibrium does depend on past behavior, a trait called hysteresis. This paper considers the hysteresis hypothesis by using an iterated version of OLS to construct a series for equilibrium unemployment. Regression analysis shows strong evidence that actual unemployment does affect its equilibrium level. This paper also focuses on one of the specific channels through which hysteresis supposedly works, called ranking. The ranking hypothesis asserts that while unemployed, workers' skills degrade as they lose their connection to the labor market, so employers rank their potential new hires based on duration of unemployment. If the ranking hypothesis is true, then when average duration of unemployment rises, workers are less hireable and the equilibrium level of unemployment should also rise. Using statistical filtering to analyze the timing of changes in unemployment duration and the equilibrium level, this paper finds evidence for the ranking hypothesis and the hysteresis hypothesis. However, incorrect timing of events provides strong evidence against the connection between the ranking and hysteresis hypotheses, despite both hypotheses likely being true. Since unemployment is not self-correcting, policy must step in.

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**Presenter:** Alex P. Kleinfehn

**Project Adviser:** Christopher Cole (Biology)

**Title: Evolution of Protein Structure in a Biochemical Pathway**

**Type of Presentation:** Poster or Visual Display #1

We are examining variation and evolution of enzyme structure in *Populus tremula*, the European aspen, a close relative of the North American quaking aspen (*P. tremuloides*). These trees are foundation species for forest ecosystems covering much of the northern hemisphere. The enzymes make up a pathway to synthesized condensed tannin and lignin precursors. Tannin is used as a defense mechanism against fungi and herbivores, but high tannin levels inhibit the growth of *P. tremuloides*. Ten steps are in this pathway, each catalyzed by a family of one to ten enzymes. Based on DNA sequence data from a dozen Swedish aspens, and online database information, we compared the amino acid sequence and 3-D structure of these enzymes to those carrying out the same reactions in other species. These comparisons identify the structural features of the enzymes that are conserved and those that are variable. From our current results most coding regions show conservation of DNA sequences between *P. tremula* and *P. trichocarpa*, the first tree whose genome was completely sequenced. Most amino acid replacements are structurally similar (eg. valine to leucine), which suggests the protein structure is conserved. We are currently doing further comparison of the most highly variable sequences to other plant species' known structures. This is important because condensed tannin levels are both highly heritable and highly variable, and the strong conservation of amino acids and enzyme structure suggests that the evolution of expression levels of this major pathway arises from differences in regulatory genes, rather than structural genes.

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**Presenter:** Cassandra Hall

**Project Adviser:** Julie Eckerle (English)

**Title: Magic, Mothering, and A Woman's Voice in Shakespeare's *The Winter's Tale***

**Type of Presentation:** Oral Presentation

John Q. Imholte, Room #111, 2:50 p.m.

In my study of William Shakespeare, I was struck by how the subjects of motherhood, midwifery, folklore, and magical women seemed to be connected, especially in Shakespeare's *The Winter's Tale*. In my research to uncover and articulate these connections, I observed that there was much work on the subjects separately, but there were relatively few resources on the four combined, especially in regard to *The Winter's Tale*. I decided to pursue this course of study to better understand how these subjects in combination lead to greater understanding of what motherhood, midwifery, and witchcraft have to say about female power and voice in Early Modern England, specifically in the influencing of children and the anxiety such sway causes in men. I argue that Shakespeare breaks through stereotypes and combines the roles of mother, midwife, and witch in a way that is supportive of powerful women and considers them essential to a balanced society, despite society's anxiety over their influence. The character of Paulina supports my argument, as well as research on midwives, witches, and old wives' tales.

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**Presenter:** Will Hanson

**Project Adviser:** J. Brooks Jessup (History)

**Title: The Easter Rising and the Press: The Influence of Print Culture on Nationalism in Ireland**

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #114, 4:10 p.m.

The Easter Rising of 1916 is one of the most important events in modern Irish history and essential to understanding how Ireland became a sovereign nation through its influence on the success of the Sinn Féin in the election of 1918. The question this study attempts to answer is to what extent newspapers in Ireland contributed to or impeded the rise of Sinn Féin through their interpretation and coverage of the Easter Rising in 1916. This presentation is primarily a study of newspaper archives and other sources of print pertinent to the study, thus creating a survey from the two month period following the Rising. While there is work in the field on the reasons for the advancement of nationalism following the Easter Rising as well as histories of the media in Ireland, there has yet to be a full historical inquiry into how the media itself interacted, changed and eventually contributed to the cultural shift towards nationalism. In my research, I have found that it is necessary to divide the shift into three phases. These phases are based in the sources of print and their interaction. I will argue the first signs of the shift come through street memorabilia and propaganda. This then affected the rhetoric and overall reportage of the regional press, which then affected the rhetoric and overall reportage of the moderate national press. These changes then created the perception of widespread support for nationalism and thus significantly contributed to overall the rise of nationalism in Ireland.

