

SOUTHWESTERN UNIVERSITY

17th Annual

RESEARCH AND
CREATIVE
WORKS SYMPOSIUM
2016

from every voice

April 12, 2016
PROGRAM

2016
RESEARCH AND CREATIVE WORKS
SYMPOSIUM
FROM EVERY VOICE

Southwestern University
Georgetown, Texas

EVENT PLANNER

Christine C. Vasquez
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Southwestern University

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Southwestern University

April 12, 2016

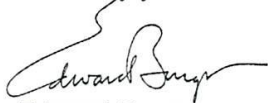
Welcome students, faculty, and staff to Southwestern University's 17th Annual Research and Creative Works Symposium. This day is a celebration of Southwestern University's commitment to, and success in, enriching our community through scholarly conversation. This is a record-breaking year for the symposium with over 500 presenters, proudly representing 29 departments, programs, and offices. I hope you will enjoy the celebration as much as I will; and more importantly, that the day will enrich you.

You may find the following particularly interesting:

- A morning presentation from the Southwestern Andean Ensemble on the Main Lawn;
- An afternoon dance presentation by India West '16 and Brandon Baker '16 in the Bishop's Lounge;
- Capstone presentations throughout the entire day;
- Community-Engaged Learning panels from students, faculty, and staff in the Lynda McCombs Room; and
- The Annual Student Art Exhibit in the Sarofim Fine Arts Gallery and the Senior Art Exhibits across the Fine Arts Courtyard.

Congratulations to all participants, and thank you to all who have worked diligently to make our Research and Creative Works Symposium an outstanding celebration of Southwestern University!

Sincerely yours,



Edward Burger
President and Professor

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SCHEDULE AT A GLANCE

MONDAY, APRIL 11 , 2016

3:00-8:00 Registration Alma Thomas Fine Arts Center

TUESDAY, APRIL 12, 2016

8:00-3:00 Information and Volunteer Check-in Table
(coffee & water provided) Bishops Lounge

9:30-9:45 Introduction and Welcoming Remarks
Dr. Alison Kafer, Professor of Feminist Studies
Dr. Edward Burger, President of Southwestern University Main Lawn

9:45-10:00 Southwestern Andean Ensemble
Amara Yachimski '17, Mattie Kotzur '16, Matt Potenti '18,
Karem Castillo '16, Ben Galindo '16, Ms. Adrienne Inglis Main Lawn

10:00-12:00 Creative Works and Exhibitions Alma Thomas Fine Arts Center

Annual Student Art Exhibition
(snacks provided)

Senior Art Exhibition
(coffee & water provided)

10:15-4:30 Panel Presentations Lynda McCombs Ballroom

12:00-1:00 Lunch Break Commons Dining Hall

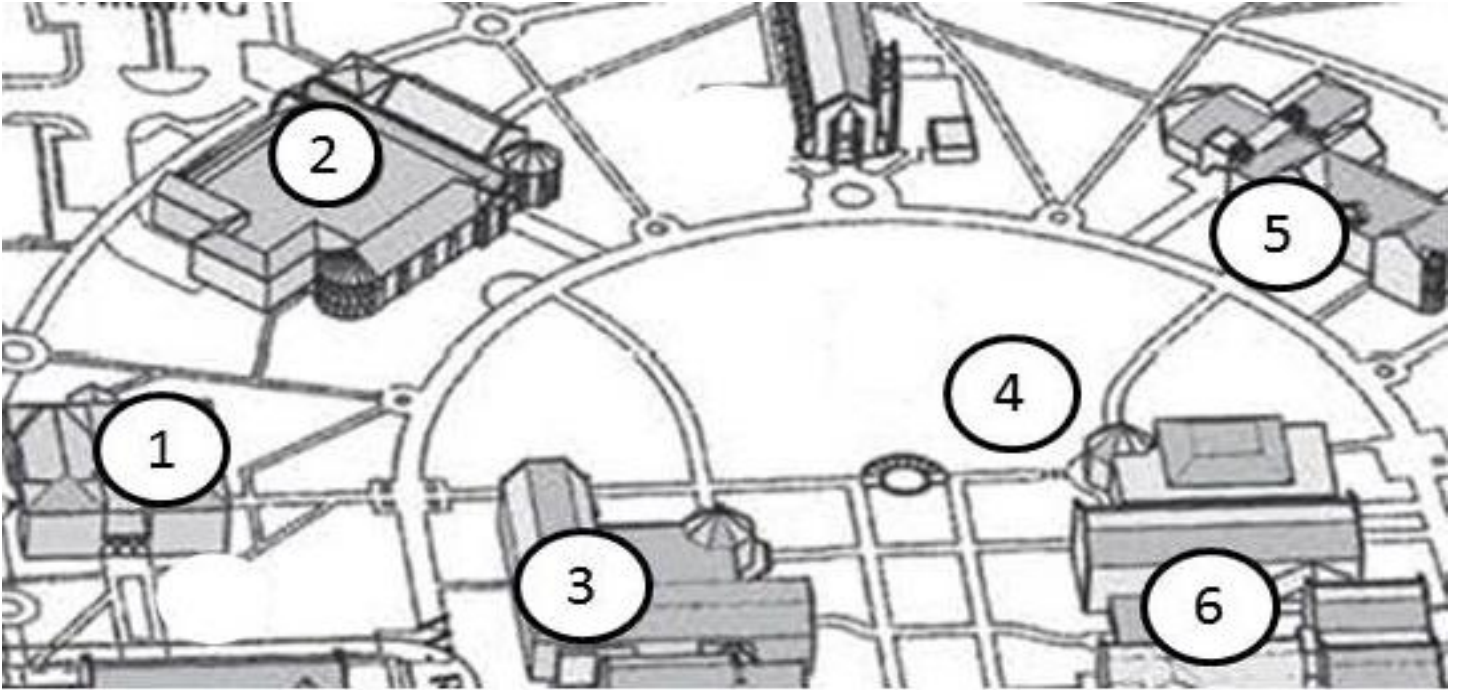
1:15-4:30 Oral Presentations FW Olin Building
Mood-Bridwell Building
Prothro Room in
A. Frank Smith, Jr. Library Center

3:30-3:45 Back to Your Roots: The Soul as Communicated Through
Dance
India West '16, Brandon Baker '16
(snacks provided) Bishops Lounge

4:00-5:30 Poster Presentations Bishops Lounge

5:30-6:30 Celebration and Awards Presented by
Emma McDaniel '16
Dr. Edward Burger, President of Southwestern University
(refreshments provided) Bishops Lounge

MAP OF ACTIVITIES



1. **Mood-Bridwell**

Political Science Department Capstones

2. **Red & Charline McCombs Campus Center**

Information / Volunteer Table

Various Panels

Lunch in the Commons

Performance

Poster Presentations

Celebration and Awards

3. **A. Frank Smith, Jr. Library Center**

Economics Department Capstones

4. **Main Lawn**

Introduction and Welcoming Remarks

Creative Works and Exhibition

5. **FW Olin Building**

Oral Presentations

6. **Alma Thomas Fine Arts Center**

Monday Registration

Creative Works and Exhibits

Annual Student Art Exhibition

Senior Art Exhibition

PANEL abstracts

1. Wouldn't You Leave Too?
Mary Coleman '16, Stacey Smith '16, Lucy Loewen '16, Lina Litvak '17
Sponsor: Dr. Katy Ross, Mediterranean Mingling Paideia Cluster
10:15-10:35 am – McCombs Campus Center, Lynda McCombs Ballroom

The implicit economic costs of the Mediterranean crisis are staggering. As Americans, our stable economy and comfortable standard of living lend us an ethnocentric perspective on the critical situation facing the citizens of Syria. This panel utilizes comparisons in order to alter the audience's perception of Syrian migrants by surveying the basic consumer issues that affect all countries. By using current economic data to expose the humanitarian costs of the recent economic collapse in Syria, this presentation seeks to change the widespread view of Syrian migrants as threats to security rather than as fellow humans in need of relief. A study of the Syrian economy before and after the war implies that average hard working people are being forced from their homes to escape not only a war, but that they are also fleeing a recently stable economy that is now in ruins. Lack of primary education, increasing unemployment, hyperinflation, and a rapid devaluation of the Syrian Pound are serious factors fueling this migration crisis. The costs of this humanitarian emergency will be felt far into the future as the millions of now homeless families crowd out resources in host countries, and furthermore, as it is determined who will pay to rebuild Syria. This presentation will bring the numbers home to examine what would happen in United States of America if average families were forced to confront the same economic conditions that have persisted in Syria over the last few years.

2. The Role of Religion in the Migration Crisis
Mattie Cryer '17, Maegan Skinner '17, Hayley Pickett '17, Elisabeth Reilly '16
Sponsor: Dr. Katy Ross, Mediterranean Mingling Paideia Cluster
10:35-10:55 am – McCombs Campus Center, Lynda McCombs Ballroom

As members of the Mediterranean Mingling cluster for Paideia, we plan to explore themes of religion and migration within a Mediterranean context. Specifically, we will be looking at how a migrant's religious background affects their treatment within varying countries, beginning with the history and demographics of the Syrian War. We will also explore reception of these migrants into the different nations of the Mediterranean and the sustained relationships between host countries and migrants. Finally, we will look at different factors that cause conflict in these affected areas, with a focus on certain countries of different religious backgrounds and denominations. We will use news outlets, media, and academic sources to obtain information and various perspectives to create a well-rounded understanding of the topic. Our goal is to bring thorough information and an insightful observation of the migration crisis to highlight aspects of the conflict in the Mediterranean that are lesser known or absent in current events.

3. Syria: Before the War
Rachel Robinson '16, Alexandra Shipman '16, Amber Riedel '16, Arthur Garcia III '17
Sponsor: Dr. Katy Ross, Mediterranean Mingling Paideia Cluster
10:55-11:15pm – McCombs Campus Center, Lynda McCombs Ballroom

Through an examination of Syria's culture and history, we will reconstruct an image of the Syria that existed before the current civil war and migration crisis. By consulting both peer-reviewed academic sources and popular Syrian media, the everyday experience of Syrians will be put into conversation with scholarly discourse to create a well-rounded view of Syrian culture. We will discuss Syria's political and social history, as well as its art, film, and theatre traditions. We specifically intend to focus on the city of Aleppo because it has stood for thousands of years as cultural hub. Because Syrians are having to leave their country, it is of tantamount importance to remember their culture. By presenting the particularities and complexities of Syrian society, the migrants stop being just victims and statistics, and become real people in the eyes of the rest of the world.

4. Politics the Migration in the Mediterranean
Jacquelyn Mata '16, Ilka Vega '16, William Chick '16, Justin Allemang '16
Sponsor: Dr. Francis Mathieu, Mediterranean Mingling Paideia Cluster
11:15-11:35 pm – McCombs Campus Center, Lynda McCombs Ballroom

Since 2011 Syria has been experiencing a civil war that arose within the context of the Arab Spring with protests against the dictator Assad. As a result, over 11 million people have been killed or displaced and over 4.3 million people have been forced to seek asylum in other countries including those in the Mediterranean. However, these host countries have had varying responses to this crisis as well as the EU and the international community. Thus, the purpose of this study is to compare and contrast the differing political responses to this crisis focusing on the migration policies in the EU and individual member countries. To do so we study policy implementation and measure how welcoming the host countries are to refugees based on a number of factors such as pledged number of refugees per capita, total number of refugees, and refugees per square area, among others. These factors are then indexed to determine the country's overall receptiveness of refugees. Through the use of analysis, and GIS visuals we aim to document and educate the public about the different approaches taken to handle the refugee crisis. We also hope to give light to the impact that the lack of better policies to welcome refugees has in Europe and the Mediterranean, both in donor and host countries. With this analysis, we can better assess suggested policies by the EU and member nations seeking to spread and alleviate the strain from the migrant crisis.