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**Presenter:** Collin Ireland

**Project Adviser:** Barbara Burke (Communication Media, and Rhetoric)

**Title:** **Visualizing from Concept to Screen: Directing a Student Produced Short Film**

**Type of Presentation:** Oral Presentation

Science Building, Room #2200, 11:20 a.m.

Although I've studied stage directing and been in several productions, with this project I learned through my readings, research and experience that the process of "independent-film" directing is different than stage directing. Film directing involves: creating a specialized script in collaboration with others; casting, actor training and rehearsals; production meetings discussing locations, costumes, and props with the staff-volunteers; and during filming, working with actors, blocking the scenes, and collaborating with the cinematographer. Throughout the process I used DeKoven's *Changing Direction* that says "the director's work calls for an overview of the material and an awareness... (of all components)" as guidance. I also evaluated and reviewed and corrected my directing notes. My goals were to create a portfolio-worthy film for myself and for the student-filmmaker, and to gain further knowledge of the creative process. Because the producer wanted a finished video that was visually creative, engaging, and cinematically significant I was motivated to work to a high standard. In this presentation I will discuss the creative choices and decisions used to accomplish the finished product. I will also show a few short clips from the film to demonstrate directing techniques used and the results achieved. Directing a short film as part of a fellow-student's Digital Media Studies senior capstone project involved meeting my goals and learning additional skills involving innovation, problem-solving and solid teamwork, adapted from my stage experience onto this new context and further developed through the experience of creating this project.

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**Presenters:** Kaitlyn Macheledt and Leah Monette

**Project Adviser:** Heather Peters (Psychology)

**Title:** **Artistic Expressions: Interactions between Art-Based Interventions and Motivations of Interpersonal Forgiveness**

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #113, 2:50 p.m.

Forgiveness has been linked to aspects of the creative processes (e.g., mood, motivation, cognitive resources etc.) yet there is little research on the interaction of artistic expression and forgiveness. To evaluate the interaction between artistic expression in enabling interpersonal forgiveness, 62 undergraduate students were primed with unforgiveness by an eight minute conflict recall writing task adapted by Karremans, Van Lange, and Holland. The participants were randomly assigned to 3 conditions which each lasted 20 minutes. The conditions included Metaphor art making, Free Drawing art making or a control task that used a digit symbol coding task. After each condition a 12 item self-report measure Transgression-Related Interpersonal Motivations inventory was used to assess levels of avoidance and revenge, two main indicators of unwillingness to forgive. Artwork created by participants in the Metaphor art making and Free Drawing art making conditions were collected. Participants who were placed in the Free Drawing art making and Metaphor art making conditions that indicated they had not forgiven their offender were more likely to express revenge and avoidance towards their offender than those in the control condition. These results suggest that the act of drawing may increase unwillingness to forgive especially in the realm of revenge seeking and avoidance behaviors. This finding has implications for art therapists when working with clients who are working towards forgiving an interpersonal conflict.

**Presenter:** Laura Holland

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

**Title:** **Disastrous Discrepancies: Women's Unique Challenges and Natural Disaster Recovery**

**Type of Presentation:** Poster or Visual Display #20

We must realize that women face special challenges when it comes to preparing and recovering from a natural disaster. Furthermore, our own perceptions and behavior can significantly impact women's recovery. When a natural disaster strikes, relief efforts often lump survivors into one category, with little distinction made regarding survivors' unique needs. In particular, women's needs are often ignored, and women tend to experience poorer disaster recovery. The goal of this project is to analyze the specific problems women face regarding disaster relief, and the socio-cultural causes of these problems. Specifically, I argue that: (1) Women have fewer economic resources before disaster strikes, (2) Women and men react in stereotypically gendered ways during disaster recovery, and (3) Women's needs are not sufficiently addressed by relief organizations. In addition, American women are not conceptualized as "true" victims, and thus receive less serious attention from aid organizations than do women in the "Third World." Therefore, gender discrimination, stereotypes, and bias exacerbate the difficulty of the disaster recovery process for women. Scholarly literature from sociological journals, psychological studies, ethnographies and first-person narratives will be used to support this argument. In order to improve the recovery process for everyone, women's unique needs must be fully incorporated into disaster planning and relief efforts.

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**Presenters:** Zac Jesser and Rebecca Hanson

**Project Adviser:** Rich Hardy (Anatomy/Physiology)

**Title:** **Kinetic Chain injuries in the ACL injured patient: A preliminary report**

**Type of Presentation:** Poster or Visual Display #17

An injury to the ACL causes a disruption in the kinetic chain of the lower extremity. This disruption leaves the possibility that other injuries such as those to the ankle may precede or possibly predispose the ACL injury. When comparing patients who have had previous ACL reconstruction to those who have undergone labral surgery, the ACL patients will have a higher incidence of a previous ankle injury. Thirty-five patients who had recently undergone surgery for an arthroscopic labral repair or an arthroscopic ACL reconstruction were analyzed. Demographic data, Tegner activity level, knee alignment and Beighton scale for ligamentous laxity were assessed. The patients also answered a questionnaire to determine whether or not they had a previous ankle injury and completed the AOFAS Hindfoot scale. ANOVA comparison was done for the demographic data between groups. The groups were comparable, no significant differences were found for the demographic data as well as the Tegner activity level, knee alignment and Beighton scale. Kinetic chain injuries were of similar incidence in each group and did not appear to play a role in an ACL injury.