5. Latina History Project

Tori Vasquez '15, Nanci Romero '16, Stephanie Garcia '16, Denise Ovalle '17

Sponsor: Dr. Charlotte Nunes, Information Services - Research/Digital

1:15-2:00pm – McCombs Campus Center, Lynda McCombs Ballroom

We propose to showcase the online Omeka site of the Latina History Project at Southwestern University. Co-directed by faculty members Dr. Brenda Sendejo (Anthropology) and Dr. Alison Kafer (Feminist Studies) the LHP aims to enhance undergraduate education about Latina history in the Central Texas region. The project provides a connection between past, present and future Southwestern Latinas to be able to discuss and interact with primary source archives involving influential Latinas. Student workers Tori Vasquez, Nani Romero, Stephanie Garcia, and Denise Ovalle created this site under the supervision of Charlotte Nunes, Postdoctoral Fellow in Digital Scholarship, in order to highlight their research in a collection of primary source materials related to a photography exhibit about Latinas. During the early 1990s, Professor Mary Visser collaborated with Lupita Barrera Bryant to curate a photography exhibit titled "Rostros y Almas/ Faces and Souls", which remains on display in the F.W. Olin Building at Southwestern. The digital exhibit of the Latina History Project includes a reproduction of the physical exhibit "Rostros y Almas/Faces and Souls", which featured photography by Mary Jessie Garza, as well as materials pertaining to the planning and execution of the exhibit. The story of the planning and presentation of this exhibition is an important manifestation of Southwestern's own institutional history as it connects with Latina history. The photography from the exhibit, planning and research materials, and oral histories are thematically categorized into separate collections. During our presentation we will showcase the various components of our site and encourage people to explore more.

6. Interdisciplinary Connections

Kenny Knowlton Jr. '17, Ben Galindo '16, Taylor Braselton '17

Sponsor: Dr. Phil Hopkins, Philosophy Department

2:15-3:00pm – McCombs Campus Center, Lynda McCombs Ballroom

How are racism, the human brain, and climate change interconnected and why does it matter? The purpose of this panel is to explore the connections between Evolutionary Biology and Process Philosophy and to provide a framework from which the intersection of the historico-political, the ontological, and the evolutionary biological could be further elucidated. We argue that the historico-material developments in these areas of study must be viewed as interdependent in their relations and therefore the ideological abstract has affected and continues to affect, in one form or another, the evolutionary development of humans and nonhumans. Furthermore, by focusing on neuronal plasticity, epigenetics, and anthropogenic climate change as case studies we will provide an understanding of (1) the fluidity of the human and nonhuman ontological condition, (2) the historical implications of abstract ideologies and their practical influence on the biological evolution of particular peoples under the 'logic of coloniality' and (3) a place from which a critique on the systemic hierarchies of power can be made within a system that is structural and dominant yet not without contradictions; where change is not merely possible but necessary and fundamental. With such an analysis we hope to demonstrate that an overly narrow disciplinary approach to interrelated systems of power obscures potential points of disruption and problematizes the extent to which collective, heterogeneous knowledges could inform substantive and autonomous change.

7. Community-Engaged Learning Teaching Assistants
Christopher Adams '16, Michelle Hershberger '17, Daniel Ross '16, Katherine Protil '16, Abigail Frels
Sponsor: Dr. Sarah Brackmann, Office of Civic Engagement
3:15-4:00 pm – McCombs Campus Center, Lynda McCombs Ballroom

Community-Engaged Learning Teaching Assistants (CELTA's) support civic engagement pedagogy by supporting Paideia Clusters. CELTA's assist cluster coordinators with the implementation of community-engaged learning as it relates to the cluster themes and questions. Throughout the academic year, CELTA's participate in ongoing training and reflection sessions with the OCE, and develop skills in project management, communication, facilitation, and community-building. Monthly training topics focus on an introduction to civic engagement, community-engaged learning pedagogy, Georgetown stats and figures, working with community learning partners, recruiting student volunteers, risk management, and preparing for a leadership transition. They also work closely with cluster coordinators to identify projects goals, and timelines to promote civic engagement in the clusters. Responsibilities include activities such as: locating appropriate community partnerships for the cluster, nurturing community learning partnership(s), regularly communicating with faculty and community organizations and coordinating evaluation and assessment of community organizations, students, and faculty. CELTA panelists from the Anthropocene, Global Health, Representing Gender, Situating Place, and Identity clusters discuss their experiences supporting civic engagement within Paideia.

8. Community-Engaged Learning Fellows
M. Anwar Sounny-Slitine, Desi Roybal, Dr. Michael Kamen, Dr. Katy Ross, Dr. Erika Berroth, Dr. Therese Shelton, Dr. Laura Senio Blair,
Sponsor: Dr. Sarah Brackmann, Office of Civic Engagement
4:15-5:00 pm – McCombs Campus Center, Lynda McCombs Ballroom

The Community-Engaged Learning (CEL) Fellows Program is a year-long faculty development program that provides an opportunity for faculty members to integrate community-engaged learning into their pedagogy while becoming recognized campus leaders in community-engaged pedagogy. The Fellowship includes a faculty development award in the form of a professional development account to be used for professional development, course development, and research. Each month, CEL Fellows meet to discuss a variety of topics such as introduction to civic engagement and community-engaged learning, developing learning partnerships, designing reflection, Georgetown 101, risk management, and scholarship of engagement. The seven 2015-16 CEL Fellows will discuss how they are developing or modifying their courses through community-engaged learning. Dr. Kamen will discuss his Educational Technology course in which SU students will work with GISD teachers to develop their class websites. Professor Sounny-Slitine is using the CEL fellowship to incorporate community-engaged learning pedagogy into his GIS courses. In addition, Professor Roybal will discuss how he is developing an intergenerational community-engaged learning with a theatre group in Sun City. Language professors, Dr. Ross and Dr. Berroth, will address how they are using the CEL fellowship to more intentionally implement community-engaged learning pedagogy into their courses. Dr. Shelton will take the panel in another direction by talking about how she is incorporating community-engaged learning pedagogy into her FYS class. Finally, Dr. Senio Blair will discuss how she is using the CEL Fellowship to consider community-engaged learning pedagogy as a Paideia cluster coordinator.

9. "Mother Merkel" and the European Refugee Crisis
Lily Marrs '16
Sponsor: Dr. Tim O'Neill, Political Science Department
10:00 am (Panel A Participant) – Mood-Bridwell Atrium

In September of 2015, German Chancellor Angela Merkel threw open her country's borders to any refugees seeking asylum. Since the implementation of her open-door refugee policy, the Chancellor has been internationally hailed as the 'savior' of refugees while simultaneously facing sharp criticism from within her own political party and coalition, as well as dropping in national approval ratings. In response, Chancellor Merkel has changed her stance with talk of quotas and tightening the European Union's external borders. Due to the short amount of time this open-door policy has been in effect, there is no way to fully understand its impact. Therefore, this paper will utilize a historical policy analysis in order to assess the political and ethical justification of her change in stance. Through a comparative case analysis of the refugee crises during both inter-war Europe and post-World War II Europe, my research will address the question of whether Chancellor Merkel's change in stance on her open-door refugee policy in order to alleviate pressure from critics within her own party was justified based on Virginia Held's ethics of care.

10. For The People or For My People?

Mackenzie Elrod '17

Sponsor: Dr. Tim O'Neill, Political Science Department

10:00 am (Panel A Participant) – Mood-Bridwell Atrium

Germany's Chancellor Merkel has reversed her open border refugee policy, and has initiated the implementation of strict and restrictive criteria specifically targeting refugees. The new policy will refrain Germany from granting asylum to thousands of Syrian refugees seeking sanctuary. Refugees are defined as "a person who has been forced to leave their country in order to escape war, persecution, or natural disaster", and economic immigrants are defined as, "a person who travels from one country or area to another in order to improve their standard of living". Chancellor Merkel's policy change is forcing thousands of Syrian refugees to continue the long and dangerous search for refuge but it is protecting the economic, health, safety and logistical freedoms of German citizens. Using a historical policy analysis, this paper will compare other mass refugee situations Germany and other countries have faced, with the current Syrian refugee crisis. Once the historical foundation has been developed, the paper will examine cases to determine if the Syrian refugees present any true economic or radicalization dangers. Concluding with the implementation of John Stewart Mill's ethical principle, can Chancellor Merkel's policy "flip-flop" be deemed as ethical?

11. Containing the Crisis: Migration and Border Control in Denmark

Shannon Lukehart '17

Sponsor: Dr. Tim O'Neill, Political Science Department

10:00 am (Panel A Participant) – Mood-Bridwell Atrium

Millions of Syrians have been displaced as a consequence of war and conflict, many have gone to Europe to seek asylum as refugees. The Danish government recently passed a law nicknamed the Jewelry Law that allows police to confiscate refugee assets above a baseline value. The government justifies the law claiming it will help them to pay for their welfare state, which benefits the refugees. However, as a member of the EU Denmark is limited in how they can control their borders. Did Danish Prime Minister Lars Løkke Rasmussen support the Jewelry Law in order to discourage migration thus attempting to secure the Danish Border, can this be justified using Mill's concept of utilitarianism? This paper uses a comparative case study to evaluate other states use of migration policy and will look at the impact of such policies in relation to the number of refugees seeking asylum both before and after their passing. The paper will conclude with a discussion of the state's sovereignty versus their obligation to uphold policies established by an international body such as the European Union.

12. Can Arizona's SB 1070 Be Justified According to Mill's Utilitarianism?

Katherine Hernandez '16

Sponsor: Dr. Tim O'Neill, Political Science Department

10:00 am (Panel A Participant) – Mood-Bridwell Atrium

On April 2010, former Arizona Governor, Jan Brewer, signed into effect the Support Our Law Enforcement and Safe Neighborhoods Act or Senate Bill 1070 (SB 1070) with the intention of reducing drug-related crime along Arizona's border and to aid Arizona's struggling economy. SB 1070 garnered national attention for its controversial immigration policy which requires police to determine the legal status of someone lawfully stopped, arrested, or detained if there is reasonable suspicion that they are not US citizens. Through a comparative case study, this paper will assess the justification of SB 1070 through Mill's theory of utilitarianism by comparing the economic and social stances of Arizona and Texas, two border states with the majority of its citizens identifying as Republican, after SB 1070 was passed, paying particular attention to border crime, the economy, and the issues of racial profiling. My research will then determine if policies like SB 1070 should be encouraged as a means of immigration reform or if other approaches should be explored.