**Presenters:** Kristina Grundmanis and Elizabeth Munson  
**Project Adviser:** Jeffrey Ratliff-Crain (Psychology)  
**Title: Emotional Expression in First-Generation Students**  
**Type of Presentation:** Poster or Visual Display #23

Research suggests emotional expression is a successful tool for reducing stress in the short term (Pennebaker et al., 1990). The current study applied this approach to first generation students (FGS). We hypothesized that emotional expression would reduce stress in FGS, and that the stress reduction would last longer in association with the number of emotional expression writing sessions. Although no group in showed a significant decrease in stress over the semester, having greater levels of social support was associated with lower anxiety.

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**Presenter:** Sarah Hanson  
**Project Adviser:** Siobhan Bremer (Theatre)  
**Title: Designing costumes for *The King Stag***  
**Type of Presentation:** Poster or Visual Display #13

My research comes from three places: Commedia dell' Arte style theatre, medieval period clothing, and current children's movies. The costumes for the University of Minnesota, Morris spring children's show *The King Stag* are unique and imaginative in order to ensure that the show is as magical as possible for the children who attend. This show is a fairy tale about King Seren searching for a Queen who really loves him. When King Seren finds his love, the jealous Prime Minister casts a spell turning King Seren into a stag and himself into the king. Chaos breaks out in the kingdom but eventually everything is sorted out. The original intent of this script was to be performed in the Commedia dell' Arte style, which originated in Italy in the 16th century and was characterized by masked "types," but our pre-production discussions at UMM led us to a less traditional approach. The director of *The King Stag* liked the look of movies with three-dimensional animations made by companies such as Pixar or DreamWorks, so much of my inspiration designing these costumes comes from *Brave* and *Shrek*, as well as other classic Disney movies such as *Snow White*. The style of these costumes loosely reflects the setting in medieval England, but the costumes also include unexpected elements to add to the spectacle. My designs reflect elements from a combination of all these areas.

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**Presenter:** Alissa Melberg  
**Project Adviser:** Bibhudutta Panda (Economics)  
**Title: Natural Resources a Curse or a Blessing: Evidence from Williston, ND**  
**Type of Presentation:** Oral Presentation  
John Q. Imholte Hall, Room #112, 3:50 p.m.

The aim of this study is to test the implications of natural resource abundance for regional economic development for Williston, ND. Williston has emerged as a natural choice for this study due to the recent crude oil production boom experienced by it post 2007. The implications of natural resource abundance on regional development are rather mixed in literature. While one strand of literature believes that natural resource industries often create forward linkages which supplement regional development, the other strand believes that it impedes regional development by diverting local resources. The prime objective of this study is to test these two strands of literature by examining the trends in production, local business activities and employment in Williston from 2000 to 2011. This study specifically looks to answer if the oil boom has managed to establish forward linkages by creating new local industries and businesses, generating employment as well as by developing new infrastructure projects post 2007.

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**Presenter:** George/Anne Meyers-Welsch  
**Project Adviser:** Michael Lackey (English)  
**Title: The Mechanical Man for Modern Times: The New Nietzsche in Ralph Ellison's "Invisible Man" and Richard Wright's "The Outsider"**  
**Type of Presentation:** Oral Presentation  
Science Building, Room #1030, 11:20 a.m.

Most humans are merely mechanical--preordained to act as they act, believe how they believe. They are stuck being lived by life rather than living life, comforting themselves with simple, self-aggrandizing ways of thinking. The mechanical man is a concept named and theorized by Freidrich Nietzsche in "On the Genealogy of Morals" and has become a rich tradition conceptualized in Western thought. Later constructions of the mechanical man clarify and complicate Nietzsche's original understandings. In this historical discussion, Richard Wright and Ralph Ellison argue in Nietzsche's footsteps, that most people are determined by the thought systems prevalent in their social environment. But they also find serious problems with the Nietzsche's mechanical man. Wright and Ellison argue for a greater degree of personal choice of which systems to pick but not the role within the organizational structure of those systems. Ellison and Wright add complexity to our understanding of the mechanical man. In my paper I track Wright's and Ellison's use of the Nietzschean mechanical man through a close reading of specific characters and specific belief systems..

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**Presenter:** Jenny Morris

**Project Advisers:** Barbara Burke, Tony Ocana (Communication, Media, and Rhetoric)

**Title:** An American Perspective: Intercultural Communication in China

**Type of Presentation:** Oral Presentation

John Q. Imholte Hall, Room #113, 4:10 p.m.