13. Rwanda: The Genocide That Went Ignored

Tina Sohne '16

Sponsor: Dr. Tim O'Neill, Political Science Department

11:00 am (Panel B Participant) – Mood-Bridwell Atrium

The Tutsi and moderate Hutu population were targeted during the 1994 Rwandan genocide; over 800,000 innocent children, women, and men were slaughtered all across Rwanda by the Hutu extremists. According to Article 2 of the Conventions on the Prevention and Punishment of the Crimes of Genocide (1948) from the United Nations, genocide is defined as "any acts committee with intent to destroy, in whole or in part, a national, ethnic, racial regions group" and so on. However, the

Clinton administration failed to label this atrocity as genocide according to the provided UN definition. Was President Bill Clinton's decision not to intervene in the Rwandan genocide, which contributed to the increased number of innocent killed, justified according to the "Greatest Happiness Principle" by John Stuart Mill? A historical policy analysis will be applied to various historical events such as the Somalia Affair, Bosnian Genocide, and Rwandan Genocide in order to identify what's the most similar and dissimilar to provide insight on why the United States failed to intervene in the horrific tragedy.

14. Was Governor Perry Justified in Threatening a Veto to Remove a Public Official?

Samantha Skurka '16

Sponsor: Dr. Tim O'Neill, Political Science Department

11:00 am (Panel B Participant) – Mood-Bridwell Atrium

The veto of the \$3.7 million in funding for the Public Integrity Unit of Texas was a great source of controversy; so great, in fact, that it led to the indictment of the Governor of Texas at the time, Rick Perry. Allegations of unethical actions with political motivations came into play, centered on the Driving While Intoxicated (DWI) arrest of Travis County District Attorney Rosemary Lehmborg, who refused Perry's call for resignation. The question of why former Governor Perry chose to extort Lehmborg into resigning goes beyond mere political posturing and reasoning. The Texas State Constitution maintains that it is the right of the Governor of Texas to veto items of appropriation with which he disapproves. The ethical dilemma that has arisen stems from the possible motives the Governor may have had. The Institutional framework is best for examining the relationship and interactions between the executive and judicial branches of government in Texas. This paper is an attempt to answer the question of whether or not, from an ethical standpoint, Governor Perry's actions in vetoing funding for the Public Integrity Unit -an office charged with investigating top officials accused of ethical violations- violated his constitutional powers as governor.

15. The United Nation's Failure in Sudan and Its Impact on Humanitarian Intervention

Jayden Beatty '16

Sponsor: Dr. Tim O'Neill, Political Science Department

11:00 am (Panel B Participant) – Mood-Bridwell Atrium

Humanitarian intervention continues to be a topic of debate within the post-war era despite continued violations of human rights and instances of genocide. Since the early 2000's Sudan has remained in a state of chaos and violence with evidence of human rights violations reported by regional organizations and reports authored by the United Nations Security Council itself. This has resulted in the international community declaring the Sudanese civil conflict a genocide. Since the signing of the UN Charter in 1945, the UN has continuously claimed its willingness to protect human rights and to punish those who violate them. Despite that value of international human rights, failed peacekeeping initiatives by the UN and regional organizations, and the knowledge of continued human rights violations in Sudan, the United Nations has failed to call for military humanitarian intervention. Through an historical policy analysis, this paper seeks to answer three central questions: Why has the United Nations Secretary General failed to call for military humanitarian intervention in Sudan by member countries, has non-intervention resulted in a greater amount of innocent deaths and human rights violations, and finally Is the UN Secretary General's decision justified under Virginia Held's ethic of care?

16. Rumble in the Valley: The Three Gorges Dam and Utilitarianism

Eryn Quinn '16

Sponsor: Dr. Tim O'Neill, Political Science Department

11:00 am (Panel B Participant) – Mood-Bridwell Atrium

The Three Gorges Dam is the largest feat of hydroelectric engineering in the world. The dam is a physical representation of China's rise into the modern world. However, a structure that grand does not come without major drawbacks. The decision to build the Three Gorges Dam was met with rigorous debate on domestic and international stages. Benefits of the dam include large amounts of renewable energy, control of the annual floods that plague the Yangtze River Valley, and greater navigation on the shipping channels, which will lead to greater development in the impoverished region. Naysayers of the dam brought up devastating ecological and geological effects, specifically landslides and earthquakes, the loss of priceless archaeological sites and artifacts, as well as the cost of displacing 1.2 million people due to the massive reservoir. This paper will measure the decision to build the Three Gorges Dam against John Stuart Mill's concept of utilitarianism. Using this as an ethical standard, was the building of the dam justified? In order to answer this question, this paper will bring forth empirical evidence how the building of the dam has impacted those living in the region, for better or worse, as well as the impact for China as a whole. It

also will seek to understand the reason why the dam was built, and whether or not the dam can be considered successful in its goals.

17. Political Skepticism, Idealism and Ethics of a Rawlsian Subject: Julian Assange and WikiLeaks
Sam Kim '16
Sponsor: Dr. Tim O'Neill, Political Science Department
1:00 pm (Panel C Participant) – Mood-Bridwell Atrium

Whistleblowing and information leaks regarding state secrets have become a significant political issue in recent years, which has prompted a public discussion of the role between national security and transparency in liberal democracies. However, another serious debate has also surfaced, in which the public has asked, under what circumstances are individuals morally justified in defying the state in order to achieve social and political ends? This paper uses a historical policy analysis to the case of Julian Assange's role in the 2010 public disclosure of secret diplomatic cables through the organization WikiLeaks in order to understand the motivations and decision-making that led to this event. I will then apply John Rawls's liberty principle and difference principle from his theory of justice to address the question of whether Assange's actions, which consisted of possibly non-universalist practices but also contributed to democratization, would be considered ethical. The treatment of Rawls's theory of justice to this case will inform a final discussion on the application of both the deontological tradition as well as consequentialist in politics.

18. The Myth of U.S. Multilateralism in the International Community Regarding the Use of Force
Samuel Ashley '16
Sponsor: Dr. Tim O'Neill, Political Science Department
1:00 pm (Panel C Participant) – Mood-Bridwell Atrium

There have been plenty of instances of the United States using force on rogue states without the consent of the U.N. Security Council. However there are fewer instances where the U.S. has attempted to receive approval from the U.N. Security Council, been denied by the Council and then continued along a path of unilateral interests. In particular the case of Iraq in 2004 shows the attempt of the U.S. to pursue goals through multilateral diplomacy. The authorization of the use of force by the U.N. Security Council. However when the attempt to achieve intended results through multilateral means failed, the U.S. still carried out a more unilateral plan and insisted on the invasion of Iraq. By using an historical policy analysis along with John Stuart Mill's rule utilitarianism I intend to investigate why the U.S. even pursued multilateral interests if it did not plan to respect the decision of the international community. The U.S. has had a very complex relationship between multilateral goals and unilateral goals as far as the use of force is concerned. While the invasion of Iraq was supported by a majority of Americans and even multiple members of the international community, it still serves as a reminder that the U.S. does not have a problem dropping multilateral interests for the pursuit of unilateral interests.

19. Ethics During a Time of Terror
Brandon Thomas '17
Sponsor: Dr. Tim O'Neill, Political Science Department
1:00 pm (Panel C Participant) – Mood-Bridwell Atrium

With the enactment of the abhorrent attacks on the Twin Towers on September 11th, the issue of ethics has been an important target of discussion. While the United States has been a major advocate in the respect of basic human rights, the Bush memorandum of 2002, authorizing the use of harsh interrogation techniques in the questioning of suspected terrorists in order to obtain information to halt future terrorist attacks, has come under abundant scrutiny. By utilizing the historical policy analysis utilized in Neustadt and May's "Thinking in Time: The Uses of History for Decision Makers", I will analyze the known, unclear, and presumes aspects behind the memorandum, and by applying John Stuart Mill's utilitarianism to decide whether or not it was justifiable or not. My research will consist of examining opinion polls, policy analysis, effects on recruitment, and the effects of the use of such methods. With consideration of my research, I will supply several considerations to possible adjustments to the rhetoric used surrounding the discussion of the memorandum.

20. The Ethical Reasoning Behind Military Intervention Against ISIS
Christian Raley '16
Sponsor: Dr. Tim O'Neill, Political Science Department
1:00 pm (Panel C Participant) – Mood-Bridwell Atrium

In previous efforts to combat terrorist organizations in the Middle East, the United States has responded with the implementation of military action. The United States must now consider the ethics behind using military force in response to ISIS due to the unfamiliar characteristics of the terrorist organization. Through the application of policy analysis, this paper will examine how the United States' responses to prior terrorism in the Middle East have shaped current approaches to a conceivably similar circumstance. My research will specifically focus on the United States' response to the terrorist organization al-Qaeda in comparison to the current foreign policy stance taken as a means of combating ISIS. By concentrating on the dissimilarities between the characteristics and objectives of al-Qaeda and ISIS, this paper aims to conclude whether or not the United States' implementation of military force as a means of combating ISIS is ethical under the principles of just war theory.

CREATIVE WORKS AND EXHIBITION

abstracts

21. Southwestern Andean Ensemble

Amara Yachimski '17, Mattie Kotzur '16, Matt Potenti '18, Karem Castillo '16, Ben Galindo '16, Ms. Adrienne Inglis
Sponsor: Adrienne Inglis, Music Department

9:45-10:00pm – Main Lawn

The Southwestern University Andean Ensemble would like to present at the Creative Works Symposium a performance of folk music indigenous to Perú and Bolivia. The ensemble plays sikus (panpipes), charango (small guitar-like instrument), and bombo (goat-skin drum). The sikus are played in traditional hoquet style in which each sikuri (sikus player) has only half of the notes of the scale. Just as community cooperation is needed to live in small rural communities in the harsh high-altitude climate of the Andes mountains, cooperation is also needed to play an entire melody shared between two sikus. The selections chosen for this program were likely composed cooperatively among the sikuris the night before a festival. Even sikuris procrastinate. Sometimes the arrangements include parallel fifth harmonies. The members of the ensemble wear traditional ponchos made of aguayo fabric. The 15-minute program features four sikuriadas (tunes played with sikus): Tesorito, Pueblo de mi huaycho, Yawar malico, and Asuntita. The ensemble will demonstrate and explain the instruments at the performance. Members of the ensemble are Karem Castillo, Ben Galindo, Mattie Kotzur, Matt Potenti, Amara Yachimski, and Southwestern University flute instructor Adrienne Inglis. This presentation demonstrates the diversity of music enjoyed by the Southwestern community.

22. Annual Student Art Exhibition

Sponsor: Victoria Star Varner, Art and Art History Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Sarofim Fine Arts Gallery

The exhibition consists of work by many Southwestern students ranging from freshman to seniors.

The exhibit will showcase works in a variety of mediums. Featured work will include all of the Fine Arts and Architecture classes from the following Professors: Dr. Thomas Howe, Elvia Perrin, Matt Rebholz, and Noel Robbins.

23. Collapsible Telescope

Diana Beltrán '18, Susana Beltrán '18, Michael Measom '16, Kyle Zarosky '17

Sponsor: Dr. Steve Alexander, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

This project could change the way the young and old interact with the extraterrestrial community we inhabit. The ultimate goal of our team is to bring the majesty of the universe to the general public in a more practical way than ever presented. This was done by means of a compact, inexpensive, collapsible telescope. This idea was partly inspired by foldable microscopes, and like those, this telescope will empower a much larger audience, especially in underdeveloped countries. Part of our project involved researching inexpensive materials which could be used for such collapsible telescopes. We designed the collapsible body mechanism that was most compatible with our goals. This resourceful tool could potentially be used in the everyday classroom to teach about astronomy. The financially convenient design will allow for more students to come into contact with phenomena they have previously never experienced, and it could reveal a new found passion in a subject otherwise foreign.

24. Simulated Synesthesia

Isabella Ferranti '17

Sponsor: Dr. Steve Alexander, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Synesthesia is a psychological phenomenon in which the stimulation of one sense triggers a separate response in another unrelated sense. This result is in sensory associations such as taste-to-color and sound-to-touch, but researchers currently believe music-to-color to be the most common. This anomaly may be due the "cross-wiring" of commonly segregated regions of the brain and I am creating an external processor that will simulate this connection for nonsynesthetes to experience. With

the use of an Arduino microcontroller and compatible RGB color sensor, I am building and programming a hand-held module that will scan color, and with this data input, produce sound in the form of musical notes and chords, essentially translating color into music. With this technology, a painting could double as a music composition and a child's drawing could be transformed into a symphony. This project forms a connection between the seemingly separate fields of computer programming, art, music, psychology, and cognitive neuroscience. I hope to present my work at the Creative Works Symposium and allow students, faculty, and the public to interact with this color-to-music translator.

25. Using Spray Foams as Building Resources for Emergency Housing and Eventual Interplanetary Habitats

Laura Prier '19

Sponsor: Dr. Steven Alexander, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

We propose the development of a pre-formed, inflatable, durable, water resistant habitat(s) requiring the use of a spray foam component serving as an inflation method. The spray foam will provide structure to the inflatable habitat. If we want to create long term human habitats on another planet, taking Mars for example, we need to reduce the cost and the complexity of fabricating and assembling buildings to house our exploration efforts. Phase one of this project will consist of identifying and verifying a set of criteria that a proposed spray foam should meet in order to be considered suitable for the purposes of safely and efficiently expanding within an enclosure. One such criteria would be how well the spray foam sample performs in a Mechanical Pull Test. This test, along with various other physical characteristics, including the speed of inflation and the durability of the spray foam in environments with varying temperatures, will make it easier to determine the important properties a spray foam system will need to exhibit in order to be feasible for use in constructing a long-term human habitat. The fact that these spray foam habitats are light weight, inflatable, durable, low-cost and quickly fabricated will make them a better alternative than current housing methods employed for inhospitable conditions such as alien landscapes, areas affected by natural disasters or remote areas lacking in building materials.

26. Spray Foams as Building Materials for Stray Animal Homes on Campus

Laura Prier '19, Karen Nieto '19, Ty Stubbs '19

Sponsor: Dr. Rebecca Edwards, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The group wanted to focus on something campus related for this project instead of going global. To understand some of the campus issues, we turned to the local newsletter. After further discussion we decided to focus on the stray animals that live on campus. We knew that Georgetown had a very uncommon pattern when it came to the weather. Some weeks would be extremely cold while the next would be extremely hot. These changes in the weather may seem easy for students to handle because we have air conditioning and heaters. Our group showed concern about all the stray cats, or even squirrels that lived among us. Neither of these plants provided enough shelter to protect them from every weather condition. Our solution is to use easily purchased materials like tape, spray foams, PVC pipe with the accompanying connectors, and painters' tarp to create shelters for the stray pets on campus. Eventually if our project is a success the group would like to mass produce these shelters as kits that anyone can purchase in stores either for the stray animals in their neighborhoods, or their own household pets that stay outside. The shelters would be affordable and require less building time and material than traditional outdoor pet shelters.

27. The Pen

Samuel Cox '19, Tyler Polasek '19, Amir Alzer '19, Aaron Robinson '19

Sponsor: Dr. Rebecca Edwards, Physics Department

10:00-12:00 pm – Main Lawn

"The Pen" An alternative use for catching bullpens that doesn't require the use of a catcher. The main purpose of this creation is to provide an alternative way of receiving the baseball so that there is no need for a catching partner. It provides an easier and simpler way for pitchers to work on their mechanics, pitches, pitching techniques without having to find someone to catch. Our methods were based on our previous and current baseball knowledge and experiences. The structure will be made out of wood and PVC pipe. The structure will be able to withstand the force of the baseball being thrown into the net due to stabilizers that will be connected to the frame with rubber ends to cause friction so the structure won't slide. The baseball will be thrown into the net and will funnel through a tube and be shot back to the pitcher standing 60ft 6in away. This can be accomplished by having rotating wheels connected to a small motor on the tube that will allow the ball to be shot back. There are no results that can be concluded at this moment.

28. Stay Alert, Arrive Early
Sophia Matar '19, Violeta Bueno '19
Sponsor: Dr. Rebecca Edwards, Physics Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

“The National Highway Traffic Safety Administration estimates that drowsy driving was responsible for 72,000 crashes, 44,000 injuries, and 800 deaths in 2013. However, these numbers are underestimated and up to 6,000 fatal crashes each year may be caused by drowsy driver.” Imagine you’re worn-out from working 12 hours, sleep deprived and had to drive half an hour to get home. You’d want to do anything to prevent yourself from falling asleep like listening to loud music, drinking coffee or perhaps making your steering wheel vibrate to keep you alert. We hope that this device will keep drivers alert and will prevent car accidents due to drowsiness. We’re making a steering wheel cover equipped with vibration motors that will vibrate at time intervals using an Arduino. We will place all the vibration motors throughout the inside of the steering wheel cover. We will then create a circuit with the Arduino and attach it to the vibration monitors using electrical wires to connect it to the inside of the steering wheel cover to make the motors vibrate at certain time intervals. The Arduino will be powered using a USB cable that can be connected to the USB output in a vehicle. When you start feeling drowsy you will be able to turn on the vibrating steering wheel cover to keep you awake. The vibrating steering wheel cover will vibrate enough to make a driver stay awake and alert while driving resulting in less accidents due to fatigue.

29. Universal Water Filtration
Austin Morrison '19, Mark Befeld '19, Elijah Velasquez '19, Haluki Nakayama '19
Sponsor: Dr. Rebecca Edwards, Physics Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Our goal is to provide a self-sustaining water filtration system that can function with the power of solar energy. Our motivation to create this design was to provide clean water for any third world country without sustainable clean water. By creating a means of universal fresh water, we hope it will lead to the minimization of water spread diseases. We chose the UV light to clean the water because it does not use any harmful chemicals. This method can clean the water by emitting a certain wavelength of UV light. This UV wavelength eliminates small micro-organism's. However, we need to have a pre-filter to separate small particles of dirt and debris which can obstruct the UV light passing through the water. Our anticipated result is that our UV water purifier will cleanse unsanitized water in removing a great margin of decontaminants.

30. Press here for Productivity: SU's Own Productivity App
Will Price '19, Noah Berlanga '19
Sponsor: Dr. Rebecca Edwards, Physics Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

I am an aspiring coder. It has been a hobby of mine off and on since I was eight. Now, computer science is my intended major. So when my Engineering class assigned me to apply for the Creative Works Symposium, I knew exactly what I wanted to create: a mobile app. I am relatively new to the world of mobile development, so it poses a nice challenge. My app idea is a relatively simple one; the main feature consists of a switch that enables or disables the phones access to social media. The potential benefit of this is to allow students a way to focus on their work without the constant urge to check on their twitter. Other features would be relatively standard, like a calendar and a planner. My partner, Noah, has an aesthetic eye and plans to do most of the graphic design for the app while I will write the majority of the code. Due to the time constraint posed by the looming symposium, we plan to only develop for the iPhone. Maybe in the future we might expand to other phones, but that is another story.

31. Envelope House Model
Victoria Gore '18, Julieanne Whitehurst '18
Sponsor: Lee Fellows, Chemistry and Biochemistry Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The concept of an envelope house focuses on creating an affordable and comfortable house that runs entirely on clean energy. This house design saves money and energy through its use of south-facing windows and circulation of air from the underground sub-floor into the house. During the winter, the south-facing windows allow natural heat to warm the house. The sun naturally warms up parts of the house and that air is then circulated, maintaining a much warmer temperature indoors. During the summer, the windows are shaded and the underground sub-floor becomes the house's source of ventilation. Since

it is underground, the sub-floor maintains a much lower average temperature than the house, and can therefore be used to cool the air inside the house. Both of these processes drastically decrease the amount of energy needed to maintain comfortable indoor temperatures, thereby saving the owner of the home lots of money over time. The model on display is an example of a common envelope house design.

32. Backpack Seat

Brenda Sanchez '19, Yuting Sun '19, Shenwei Liang

Sponsor: Dr. Rebecca Edwards, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

People often encounter uncomfortable seating in their everyday life events. Such events may be sitting on bleachers during a basketball game, or sitting on an old desk chair at school. Not only is uncomfortable seating, uncomfortable, but an unnecessary add-on of inconvenience to our already busy lives. We've proposed a solution to our uncomfortable seating problem that will make everyone's life more comfortable. It's simple and easy to carry around and provides comfort to your back while allowing you to continue your daily routines. This device is called a "Seat Backpack". Some of its benefits are: Easy to carry, travel with comfort, works on desk chairs, airplane seats, bleachers, practical, useful, not expensive, light, and waterproof.

33. Portable Phone Projector

Cory Schovanec '17, Mason McClellan '19, Jacob Buckley '17, Travis Malesky '19

Sponsor: Dr. Rebecca Edwards, Physics Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Have you ever wanted to have a better viewing experience on your phone? We want to create a portable device that can magnify and project the images from a phone. In order to do this, we want to use mirrors and lenses. We plan to use wood to make the device more portable by attaching latches to make it able to fold down. We also want to be able to project the image both forward and onto the ceiling by being able to change the angle of the mirrors. To ensure battery life of the device, we plan to integrate a charger into the base of the box where the phone will sit. In the end we hope to project a large image onto the wall with enough clarity to be able to tell what's going on. This project allows for better imaging for both personal and group experience. To start off we will use the iPhone 6 as a model.

34. Timeless Greed of Humans Increases Extinction Rate for Giant Clam Species, *Tridacna Gigas*

Kaitlyn Campbell '17

Sponsor: Dr. Romi Burks, Biology Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Mollusks play an important role in oceanic ecosystems and serve as excellent ecological indicators. For example, giant clams serve as regulators of harmful waste, and provide food and refuge for many species. Unfortunately, human interaction has significantly decreased giant clam populations through overfishing, habitat degradation, and aquarium and black market trade. I chose to focus on *Tridacna gigas*, the largest giant clam, which can grow up to 47 inches wide and weigh 440 pounds. They can be found off the shores of the Philippines and South China Sea in shallow, sun abundant areas and serve as a flagship species for the coral reefs they inhabit. The IUCN has listed *Tridacna gigas* as vulnerable and the loss of this species can lead to an immense decrease in biodiversity, as well as directly harm coral reefs, increasing their extinction rate. To draw attention to the devastating effects of our selfish acts, I constructed a giant clam, *Tridacna gigas*, to scale out of cardboard, paper-mache, and Ping-Pong balls. Between the clam's openings sits a clock with Ping-Pong balls glued to its rim. The Ping-Pong balls represent pearls and will have reasons how human interaction affects this species and statistics. The clock represents the little time this species has before extinction. Through this project I hope people will realize the current serious effects of our actions and actively choose to not engage in these harmful activities in the future.