This project describes my review of 21<sup>st</sup> century intercultural communication in China, compared with current theories and research in the Communication/Rhetoric/Field. Although there have been many excellent studies, (e.g., Lustig & Koester, 2011), generalizations comparing Eastern and Western cultures, are questionable because of recent differing circumstances in China. To complete this project, I reviewed relevant literature and “travel guides for visitors to China” and then adopted a qualitative and evaluative/critical method to my cultural studies-focused research data. Through analysis and evaluation of my thirty-plus pages of field notes, fifty blog entries and reports of experience of living in China for six months, I have created a description of being both a witness to and a participant of the challenges of developing an emerging intercultural competence. Analyzing and documenting these differences between advice, theories and practices I focus this report on: political and environmental sensibilities; personal topics such as body image and filial piety; and gender roles. My conclusions are that intercultural communication competence regarding these domains involves an on-going skill set that relies on several of the lessons learned in-country, rather than those from (older) textbooks and travel guides.

**Presenter:** Adiroopa Mukherjee

**Project Adviser:** Tammy Berberi (Honors)

**Title:** Adoption and its Reflection of Society through the Ages

**Type of Presentation:** Oral Presentation

John Q. Imholte, Room #113, 3:30 p.m.

Time has influenced and changed the meanings and perceptions of adoption drastically through the ages. This research project examines these changes and traces different events that have defined adoption as a whole. It also pays some attention to characteristics of and reasons for gender-based adoptions. This is important since there are continuous discrepancies between adoption levels of girls versus boys as social customs create trends in gender based adoption. By examining these differences, I have drawn some conclusions on gender equality (or inequality), and the shifts in attitudes of society with the passage of time that have caused certain trends to arise. An appreciation of these differences is important to a society that continually stresses gender equality. This project begins by examining concepts of adoption as early as Classical Antiquity, then moving on to the Middle Ages before finally examining adoption in the twentieth and twenty first centuries. Being able to understand the formative process of existing adoption laws causes an appreciation of how much we, as a society, have progressed in just the last two decades. It is my hope that I can build on this research, and eventually work on narrower Human Rights issues, both for research and career purposes. I would like to begin by raising awareness in Morris’ involved community. This research can also hopefully also add to the limited English materials available on adoption.

**Presenters:** Tim Ginader and Alice Toll

**Project Advisers:** Stephen Burks and Jon Anderson (Economics and Statistics)

**Title:** Commercial Driver's Licence Medical Exam: How Well Does it Predict?

**Type of Presentation:** Poster or Visual Display #9

To be employed using a commercial driver’s license (CDL), each truck driver must complete a Federal Motor Carrier Safety Administration (FMCSA) “Form 649” medical examination every two years. This examination is conducted by a qualified medical examiner, who certifies that the driver is medically able to drive safely, and each motor carrier is required to keep a copy of this Form 649 certification on file. Because the requirements to become a medical examiner are not especially stringent, and because historically there has been little oversight of examiners, many in the industry have speculated that this exam does not adequately screen out drivers with medical conditions that make them unfit to drive safely. In cooperation with a major motor carrier the Truckers and Turnover Project (T&T) collected data to measure how well the CDL medical exam identifies dangerous medical conditions. Data from a set of scanned Form 649 records were keypunched, interpreted with the assistance of co-investigators from Harvard Medical. This was merged with data on the same individuals from the firm’s medical insurance manager; health care reimbursement claims thus provide a separate and objective measure of the drivers’ medical diagnoses. We examine four safety-related conditions: hypertension, diabetes, sleep apnea, and obesity. We find that the CDL exam statistically significantly under-identifies these four conditions according to their appearance in the medical claims data. This suggests that the commercial driver’s license exam is not a very accurate screening tool. Sponsors include the Truckers and Turnover Project and Morris Academic Partners.

**Presenter:** Samuel N. Gockel

**Project Adviser:** Nancy E. Carpenter (Chemistry)

**Title:** Regioselective Suzuki-Miyaura Coupling to 2,4-Dibromoquinoline

**Type of Presentation:** Poster or Visual Display #5

Oftentimes in the synthesis of a biologically active molecule, chemists must make new carbon-carbon bonds. When forming such bonds, chemists must pay close attention to the reaction conditions and the starting materials. For a given reaction, new bonds could be formed at any any region in the molecule. A reaction that controls where a bond is made is said be regioselective. A reaction that is not regioselective can result in a mixture of products, most of which may be undesirable and will be discarded. If a chemist can control where a new bond is made in a reaction they can reduce the production of undesirable waste compounds. The Suzuki reaction is one that is often used to make carbon-carbon bonds. This research studied the relationship between regioselectivity in a Suzuki reaction and the type of catalyst employed in such a reaction. Catalysts with a wide variety of properties were tested in various solvents. The regioselectivity of these reactions was measured by finding a ratio between the products formed using data from Gas Chromatography-Mass Spectrometry. The results indicate a close link between the type of catalyst employed and the regioselectivity observed. It was also observed that that addition of a mild reducing agent increases regioselectivity. Overall, this investigation serves to shed more light onto the affects of catalysts on bond-formation.