35. The Extra Organ: The Human Microbiome

Madison Doty '17

Sponsor: Dr. Romi Burks, Biology Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The human microbiome, our personal ecosystem, grows and changes with us throughout our lives and provides necessary functions for our bodies. This microbial ecosystem can be seen as a bridge between our body and the environment, or as an

extra organ, that allows us to adapt to the rapid changes in environment around us. Bacteria in and on our body outnumber our human cells 10:1 and are highly diverse. The modern lifestyle, however, threatens the biodiversity of these microorganisms as well as the functions they provide. To illustrate the biodiversity of the human microbiome as well as the effects of the modern lifestyle, I have created an art piece of a human body with the two microbiomes depicted. The art piece consists of two sheets; a top clear film that can be flipped on and off of a bottom sheet of white poster. The white poster has an outline of the human body with a microbiome affected by modern lifestyle, while the clear sheet has a human body with a healthy microbiome. The human bodies are covered in colored dots that represent different families of bacteria and their relative abundance on the body. This piece allows viewers to see the abundance and diversity of a healthy microbiome, and then compare it to a microbiome affected by modern lifestyle by flipping the top sheet on and off. This piece shows the importance and value in conserving the biodiversity of the microorganisms in our own ecosystems.

36. Drowning in Oil

Mary-Kathryn Mitchell '17

Sponsor: Dr. Romi Burks, Biology Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Media and politics repeatedly ask why we need to care about climate change. Human modification of the Earth and the dependence on fossil fuels represents a driving force behind climate change and dictates that we, as the source of the problem, think of its effects and implications. Climate change is rapidly pushing many species towards extinction. This mixed medium art piece will combine some of the top causes of climate change with flagship and cryptic species who are affected by the changing climate. At the top of the piece, a container of oil will cascade down onto the top of the Earth. As the oil spills down, it will encounter different species trying to get away from the oil spill. At the very bottom, a human being will be watching in fear as the oil gets closer. The relative position suggests humans cannot rise above climate change and the inevitable extinction that will occur if current rates of change continue. This art piece will utilize different mediums such as paint, pastels, plastic, straws, and other everyday items to emphasize the impact of everyday life on ecosystems. The project will visually tell the story of the loss of biodiversity tied to daily existence in the midst of climate change. The project seeks to encourage people to think about how they impact the Earth as well as biodiversity every day.

37. Hold Your Breath: Coral Biodiversity Depends on Us

Alexandra Morris '17

Sponsor: Dr. Romi Burks, Biology Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Coral reefs support the most biodiverse ecosystems in the entire ocean and rival the biodiversity levels of most terrestrial ecosystems as well, earning them the name “rain forests of the seas”. Reefs not only provide homes to marine organisms but numerous ecosystem services such as food and medicine, economic benefits through tourism, and protective barriers to shorelines. Through their high levels of biodiversity, coral reefs offer these ecosystem services to humans, yet the ocean wide decline of coral reefs can only be linked to various human impacts. Coral reefs are dying and becoming bleached and uninhabitable as a result of threats from humans. To represent this harsh reality, media such as clay, colored paper, and other materials will be used to create a comparison between a coral ecosystem impacted by humans and a pristine one. This art piece will focus on the juxtaposition between healthy coral as it should be and dying coral under the impacts of human activities. Represented in a fishbowl, healthy and thriving coral will be supporting life and ecosystem services on one side while dying and bleached coral will be lifeless on the other side. The sharp contrast will be indicative of the real situation our oceans face and hopefully change the ways in which people view their impacts on biodiversity. If anthropogenic threats remain unaddressed, we will be left with despair and emptiness in the ocean where there should be a diverse array of life.

38. You've Got A Friend in Me: A Symbiotic Song

Claire Schumann '18, Greer Miller '18

Sponsor: Dr. Romi Burks, Biology Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Scientifically demonstrated to increase neuroplasticity, music possesses the ability to make connections in the world across a lifetime and holds much potential for engaging learners. For example, a familiar song with lyrics changed into an educational subject can beneficially engage the public about a little known subject. “You’ve got a friend in me”, featured in the movie Toy Story by Randy Newman consists of a catchy melody that most people know. Using this song, we created a learning tool that will facilitate awareness about a little known symbiotic relationship between mycorrhizal fungi and plants. Mycorrhizal fungi

share relationships with 80% to 90% of vascular plants throughout the world. The fungi colonize the root system of a host plant and assist in absorption of essential nutrients, specifically phosphorus and nitrogen. Previously, the relationship between mycorrhizal fungi and plant roots remained unclear due to lack of research on energy and nutrient cycles. Deficit in awareness regarding mycorrhizae can be solved in a creative way through the song. The song creates a connection in listeners' minds that remind them of mycorrhizal function every time they look at a plant or see a visual cue. "When the plants need nutrients, I will cycle P and N to help you grow strong, Oh you- just remember what we said, Boy, mycorrhizal fungi" Lyrics will feature the symbiotic relationship and its importance in supporting biodiversity and plant life.

39. Pirates for Pride Presents: LGBTQ+ Narratives on Campus
Chelsea Allen '16, Jordan Curtis '16, Samuel LeCompte '16
Sponsor: Jamar Keaton, Office of Admissions
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Pirates for Pride, the LGBTQ+ advocacy group at Southwestern University, will present a thought-provoking short video to help give voices to and raise awareness for the LGBTQ+ students on campus. LGBTQ+ students struggle with a unique set of challenges in a university environment. According to the National Gay and Lesbian Task Force (NGLTF), 20% of college students fear for their physical safety due to their gender identity or their perceived sexual orientation, and 29% of students did not feel that their curriculum adequately represents contributions of LGBT individuals. The Policy Institute of the National Gay and Lesbian Task Force stated that 36% of GLBT undergraduate students who responded to their Campus Climate Assessment survey have experienced harassment within the past year. These few statistics give an idea of the sobering realities LGBTQ+ students experience daily, and further outlines the need for a medium through which they can speak. This video will address those challenges, outline specific narratives and stories directly from students about their personal challenges, and ultimately introduce a dialogue and platform for these minority students to express themselves. A short Q&A will be held after the showing with the directors.

40. The Manipulation of Masculinity in the Spanish Golden Age Through the Myth of Don Juan
Kenedi Delgado '17
Sponsor: Dr. Sergio Costola, Theatre Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

I will be conducting research on the topic of Masculinity in the Golden Age. I will explore not only the obvious evolution of masculinity, but the manipulation of it by the Spanish Inquisition and higher institutions. Once I have gathered research and primary sources, I will explain how these findings are accurately depicted and used in the myth of Don Juan both back then and today. In the creation of an Omeka Exhibit, I will have a breakdown of three collections. One being the historical definition of masculinity at the beginning of the Spanish Golden Age and how the problematic behavior was condemned by the Spanish Inquisition and higher powers. My second Collection will deal with the new idea of masculinity that the institutions were inventing and promoting for the better of society. My third collection will then be of how the "Tirso de Molino" Don Juan myth, from that time, is a prime example of a medium in which the government was trying to change male behavior at the time. It also serves as an accurate representation of both the old and new idea of masculinity at the time for us today. Each collection will be comprised of primary sources related to the topic. Some of the primary sources may be plays, manuscripts, paintings, or poems, etc. to exemplify all of these ideas that I just described.

41. The Fantasticks
Brandy Giordano '17
Sponsor: Kerry Bechtel, Theatre Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Costume design is the theory and practice of creating a concept for the clothing a character will wear in a production. Clothing can communicate age, race, social status, personality, and gender. A costume designer conducts research on the time period and style of a play, and then creates renderings or blue prints of the clothing that the performers will wear in the production. The director of *The Fantasticks* presented the production team with a traveling Mexican tent show that toured around Texas in the early 20th century. As the costume designer I researched these tent shows, specifically La Carpa Garcia, and compiled visual research and ideas for each of the characters, then sketched my designs. I created a color palette and rendered the drawings in watercolor. My results of this process included an extensive analysis of a specific style musical theatre piece, research on Mexican tent shows and mid-century American clothing styles, nine watercolor renderings, and a fully produced set of costumes that were featured in the Jesse H. and Mary Gibbs and Jones Theater. This work has helped to further my

interest in costume design. It was the first production that I designed alone and it taught me how to collaborate and further my skills by working closely with my faculty mentors and peers. This knowledge will assist me in future internships, as well as professional goals.

42. Lighting in the Round
Katherine Hazzard '17
Sponsor: John Ore, Theatre Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The musical *The Fantasticks* was written for a proscenium stage; however, Southwestern University produced it in the round. This created challenges not only for the director and actors, but also for the designers. As the lighting designer, my challenge was to insure that every member of the audience had an equally compelling view of the scenes. To achieve this, I used a five-point area lighting system, combining cold light from above, warm light from two sides, and a subtractive color-mixing light from the other two sides. I also used a four-point follow spot system to ensure that actors were seen in spotlights from all angles without casting shadows into the audience. These lighting systems successfully lit the production in a way that allowed all audience members to have an equal view of the show. This technique can be adjusted and applied not only for musicals in the round, but also for any play performed in such a space.

43. We Can't Breathe: Police Brutality in the United States
Danyale Kellogg '19
Sponsor: Dr. David Gaines, English Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

In the first twenty-four days of 2015, police in the United States killed more people than their counterparts in the United Kingdom did in twenty-four years, with a staggering fifty-nine confirmed deaths in less than a month to just fifty-five in nearly a quarter of a century. By the end of 2015, police in this country killed one thousand one hundred and forty people, a disproportionate amount of which were African American men. As of February 7, 2016, a total of ninety-two people had been killed by U.S. police officers, The Guardian's police brutality accountability project, The Counted, notes. This is the public safety crisis of our time. The question is, how did this crisis develop, and how do we fix it? This exhibit examines statistical data of police acts of violence both in the U.S. and abroad, as well as in previous decades. It also compares the training techniques of police departments around the world, juxtaposes public opinion of police in various countries, and highlights the suggestions of systemic racism and classicism amongst police departments in the U.S. as suggested by data collected in the last decade. Finally, it offers some suggestions on how this can be rectified by addressing the need for a complete overhaul of the United States correctional system.

44. Dead Man Walking: A Dramaturgical Perspective on Prejean and Robbin's Theatre Project for Social Justice
Alejandra Navarro '16
Sponsor: Dr. Sergio Costola, Theatre Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The *Dead Man Walking* Theatre Project is a social justice theatre project created by Sister Helen Prejean, author of the non-fiction book *Dead Man Walking*, and Tim Robbins, director of the Academy Award winning film *Dead Man Walking*. The stage version of *Dead Man Walking* relies on theatrical techniques as a way to create a dialogue about the ethical issues surrounding the death penalty. The writers intentionally limit the rights to produce the play to educational institutions in an effort to facilitate a dialogue and maintain the integrity of the message. My presentation will focus on: Sister Helen Prejean and her work, the use of epic theatre techniques to highlight social issues, the death penalty in the United States, states' uses of the death penalty throughout history, and the death penalty from a global perspective. This research aims to provide visual and textual information and guidance to the play's production team and their audiences in order to generate further discussion.