**Presenters:** Obsa Bokku and Melissa Denler  
**Project Adviser:** Joseph Alia (Chemistry)  
**Title:** Linear relationship between computed energies and pKa for carboxylic acids and amides  
**Type of Presentation:** Poster or Visual Display #4

The pKa of an acid can be directly for an accurately computed  $\Delta G$  for the acid dissociation reaction.  $\Delta G$  has several energy contributions to pka values. In this work we studied computed electronic energies for carboxylic acids and amides with and without use of the CPCM solvent model for water. Hartree-fock and DFT/LSDA approximations were made with several basis sets. Linear relationships with pKa improved with better approximations and use of solvent model. we are currently making quantitative pka calculations that include waters of hydration and investigating which energy contributions are needed for accurate computation of pKa.

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**Presenters:** Andrew Burroughs and Mitch Primus  
**Project Adviser:** Heather Peters (Psychology)  
**Title:** The Effects of Media Exposure on Body Satisfaction in Males  
**Type of Presentation:** Poster or Visual Display #24

Current literature on media and body image has focused primarily on females. Comparatively, research on men has been limited in scope. The goal of the current project was to examine the effects media has on body satisfaction in males. We hypothesize that exposing males to advertisements containing male models will increase body dissatisfaction. A group of 64 male UMM students were randomly divided into control and experimental groups. Each participant completed the Rosenberg Self-Esteem Scale, The Body Parts Satisfaction Scale for Men, and the Swansea Muscularity Attitudes Questionnaire both before and after media exposure. Participants also completed a measure that assessed average time per week spent consuming different forms of media. The experimental group was exposed to advertisements containing muscular male models and the control group was exposed to advertisements that contained only products and non-human characters. Based on preliminary results, the findings do not support the hypothesis. However, relationships between different aspects of body dissatisfaction and consumption of different media formats have been identified. One implication of this project is that brief media exposure on its own may be insufficient to change body satisfaction. Additional results and implications of this study will be discussed.

**Presenter:** Sienna Nesser  
**Project Adviser:** Tammy Berberi (Interdisciplinary Studies)  
**Title:** Dead and Defecated Matters: An Analysis of the Human Aversion to the Darker Side of the Nutrient Cycle  
**Type of Presentation:** Oral Presentation  
 John Q. Imholte, Room #112, 2:50 p.m.

The topics of human remains, urine, and fecal matter do not often receive positive or complementary social attention. Yet, these substances are just as important and beneficial to life on earth as food is to human beings. In this research, undertaken in the Honors course, Traditions in Human Thought, I examine the diminished place of dead and defecated matter in human society and use a deeply interdisciplinary approach to examine the overlooked but significant impact of human waste on the earth. I describe the earth's biological nutrient cycles, which include the scavengers and detritivores that utilize feces and dead bodies to feed themselves. These, in turn, produce waste that contributes to the vitality of the soil ecosystem essential to the growth of plants, which we then consume. I follow with a historical analysis of the development of London's sewer system, focusing on the late Medieval and the 'Great Stink of London' of the Victorian era. This survey of pivotal moments in the history of sanitation informs modern urban treatment of sewage and the difficulties it poses to global life cycles. The problems faced by society at this time involve not just our physical infrastructure and methods used to handle dead and defecated matter but also sociological barriers to a more holistic understanding of how dead and defecated matter fit into the earth's nutrient cycles. Finding solutions to these issues is essential to developing a more sustainable environment.

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**Presenter:** Joshua Preston  
**Project Adviser:** Roger Rose (Political Science)  
**Title:** The President's Speech: Attention to Human Rights in Post-Cold War Presidential Rhetoric  
**Type of Presentation:** Oral Presentation  
 Science Building, Room #1020, 11:40 a.m.

Many scholars and political officials believe that the United States' attention to international human rights has declined in the post-Cold War period of 1992-2008. Whether one examines action by the U.S. Congress, U.S. support for regimes violating human rights, or U.S. actions that violate international rights, the United States' commitment appears to have weakened. While some research has examined human rights attention in Congress and the U.S. media, no study has focused on systematic measures of presidential attention to human rights. Using the American Presidency Project archives at the University of California, Santa Barbara, I present a measure of presidential attention to human rights that incorporates Post-Cold War presidential speeches, remarks and exchanges with reporters related to international human rights. In this initial stage of research, I first present the range of presidential attention to human rights in given years—i.e. US & UN human rights policies; country human rights situations—and then I test the hypothesis that there is a positive correlation between a president's focus on specific countries and the likelihood of congressional attention to those same nations. Data will cover presidential rhetoric for the years 1993, 1996, 1999, 2001, 2004, and 2007, as well as measures of congressional hearings and New York Times media coverage on human rights.

**Presenter:** Andy Rosenthal  
**Project Adviser:** Julie Eckerle (English)  
**Title:** *The Concept of Free Will in Shakespeare's Macbeth*  
**Type of Presentation:** Oral Presentation  
Science Building, Room #1030, 11:00 a.m.