45. The Aliens
Alejandra Navarro '16, Olivia Woodward '16, Emily Scott '19, Kolton Noreen '18, Noah Kopit '16, Eric Oden '16, Brenna Nelson '17, Kathrine Hazzard '17, Avery Rogers '16, Brandy Giordano '17
Sponsor: Dr. Paul Gaffney, Theatre Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The Aliens by Annie Baker is the Obie-winning play about the origins of an unlikely friendship between three “geniuses” outside of a Vermont coffee shop. Her plays offer insight into the dilemmas of the millennial generation and delicate observations of our most human interactions. When approaching the play selection process, I asked myself the questions: why here and why now? Why perform this play in the spring of 2016 at Southwestern University? *The Aliens* dives into themes such as the ability for certain people to be able to completely alter the trajectory our lives and what it means to come to success in your own terms: two profound truths of the university experience. Our performance’s design theme was driven by the concept of decay and how damage can lead us to something uniquely beautiful. *The Aliens* is a pinnacle marker of the theatre’s return to the Chekhovian style of realism. While much theatre today draws us further away from reality, *The Aliens* goes closer to our truest selves.

46. Connecting Students with Southwestern’s Special Collections Through Collaborative Digital Exhibits
 Michaela Garcia, Marissa Irvin, Bernice Leonard, Katherine Morris, Katherine Rynearson,
 Sponsor: Dr. Charlotte Nunes, Information Services - Research/Digital, Dr. Jethro Hernandez Berrones, History Department,
 Jason Dean, Director of Special Collections
 10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

We propose an exhibition showcasing student contributions to the Southwestern Special Collections online exhibit using the digital platform Omeka. This semester, the Digital Texas Heritage Resource Center will feature two exhibits created by SU classes: one by Charlotte Nunes’ English class “Digital Frontiers in American Literature,” and one by Jethro Hernández Berrones’ History class “Popularizing Science: Topics in the History of Science, Technology, and Medicine.” With support from Jason W. Dean of Special Collections, students in both classes contributed to online class exhibits in order to: practice archival description and analysis as a mode of engagement with primary sources; practice primary source analysis as a way to connect with course themes and topics; and enhance the visibility of and improve access to SU Special Collections. Students in Nunes’ course are taking advantage of SU Special Collections’ vast Texas history holdings to create an exhibit that connects with their study of early to contemporary American authors that engage with notions of the frontier. Students in Hernandez Berrones’ class use several documents held in the Claude Clarr Cody Collection related to the first dean of the university’s visits to the Battle Creek Sanitarium in Michigan during the summer of 1914. By reading, analyzing, and explaining primary sources to a non-specialist audience through emerging digital tools in history, students engage in the popularization of medical history, explaining in turn the diversity of means to popularize medicine in the past. Our exhibition will feature several student presenters who will showcase their contributions to the Digital Texas Heritage Resource Center.

47. Latin II
 Matthew Prindle ‘18, Michael Brcyla, Nour Hussein, Conrad Littlefield, Joan Milburn, Claire Sellander, Chandler Smith,
 Leigh Weinberg
 Sponsor: Dr. Hal Haskell, Classics Program
 10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

As a class, we will be presenting a PowerPoint slideshow which focuses on different aspects of how the Latin language has influenced thought and culture in recent and historical memory. We will explore its relationship, as a language, to human anatomy, athletics, stars and constellations, theater performance, biology and medical terminology, and popular fiction. Also included will be components concerning the preservation of the Latin language through performance, and exploring Plato’s criticisms of art.

48. Cup of Gold: Designing and Developing a Virtual Reality Learning Space
 Dr. Andrew Rechnitz, Information Services – Research/Digital
 10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

In August of 2015, the Smith Library Center at Southwestern University launched “Cup of Gold,” a web-based, virtual-reality game designed to teach basic information literacy skills and to introduce incoming students to the scale of academic libraries. The exigency for creating this game came directly from our own university librarians, who stressed that incoming students are often unaware of the full range of materials and services academic libraries offer. This exhibition will include a full demonstration of “Cup of Gold,” as well as the opportunity for audience members to play the game. In addition to the demonstration, I will present a summary of user data that was collected while the game was being played, highlight some of the key design elements that define the game as a transformative learning space, and explain how these elements were incorporated into the development process.

49. Storyboards for Conversation in Hispanic Film
Dr. Laura Senio Blair, Brandon Baccam, Joanna Mendez, Dominique Pryor, Lizette Cantu, Marie Nugpo, Salma Segebre, Sarah Butterworth, Valerie De la Garza, Kathy Hernandez
Sponsor: Dr. Laura Senio Blair, Modern Languages and Literatures Department (Spanish)
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

This creative presentation showcases the crossroads between computing and the humanities. Using the program "Storyboard That," students in Conversation Through Hispanic Cinema analyzed the Film "Bajo la misma luna" by Patricia Riggen (Mexico 2007). Digital storyboarding re-enforces how digital literacies can complement studies in the humanities. Digital storytelling also re-enforces foreign language acquisition. Funds for this project have been supplied by a grant from the Department of Research and Digital Scholarship at the Smith Library Center.

50. Storyboards for Maria Llena Eres de Garcia
Dr. Laura Senio Blair, Deidra McCall, Kylie Hunt, Landon Carter, Oscar Dominquez, Sam Eichner, Valentin Cantu
Sponsor: Dr. Laura Senio Blair, Modern Languages and Literatures Department (Spanish)
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

This creative presentation showcases the crossroads between computing and the humanities. Using the program "Storyboard That," students in Conversation Through Hispanic Cinema analyzed the Film "María llena eres de gracia (US/ Colombia 2004). Digital storyboarding re-enforces how digital literacies can complement studies in the humanities. Digital storytelling also re-enforces foreign language acquisition. Funds for this project have been supplied by a grant from the Department of Research and Digital Scholarship at the Smith Library Center.

51. Jquan
Angelina Palacios '19
Sponsor: Mary Visser, Art and Art History Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The primary inspiration for this piece is based upon the idea of "aiding". As I thought about what to express in my sculptural form, I looked at major events in my life. One of my most important memories about 5 years ago, was when my brother came to my aid and helped me overcome a tough obstacle. I wanted to design a form that symbolized this event. As I looked for one way to make this image come to life, I was inspired by an exercise that is based on the idea of aiding members across a ten foot tall wall. Although the meaning of this work is dependent on the viewers' observations, the relationship between each form and the way in which they are assembled simulates the tactic of aiding or collaboration. I drew both the concept and my design from visualizing this exercise. I titled the work Jquan as the name has an emotional connection to my brother who aided me at this point in my life. Every single aspect of this sculpture relates back to my life as a 14 year old and the struggles I encountered during that period. This event and my brother's aid have shaped me into the person I am today. I designed this sculpture to help others acknowledge that aiding one another is vital to living. Certain aspects of our lives requires us to place others before our own ambitions.

52. "Arbor - A Study In Wood"
Julia O'Bryan '19
Sponsor: Mary Visser, Art and Art History Department
10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

In post modernism the sculptor attempts to go beyond modernism by analyzing the "grand narrative" in order to explore contemporary issues within their social and political context. Using this sculptural method, I explored this facet in my sculptural work "Arbor- a study in wood". Arbor is not only about the analysis of the concept of a tree with its complex meanings in today's world, but it is also about the irony in using the material that trees supply to create this sculptural work. In abstracting this concept I also made the fruit of the tree in wood thus implying that the entire form of the tree is for the consumption of human beings. The concept and inspiration for "Arbor" came from my best friends grandmother's apple trees. The extending branches above a tapered "trunk" along with the hanging "fruit" are strong indicators of the context for this piece. The use of wood in the construction of this piece creates a sense of irony in that living trees were destroyed to create the non-living sculptural form of a tree. Or in other words the wood itself is the fruit of the tree since the apples below are

cubes of wood. “ And this our life, exempt from public haunt, finds tongues in trees, books in the running brooks, sermons in stones, and good in everything” William Shakespeare.

53. Strength in Ideas

Zoe Watts '19

Sponsor: Mary Visser, Art and Art History Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

The work is titled “Mountain.” The negative space between the top two forms is meant to be an abstraction of the silhouette of a mountain, with the hard angles mirroring the jagged edges of stone. The purpose is to convey the fragile nature of man-made objects and ideas. I intended for the two suspended sides to represent a relationship between balance and imbalance. Mountains are strong and immovable. The material I used, wood, is associated with strength and stability in nature, but man-made objects made of wood always seem to have a limited life-span. While destruction occurs in nature, nature always finds a way to rebuild, whereas humans have a harder time reconstructing something after it is destroyed. I think we’re always trying to find answers to problems using the least-logical way possible and it’s always resulted in complications. In the piece, by trying to create something strong, I’ve used and repurposed something that’s already strong to begin with, and made it less steady and more unbalanced.

54. Burned Bridge

Marissa Shipp '19

Sponsor: Mary Visser, Art and Art History Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

I started my design with the concept of creating an ordered dynamic form that would lead the viewer on a path into the space it occupies. Since sculpture is about the manipulation of spatial relationships, I began to think about other types of relationships. I kept remembering my relationship with my best friend that I ruined, and I realized that the chaotic structure I was designing represented that destruction in a very real way. Each step along what appeared to once be a bridge to somewhere I had increased the destructive effects. Even though I began this work with the idea of two forces against each other, I didn’t realize how much of my personal feelings were coming through my artwork. It wasn’t until I had completed the work and discussed its effect with others that I realized I was expressing my own life choices that that bothered me. Not just ruining several relationships with people close to me, but also other bad choices with consequences that had created a true path of destruction in my own life. Once I could see I had manifested them, I understood how I had used art to confront my own feelings about my destructive choices. The result of my piece expresses personal haunting and traumatic memories, negative emotions, and unyielding frustrations. It is characterized as being chaotic, intense, and indicative of pain and destruction, yet fragile and broken. It stands as a warning to others, as to what one thoughtless act can do.

55. The Presence of Pachamama in Latin American Art

Elizabeth Wright '18, Karen Nieto '19, Melanie Aing, Elyse Donoghue, Bobby Garza, Amanda Gomez, Conner Joyce, Nalehya Singleton, Jack Stark, Terra Stefaniak, Armando Vidana, Marta Zuzeviciute, Josh Brennan, Miriam Hinojosa, Margaret Rowand

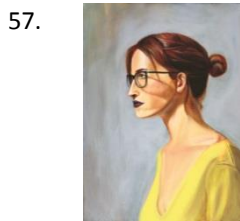
Sponsor: Dr. Patrick Hajovsky, Art and Art History Department

10:00-12:00 pm – Alma Thomas Fine Arts Center, Alma Thomas Lobby and Jones Theater Lobby

Latin American art historians primarily analyze the cultural and social traditions that appear throughout Mesoamerican, Central American, and South American art. During their studies, art historians pay close attention to common themes and artistic qualities, typically hierarchal and gendered structures. Due to a lack of archaeological context, many historians cannot accurately interpret the intentions of the original Latin American artists. In doing so, they tend to miss cross-cultural unifying factors like Pachamama, a Latin American version of Mother Earth. This project will examine how elements of Pachamama, such as heaven and earth, connect to common Latin American artistic themes and qualities. By using the online Omeka exhibit, individual students will show how Pachamama is represented in various Latin American textiles, ceramics, and metalworks. Each student will examine a specific piece of artwork in order to examine the context of Pachamama within Latin American art and reveal connections between Mesoamerican, Central American, and South American cultures.