The debate on free will goes back to Aristotle and has been addressed by many philosophers and writers throughout the ages; William Shakespeare is no exception. As Stephen Greenblatt claims, "there is evidence that autonomy as a concept interested Shakespeare...He reflected repeatedly in his plays on at least three different ways in which one might be at liberty to live after one's own law" (Shakespeare's Freedom, 94). However, Greenblatt does not discuss the thinkers who may have influenced Shakespeare's concept of free will. Understanding influences on a writer is important because it helps highlight what they may have meant in their work. Therefore, the significance of my research is to help illuminate the influence Aquinas and Erasmus had on the free will debate in the early modern period as well as their influence on the Bard himself. Both Aquinas and Erasmus's views assert a kind of compatibilist view of free will; compatibilism is a theory that says free will can co-exist with determinism/fate. I will argue that *Macbeth* makes an argument for soft determinism, which is a particular kind of compatibilism. This claim rests on a close analysis of the prophecies from the weird sisters and a close look at Macbeth and Banquo. Comparing this conclusion to the arguments from the above philosophers seems to suggest that there may be some echoing of Aquinas and Erasmus's views of free will in Shakespeare's *Macbeth*.

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**Presenter:** Andreana Saunders  
**Project Adviser:** Roger Rose (Political Science)  
**Title:** *Deconstructing Unarticulated Ecofeminist Themes in the Design of NGO-led Sanitation Programs in Rural Egypt*  
**Type of Presentation:** Oral Presentation  
John Q. Imholte, Room #112, 2:30 p.m.

Globally, the interpretation of access to clean water as a human right is increasingly common. However, so is the Western perception that all Muslim women are oppressed by patriarchs. This paper discusses how both perspectives influence the design of water and sanitation projects conducted by Western non-governmental organizations (NGOs) in rural Egypt. Although educational sanitation campaigns directed by NGOs intend to help rural Egyptian girls and women achieve greater health and autonomy, these NGOs define the supposed needs and desires of these women based on Western cultural biases. NGOs employ normative judgments very similar to the core tenets of ecological feminism (ecofeminism), but do not critically evaluate their paternalistic assumption that sanitation reform programs liberate oppressed women. A literature review was performed to investigate the global water resource management paradigm, and Islamic feminist interpretations of rights in rural Egypt. Sanitation projects conducted in low-GDP Islamic countries were then qualitatively evaluated. From the vantage point of these projects, I find that NGOs fail to acknowledge the compatibility of Islamic interpretations of women's rights with community sanitation projects. Research of NGOs supporting sanitation projects suggests that their Western "rights" rhetoric and assumptions should be modified to reflect Islamic ideals of community service and family. Such a reframing of sanitation projects would enhance collaboration with community members.

### Poster Presentations Science Atrium 9:30 a.m. – 11:00 a.m.

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**Presenters:** Abdala Bashir, Obsa Bokku, Tiwa Ajibewa, Finhas Ogbazghi, and Melissa Denler  
**Project Adviser:** Joseph Alia (Chemistry)  
**Title:** *Natural bond orbitals related to the pKa of carboxylic acids and phenols*  
**Type of Presentation:** Poster or Visual Display #3

The correlations of pKa and natural bond orbital energies for carboxylic acids and phenols were examined and a strong correlation between the energy of the basic NBO of the carboxylate base and pKa was seen. There was not a similarly strong correlation for phenolates examined. To further explore what contributes to the accuracy of computed pKa values,  $\Delta G$  of the acid dissociation reaction for several carboxylic acid molecules were computed using a quantum chemical approach and pKa values were calculated from these. All data was obtained using the Gaussian 03 or 09 package with DFT/B3LYP/6-311++Gdp approximations with CPCM solvent model for water. Waters of hydration were found to improve accuracy of the pKa values calculated. NBO analysis was used to understand these and the earlier results mentioned above according to chemical donor-acceptor concepts.

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**Presenter:** John Bliss  
**Project Adviser:** Becca Gercken (English)  
**Title:** *English Views of Foreigners as Reflected in the Stories of Sherlock Holmes*  
**Type of Presentation:** Poster or Visual Display #19

In his Sherlock Holmes stories, Arthur Conan Doyle portrayed the people, environment, and values of Victorian London. Doyle's famous detective did not confine his sleuthing to London and Englishmen, however; he traveled the world and encountered numerous foreigners. The foreign elements in these popular works appear to offer unique insights into England's views of other nations and cultures during the 18th century, yet are understudied. The purpose of my research was to identify the foreign elements in the Sherlock Holmes stories and analyze their revelations about Victorian England's socio-political perceptions of the countries they represent. I focused my research on the stories that represented people from India, the United States, and Germany, and then analyzed how these representations reflected real life events. I found that the characterizations of Indians as wild and nearly subhuman reflected Britain's attempts to establish more direct control over the country, while the images of the dangerous yet reasonable Americans reflected the policies that led to the foundation of the so-called Special Relationship. Finally, the changing perception of the Germans reflects how before WWI, Germany was perceived as defunct and silly, where as they became much more of a threat as the war loomed.

**Presenter:** Evan C. Vogel  
**Project Adviser:** Sheri Breen (Political Science)  
**Title:** **Maintaining the Integrity of Minnesota Elections: An Investigation into the Effects Voter ID Legislation Could Have in Minnesota**  
**Type of Presentation:** Oral Presentation  
Science Building, Room #1020, 11:20 a.m.

In 2002 the federal government enacted the Help America Vote Act (HAVA). To respond to this states have attempted different forms of election reform. The most controversial response to HAVA has been Photo Voter Identification Legislation. This is a type of legislation that has been implemented in a number of states including Minnesota. Though the proposed amendment to enact photo ID requirements in Minnesota failed in 2012, that does not prevent future legislation in the same vein as the amendment. This research digs into the question: Does this voter photo identification legislation disenfranchise voters, or would it disenfranchise voters in Minnesota? This paper explores the impact of photo ID laws and concludes, based on evidence from other states, that voter turnout in Minnesota would be adversely affected if legislation like this were to be implemented at any point in the future. This conclusion is reached using a comparative analysis of states, which have implemented this type of legislation, to Minnesota. This comparison includes a look at voter turnout and electoral systems which is followed by an analysis of voting behavior.

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### Performance Presentation HFA Recital Hall, Room #160

**Presenter:** Anika Kildegaard  
**Project Adviser:** Denise Odello (Music)  
**Title:** **"You Have Cast Me Into Many Calamities" Text Painting and Historical Context in Libby Larsen's *Try Me Good King***  
**Type of Presentation:** Performance  
HFC Recital Hall, Room #160, 4:00 p.m.

In one element of the musical set *Try Me Good King* Minnesota composer Libby Larsen set to music the letter Katherine of Aragon wrote from her deathbed to her ex-husband, King Henry VIII. Through extensive text painting, Larsen captures the emotional content of the story of a woman who remained faithful to her traitorous husband up to her last moments on earth. Larsen uses extensive quotation to place her music within a historical context: in this case using quotations from the John Dowland lute carol *In Darkness Let Me Dwell*. It is very likely that this evocative tune might not be recognized by an audience without some focused attention from a musical tour guide. By means of a short lecture recital, I will contextualize Katherine's words within a historical framework, and illustrate the way in which Larsen employs melodic tools to effectively portray Katherine's character. At the end of my discussion, I will perform the piece with an accompanist.

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**Presenter:** Colin Scheck  
**Project Adviser:** Benjamin Narvaez (History)  
**Title:** **Sire, er zijn geen Belgen: The Development of the Flemish National Idea (1896-1946)**  
**Type of Presentation:** Oral Presentation  
John Q. Imholte Hall, Room #114, 3:50 p.m.

In early twentieth-century Belgium, the privileged position of French-speaking province of Wallonia in government and society helped foster a sense of national difference among the Dutch-speaking Flemings who constituted the majority of the population. Long the vanguard of promoting linguistic equality and national enfranchisement, the intellectual leaders of the Flemish Movement became divided and often radicalized by far-right and far-left elements in their pursuit for greater Flemish representation and autonomy. Some, however, tried to moderate these extreme wings, but to questionable and limited success. It is in these intellectuals that I focus the brunt of my research; that is I look at how several thinkers (August Vermeylen, Paul van Ostaïjen, Hendrik Elias, and Jan Albert Goris) conceived the Flemish nation and for what political and social purposes. Of particular interest is how these intellectuals drew from one another in formulating their "nation" despite their extreme ideological differences and goals. I find that traces of both right-wing and left-wing ideological formulations of "nation" can be detected in contemporary Flemish nationalism which, ultimately, does not bode well for Belgian unity. Research was conducted through reviewing specially and newly translated pamphlets, newspapers, literature, and interviews. This paper thus represents a fresh contribution to the woefully dearth English-language literature concerning the long-standing socio-linguistic conflict that has characterized and divided Belgium since its inception.

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**Presenter:** Rose Schwietz  
**Project Adviser:** Daniel Demetriou (Philosophy)  
**Title:** **Putting a Price Tag on Death: The Costs of Capital Punishment Considered**  
**Type of Presentation:** Oral Presentation  
Science Building, Room #1030, 11:40 a.m.

Scholars generally agree that capital punishment (CP) is more expensive than life in prison without parole (LWOP). Critics of CP often appeal to this fact as a reason to discontinue the practice, while many supporters believe that CP is worth the extra expense for the sake of retributive justice, increased deterrence, or both. This project's original perspective is crucial to the death penalty debate because it shows familiar facts in the context of the value we place on human life. This project provides a framework for thinking about the costs and benefits of capital punishment. I suggest that we must determine how much (if at all) an execution deters, and multiply each life saved (if any) by the economic value of those lives and the greater economic costs of a capital crime. From this number we then must subtract the added cost of execution plus the value of a convict's life (bearing in mind that some convicts are innocent). Supplying values for these variables is difficult and value-laden. I argue that even if we supply values favorable to CP, research strongly suggests that money spent on crime prevention programs will be more effective than CP is at preventing capital crimes. Since it will be difficult for CP supporters to argue that retributive justice is so offended by LWOP that we must spend money inefficiently on executions as opposed to crime prevention, I conclude that the added expense of capital punishment indeed counts as a good reason against the practice.