56. Back to Your Roots: The Soul as Communicated Through Dance
 India West '16, Brandon Baker '16
 Sponsor: Judyth Thompson-Price, Theatre Department
 3:30-3:45 pm – McCombs Campus Center, Bishops Lounge

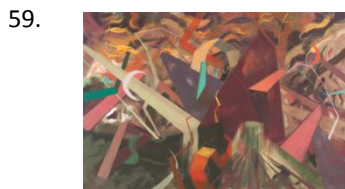
As long time dancers with backgrounds that incorporate a variety of mediums of movement, Brandon and I wanted to explore deeper into the movement that comes from human emotion of everyday life. I think that as a society we have lost touched with the idea that dance is a form of art, with shows like "So You Think You Can Dance" and "Dance Moms" dance has become a platform for competition. In this performance we decided to go back to the roots of dance as an expression of the self, and through a blend of modern dance and lyrical dance we will portray a moving piece of art. Modern and lyrical dance are driven by emotions and the embrace of individual ideas, thoughts and feelings, relying on the natural movement of the human body and the raw experience of life. The piece that Brandon and I will be performing is to the lyrical poetry of the hip-hop group from Austin, Magna Carda, a group that is known to "tell it how it is." We will be using the song "The Root" which is a jazzy blend of R&B, hip-hop and powerful lyricism about "where we come from". The dance intertwines itself with the modern beat, producing dynamic and even static movements, and the connection and conflict of two individual lives through the natural flow and expression of the body.



- Self Involved*
 Oil on Panel, 25 ½" x 18 ½"
 Ellen Hinds '16
 Sponsor: Victoria Star Varner, Art and Art History Department
 10:00-12:00 pm Alma Thomas Fine Arts Center, Across Fine Arts Court Yard



- Veiled*
 Oil on Canvas, 30" x 48 ½"
 Kelsey Baker '16
 Sponsor: Victoria Star Varner, Art and Art History Department
 10:00-12:00 pm Alma Thomas Fine Arts Center, Across Fine Arts Court Yard



- Supposed Structure*
 Oil on Canvas, 48" x 76"
 Forrest Aderholt '16
 Sponsor: Victoria Star Varner, Art and Art History Department
 10:00-12:00 pm Alma Thomas Fine Arts Center, Across Fine Arts Court Yard



- Guts*
 Acrylic on Canvas, 48 ¼" x 48 ¼"
 Alyssa Lester '16
 Sponsor: Victoria Star Varner, Art and Art History Department
 10:00-12:00 pm Alma Thomas Fine Arts Center, Across Fine Arts Court Yard

ORAL PRESENTATION abstracts

61. Returns of Portfolio Strategies Across Market Conditions
Benjamin Gil '17
Sponsor: Dr. Dirk Early, Economics and Business Department
1:15 pm - A. Frank Smith, Jr. Library Center, Prothro Room

This paper examines different portfolio strategies in differing market periods. It is widely believed and repeatedly stated: “no one can beat the market in the long run”, but there are still many individual investors and mutual fund managers who actively try to time and outperform the overall market. The surrounding literature is extensive, but inconclusive. A staggering number of investment strategies have been employed, but few have produced consistently abnormal returns, and even fewer have done so over any extended period time. Various “actively managed” portfolios will be compared to a buy and hold strategy as well as against several market indexes (NASDAQ, DJI, S&P 500). The time between 2000 and 2013 is divided into four periods: two 2-year market crashes, and two 4-year market recoveries. This study hopes to add to the evidence that actively managing an equity portfolio will underperform the market in various market conditions.

62. The Effect of a Major Depressive Episode on Employment Outcomes
Deisy Gonzalez '16
Sponsor: Dr. Dirk Early, Economics and Business Department
1:30 pm - A. Frank Smith, Jr. Library Center, Prothro Room

Major Depressive Disorder (MDD) is one of the most commonly diagnosed mental disorders amongst working Americans, and is often accompanied by negative employment consequences for those individuals. Thus, the objective of this study is to explore the causal relationship between a major depressive episode (MDE), which often leads to the onset of MDD, and an individual's current employment situation. Individual-level data ($n = 37,044$) from the 2013 National Survey on Drug Use and Health is used to analyze this relationship. It is hypothesized that experiencing a MDE within the past year will significantly affect an individual's employment outcome months after that event. Therefore, individuals who experienced a MDE within the past year should be more likely to have negative employment outcomes, such as working part-time or being unemployed, when compared to individuals who did not experience an MDE within the past year. To test this hypothesis, an ordered probit regression is used to estimate whether a previous MDE alters the current employment situation of working-aged adults. Where the current employment situation can fall under one of four categories: worked full-time during the past week; worked part-time during the past week; working/volunteering but did not work during the past week; and unemployed/on layoff but looking for work.

63. The Probability of Home Purchase Before, During, and After a Crisis
Kristen Jones '16
Sponsor: Dr. Dirk Early, Economics and Business Department
1:45 pm - A. Frank Smith, Jr. Library Center, Prothro Room

Consumer behavior has recently become a more popular field in economics because of its unique insights into how market conditions are perceived by an individual and for its ability to predict how consumers will behave based on those perceptions. This paper examines how consumers behave before, after, and during a recession towards the housing market. Some of the literature suggests that there is a lagged behavioral effect that continues on for a period of time after a shock to the economy and to housing markets. More specifically, the lagged behavioral effect would show a perception or attitude that lasts for a short time after a recession. The data was collected for the years 2004, 2008, and 2012 from the University of Michigan Survey Research Center and their Economic Behavior Program. This paper employs a logit model where the dependent variable is an individual's perception of the housing market. The independent variable includes many individual characteristics, preferences, and market perceptions.

64. Behavioral Risk Preferences: Does Natural Disaster Experience Matter?
Manyum Liu '17
Sponsor: Dr. Dirk Early, Economics and Business Department
2:00 pm - A. Frank Smith, Jr. Library Center, Prothro Room

As the climate changes, the frequency of natural disasters has increased. From 2000 to 2015, the aggregated global economic loss caused by natural disasters was approximately \$2749 billion. An increase in the frequency of natural disasters can alter individuals' behavioral risk preferences by influencing a vast array of important life decisions, such as individuals' financial investments, education choices, and levels of consumption. These changes in risk preferences might have a significant impact on the economy in places where natural disasters are more likely to occur. This is especially true if as individuals become more risk averse, they tend to avoid risky investment and consumption, slowing the growth of certain businesses. This paper examines whether natural disaster experiences contribute to individuals' behavioral risk preferences reflected in risky asset investment and life insurance coverage. The data is gathered from the U.S. Health and Retirement Study (HRS) of 2012. By using two regression equations that control for, among other things, gender, wealth, age, marriage and natural disaster as the variable of interest, the findings suggest that holding all other variables constant, individuals with natural experience tend to be less likely to take on risky investment and to purchase life insurance coverage. However, both of the effects are statistically insignificant, hence natural disaster experience does not seem to have a significant impact on individuals' behavioral risk preferences.

65. The Effect of Food Accessibility on Obesity Prevalence

Andy Martinec '16

Sponsor: Dr. Dirk Early, Economics and Business Department

2:15 pm - A. Frank Smith, Jr. Library Center, Prothro Room

This paper attempts to uncover the effect of food accessibility on the prevalence of obesity across the United States. While there are many factors that contribute to obesity, there is no question that the US has a larger abundance of food than any other country in the world, in terms of quantity and hours of accessibility. Furthermore, the US has high rates of obesity and obesity-related complications that are often a result of overeating. The literature that exists on the topic has yet to come to a consensus on whether food accessibility has a substantial effect on obesity prevalence. The goal of this paper is to quantify the effect of food accessibility on obesity prevalence and to see how large of an effect it has relative to other independent variables. By controlling for "Access" factors and "Household" factors using cross-sectional data at the county-level, this study will make evident the importance of implementing policy measures to mitigate obesity-related risk. The "Access" factors represent locational data in regard to businesses that offer food accessibility while the "Household" factors represent data such as median annual income and smoking rates.

66. When Should We Build? A Study of the Determinants of Capital Investment in Post-Bubble Japan

Akhil Rao '16

Sponsor: Dr. Dirk Early, Economics and Business Department

2:30 pm - A. Frank Smith, Jr. Library Center, Prothro Room

This paper explores the determinants of capital investment in Japan after the collapse of its economic bubble. Continued capital investment is important as capital, along with labor and total factor productivity, are considered to be the determinants of economic growth. By better understanding what determines capital investment, countries may be better able to implement policies that promote G.D.P growth. A first differences model (difference in the variables in adjacent periods) is used to estimate the key determinants of capital investment from the following independent variables: inflation, change in 10 year govt. bond yields, change in unemployment rate, change in the spot price of Dollars to Yen and the change in exports from one quarter to another. Only inflation and unemployment were found to be statistically significant. Further improvements to this paper will include alternative modeling strategies to better fit the data and additional proxy variables to account for quantitative, which has become a staple of Japanese monetary policy.

67. Racial Segregation: An Econometric Perspective

Lorena Roque '17

Sponsor: Dr. Dirk Early, Economics and Business Department

2:45 pm - A. Frank Smith, Jr. Library Center, Prothro Room

This study aims to address the issue of racial segregation and displacement as a result of increasing wealth in U.S cities. This paper uses regression analysis by focusing on the relationship between income in Core-Based Statistical Areas and racial segregation between non-Hispanic Whites and Blacks in the U.S. This cross-sectional study uses 2010 Census Data to produce a measure of Racial Segregation and estimates the relationship between segregation and income, rent, education, wealth accumulation, vacancy rate, unemployment and poverty rate. The results suggest that urban renewal, which increases incomes in the metro course, increases the level of racial segregation.

68. The Effect of Firearm Prevalence and Restrictions on Suicide
Christian Scott '16
Sponsor: Dr. Dirk Early, Economics and Business Department
3:00 pm - A. Frank Smith, Jr. Library Center, Prothro Room

In 2012, sixty percent of firearm related deaths in the United States were suicides. Moreover, sixty-four percent of all suicides are committed using a gun. Therefore, while firearm distribution, availability, restrictions is consistently analyzed for its relation to crime and homicides, it is less often used in the literature on suicides. Researchers have primarily focused on the number of firearms per capita. Nevertheless, other gun control policies, such as safe storage laws, should also have an effect on suicides by firearm. Thus, this study seeks to unify a scattered debate of the impact firearms have on suicides. By utilizing the most recent consensus on the macroeconomic variables that determine suicide, as well as employing the use of panel data to control for fixed and temporal effects, this work isolates the effect firearm prevalence and restrictions has not only on suicides by firearms, but also the overall suicide rate. In doing so, the results will contribute to the discussion surrounding the existence of a substitution effect between firearms and suicides; restricting and reducing firearms may only cause alternative methods of suicides to be used.