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**Presenter:** Rose Schwietz  
**Project Adviser:** Tisha Turk (English)  
**Title:** *Alive in the Writing: The Ubiquitous Audience*  
**Type of Presentation:** Oral Presentation  
John Q. Imholte Hall, Room #114, 3:10 p.m.

For decades, scholars in Composition Studies have discussed the relationship between writers and audiences and debated the effect of this relationship on composing processes. Current scholars express a spectrum of opinions about writing methods in light of an audience’s position relative to that of a writer. This spectrum ranges from a totally external focus on the physical audience to a focus on an audience completely internalized by the writer, including a middle ground that incorporates both ends. Peter Elbow’s proposition that expresses the benefits of ignoring the audience during the writing process is related to this spectrum in that it offers a different option of relationship between a writer and an audience. The research presented here addresses this spectrum and the abstract nature of the audience question, specifically in terms of the effects an audience has on the writer while writing, and the implications these effects have for the writer’s ownership of his work. In a compilation and extension of the existing conversation, I make the following argument: because of the complex interconnectedness of audience and written word, the audience is not only something constructed by the writer but also consequently a ubiquitous presence, and thus something that can never fully be ignored, as Elbow proposes. These claims offer an original perspective on the audience question, significant for those who write, who teach writing, and who are interested in the writing process.

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**Presenter:** Samantha Stegura  
**Project Adviser:** Jennifer Rothchild (Sociology)  
**Title:** *The Complexities of Surrogacy: A Look at the United States and India*  
**Type of Presentation:** Oral Presentation  
John Q. Imholte Hall, Room #113, 3:50 p.m.

From a Western perspective, the growing trend of outsourcing surrogacy to India often carries a negative stigma, but when examined more closely, we see it is actually quite complex. To best understand and address this issue, we have to examine it from both a macro-level and a micro-level, particularly from individual women’s stories and experiences. Specifically, we should examine the social institutions involved (economy, family, and political systems) and focus on the individuals these reproductive technologies serve. This presentation will give audience members a brief description of the different types of surrogacy. It will cover who can benefit from surrogacy and what type of hurdles may present themselves while engaging in the surrogacy process. I will also compare the costs between hiring a surrogate in the United States and hiring a surrogate from India. Along with this, I will discuss various motivations for becoming a surrogate and how U.S. and Indian surrogates are treated. This study has implications for broader society because reproductive technology is changing rapidly, and consequently, diverse family structures are emerging.

**Presenter:** Daniel Stoterau  
**Project Adviser:** Jessica Larson (Visual Arts)  
**Title:** *Lowering the Bar: Art, Athletes and Masculinity*  
**Type of Presentation:** Oral Presentation  
Science Building, Room #2200, 11:40 a.m.

Inspired by my distinct experiences as a collegiate athlete and as an artist working in what is historically seen as a feminine medium, I examine the intrinsic sexual nature of men’s sports culture by conveying conventional images of male athletes exercising via textiles. My intent is to advance a discussion about the unrealistic standards of masculinity enforced by magazines like Men’s Health and the paradoxically homoerotic imagery through which these standards are presented. My work consists of various instructional illustrations of common weight room exercises that are machine-embroidered on flowered patterned handkerchiefs. Viewed through the lens of heteronormative masculinity, the sexually charged character of these images is readily ignored, but by simply changing their context I draw attention to the often-unacknowledged presence of homoerotic themes in sports. By recognizing homoeroticism in sports, men may be able to break away from the constraints of a masculine ideal.

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**Presenter:** Haley Van Cleve  
**Project Adviser:** Jennifer Rothchild (Gender, Women and Sexuality Studies)  
**Title:** *Sex-Rebels: Re-Examining Sexualities through Feminist Porn*  
**Type of Presentation:** Oral Presentation  
John Q. Imholte Hall, Room #113, 3:10 p.m.

The American world of sex is inherently masculine and hetero-centric. This not only characterizes our mainstream culture and media, but also what our society considers to be “obscene.” The pornography industry glorifies masculine and heterosexually-identified sexualities, mirroring the way in which these same sexualities are given institutionalized power in our society. However, a specific avenue for reforming this phenomenon has grown within the pornography industry with increasing strength since the 1980s. Along the historical divisions of the “Feminist Sex wars,” feminist pornographers are enacting a radical defiance of masculine-centric and hetero-centric sexual representation and imagery by creating pornography that features diverse sexualities. My research analyzes secondary literature within a framework that defines gender and sexuality as being socially constructed. Through this process I am able to define those feminist pornographers seeking to reform the sex industry as “sex rebels” who are re-negotiating what kinds of sexualities are “acceptable” in our society. Their work constitutes one facet of a larger movement to validate feminine and non-heteronormative sexualities. I consider this to be particularly rebellious in that it is being achieved from within a historically male dominated industry that is often labeled “misogynist.” The implications of reforming pornography may also reach beyond that specific industry; it may also provide a model for changing the way we represent sexuality in the mainstream media. Feminist porn may therefore empower individuals as well as collective groups by modeling alternative sexualities within a society that offers few realistic or diverse representations of sexuality.