69. Do State Mandated Vehicle Inspections Keep Drivers Safe? An Econometric Analysis
Dante Sims '16
Sponsor: Dr. Dirk Early, Economics and Business Department
3:15 pm - A. Frank Smith, Jr. Library Center, Prothro Room

Recently, the Texas Senate Transportation Committee met to discuss the possibility of discontinuing the state's inspection mandate. This study seeks to answer, all things being equal, if there is a difference in roadway safety between states that require inspections and those that do not. Furthermore, if a difference does exist, are the costs of a mandate program justified by the benefits? Proponents of dismantling the program point to the fact that vehicles are becoming safer with advanced technology and federal safety standards aimed at manufacturers. Defenders of the program argue that inspections keep risky vehicles off of the road thus preventing the social costs associated with roadway accidents. There are numerous studies that attempt to quantify the effectiveness of state inspections ability to promote highway safety. The combined results are mostly inconclusive with some studies showing results that inspection programs are cost effective, while others argue that funds could be better spent elsewhere. This study uses state-level cross-sectional data to obtain an OLS regression estimate of the effect of vehicle inspections on roadway safety. Data on vehicular fatalities and injuries are the measure of roadway safety and was extracted from the Fatality Analysis Reporting System (FARS) hosted by the National Highway Traffic Safety Administration (NHTSA). The independent variable of interest indicates a state's participation in a mandatory inspection program. Other explanatory variables are state specific and include: demographic profiles of licensed drivers, traffic policies, and characteristics of traveling trends.

70. What Aspects of Free Trade Have Worsened Within Country Income Inequality? - Panel Data Analysis After the Establishment of World Trade Organization (WTO)
Ellie Lee '18
Sponsor: Dr. Dirk Early, Economics and Business Department
3:30 pm - A. Frank Smith, Jr. Library Center, Prothro Room

The main goal of this study is to measure the effect of free trade on income inequality within countries. There have been lots of studies conducted to prove the relationship, and many of them pointed out the increased wage difference between the skilled and unskilled labor force due to free trade as the main cause of inequality. However, income inequality can be affected by not only by individuals' productivity, but also by structural causes, such as sector changes in industries, expansion of financial market, or even increase on trade dependency on one's economy. Therefore, one of the specific results that this study expects is that the fragility and sensitivity of one's economy toward the global market is the key factor of income inequality. World Development Indicator dataset from World Bank, which measures the magnitude of trade flow, and World Income Inequality Database from United Nations University, which contains the GINI Coefficient of various countries, used for an OLS panel data regression model. The main dependent variable is GINI Coefficients which indicate the degree of comprehensive inequality, and trade magnitude, the number of treaties that the country has, tariff rate, import duty were adopted as the main explanatory variables. In addition to the model, control variables, which indicating the information about the nations, such as population, unemployment, the degree of developments are also included to specify the effect of free trade.

71. Money on Our Minds: An Analysis of State-Level Household Income and Prevalence of Mental Illness
Egan Cornachione '16
Sponsor: Dr. Katherine Grooms, Economics and Business Department
3:45 pm - A. Frank Smith, Jr. Library Center, Prothro Room

This paper examines the relationship between income and mental health. Much of the economics literature has looked at the effect of income on life satisfaction and happiness, and mostly at the individual level. Mental health is one of the largest determinants of happiness in individuals, yet far less research has been done on the effect of income on mental health. This paper contributes to the literature on the topic by studying the relationship at the state-level in the United States. I run a panel regression using fixed effects with data from the Behavioral Risk Factor Surveillance System (BRFSS) from 2003-2013 to estimate the effect of income on mental health, controlling for states' population, government spending on health and public welfare, unemployment rates, and poverty rates. Gross Domestic Product (GDP) and Per Capita Household Income are used as the main independent variables of interest in separate regressions. Mental health is measured as the average number of days reported by states' citizens in the past thirty days at the time of the survey with "poor mental health." I find that increases in GDP or Per Capita Household Income lead to slight reductions in mental illness. The results contribute a better understanding of the mechanisms through which income affects happiness, and can be used to help the government set policy goals, priorities, and targets.

72. Synthesis of a Novel Hydrazone Thiophene Ligand
Arie Angeledes '16
Sponsor: Dr. Willis Weigand, Chemistry and Biochemistry Department
1:15 pm – Olin 207

Copper organometallic complexes are known for their anti-bacterial properties. Additionally, hydrazones have shown biological activity as anti-tumor, anti-viral and anti-bacterial agents along with other applications. Recent research involving water-soluble hydrazone thiophene ligands outlines the ability of ligands to increase the solubility of metal complexes. A new ligand, (E)-4-(2-(thiophen-2-ylmethylene)hydrazino) benzoate has been synthesized from 4-hydrazino benzoic acid and 2-thiophene carboxaldehyde and has been characterized by ¹H NMR, IR, melting point, and elemental analysis. Ortho and para positions of the ligand were worked upon and modified but the ortho position research was discontinued due to the inability to synthesize the product. Additionally, preliminary results of bacterial testing with this ligand on *Staphylococcus aureus* and *E. coli* are shown. Different modifications to the ligand were also tested in an attempt to increase the water solubility of the ligand. X-ray diffraction studies will begin when x-ray quality crystals have been formed.

73. The Synthesis and Analysis of Two Small Cathelicidin Derivatives
Will Cates '16
Sponsor: Dr. Kerry Bruns, Chemistry and Biochemistry Department
1:30 pm – Olin 207

Cathelicidins are a naturally occurring peptides that were first discovered in neutrophils. These peptides are characteristically amphipathic, cationic, and less than 100 amino acids in length. Since their discovery, research has shown some peptides to have anti-viral, anti-cancer, anti-bacterial, and anti-fungal activities. In our study, we attempted to synthesize two small cathelicidin derivatives. Peptide 1 (Valeryl-W-W-V-X(4-pentenyl alanine)-A-N-A-X(4-pentenyl alanine)-S-R-R-amide) was synthesized to be tested for antibacterial activity and Peptide 2 (F-K-S-R-R-W-Q-R-L-amide) was synthesized to be tested for anticancer activity. We used high performance liquid chromatography (HPLC), MALDI-TOF mass spectrometry and inhibition of growth experiments to purify, analyze and assess the activity of our peptides. Qualitative analysis was conducted using the Kaiser test, which monitored the success of each deprotection and coupling step. The Kaiser tests for the synthesis of Peptide 1 indicated that there were many complications with the coupling and deprotection steps. After purifying the peptide using HPLC, the peptide was analyzed using MALDI-TOF mass spectrometry. The results from mass spectral analysis indicated that we did not synthesize Peptide 1. We suspected that the resin used for the synthesis of Peptide 1 was expired. New resin was purchased and used for the synthesis of Peptide 2. Qualitative analysis indicated that the second synthesis was successful. We have yet to purify and analyze Peptide 2.

74. Green Chemistry Dendrimers
Anthony Dapoz '16
Sponsor: Dr. Willis Weigand, Chemistry and Biochemistry Department
1:45 pm – Olin 207

The continued success of dendrimers in applications ranging from medicine to Nano engineering imposes a challenge to develop practical syntheses of these highly branched macromolecules. Dendrimer synthesis using green chemistry while being focused on highly efficient and regioselective reactions is integrated in “click” chemistry and more specifically “thiol-ene click” chemistry. In this research dendrimers were prepared via divergent growth method using a combination of “thiol-ene click” chemistry and esterification reactions. The thiol-ene reactions were conducted solvent-free at room temperature in the presence of O₂ by irradiating with UV light. Dendrimers up to the fourth generation utilizing “click” chemistry have been successfully prepared, and characterized using Infrared Spectroscopy (IR), and Nuclear Magnetic Resonance (1H NMR) techniques. Conducting the thiol-ene reactions in the absence of solvent under green chemistry conditions allows for an environmentally friendly process to be developed, and demonstrate the potential of thiol-ene chemistry as a versatile synthetic tool for the fabrication of well-defined functional macromolecules.

75. Southwestern Ecolab
Nicolas Espino '16, Dakota McDurham '16, Lauren Childers '16, Caitlin Schneider '17
Sponsor: Dr. Willis Weigand, Chemistry and Biochemistry Department
2:00 pm – Olin 207

Southwestern University recently began an initiative called Ecolab in order to utilize university owned land located east of campus off of Highway 29. Ecolab is guided by student leadership and work; and is becoming a beneficial program and asset for the university. Ecolab allows students to gain invaluable experience doing environmental field work such as water quality analysis, soil and sediment collection, and restoration work. Restoration work included practices such as invasive species removal, vegetative and brush control, trash removal, and creation of designated paths to sampling sites. In addition to these analyses, a macrofauna survey via the installation of GameCams, continuation of chemical water analyses and sediment and soil analysis, and other projects was accomplished through funds received through the King Creativity Fund. Conducting these analyses was fundamental to developing an understanding of the fluvial system present in Ecolab. In doing so, this provided develop a better understanding of the factors that affect the health of this system and surrounding ecosystem, as well as aided in determining and understanding anthropogenic impacts on these systems. This project demonstrated Southwestern's commitment towards sustainability and offered a diverse opportunity for hands-on field work for students of a variety of academic interests.

76. Variations in Phenolic Composition and Antioxidant Properties Among Lemon Balm (*Melissa officinalis*) Cultivars
Maxime Boneza '16
Sponsor: Dr. Emily Niemeyer, Chemistry and Biochemistry Department
2:15 pm – Olin 207

Phenolic acids are known for their ability to fight oxidation as well as their antibacterial properties. Although lemon balm (*Melissa officinalis*) is known for its high phenolic content, its phenolic acid composition and antioxidant properties are less well studied, particularly within fresh plants. Therefore, in this research, we quantify the levels of total and individual phenolic acids in fresh lemon balm and determine how these compounds and the overall antioxidant capacity vary as a function of cultivar and commercial seed source. High performance liquid chromatography was used to analyze eight phenolic acids commonly found in Lamiaceae herbs. Total phenolic content was investigated with the Folin-Ciocalteu assay and antioxidant properties were determined using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) and ferric reducing antioxidant capacity (FRAP) assays. The total phenolic content ranged from 4.195 mg GAE/g DW (dry weight) for the 'Lemonella' cultivar to 38.0 mg GAE/g DW for 'lemon balm'. Rosmarinic acid was the individual phenolic acid found in highest concentration among the cultivars, ranging from 0.735 mg/g DW for 'Lemonella' balm to 52.14 mg/g DW for lemon balm. Furthermore, cultivar was found to have a statistically significant effect on measured antioxidant capacities within lemon balm. In conclusion, variations in phenolic content and radical scavenging capacity were observed among different lemon balm cultivars.

77. Phenolic Content, Anthocyanin Levels, and Antioxidant Properties of Acai Berry (*Euterpe oleracea*) Supplements and Products
Mei Earling '16
Sponsor: Dr. Emily Niemeyer, Chemistry and Biochemistry Department
2:30 pm – Olin 207

Acai berries (*Euterpe oleracea*) contain high levels of phenolic compounds, particularly anthocyanins, the flavonoids responsible for blue-red pigmentation in plants. Anthocyanins have diverse functions within plants and possess antioxidant properties and free-radical scavenging capacity that correlate with disease prevention in humans. Although much research has been conducted on fresh berries, little is known regarding the chemical composition of commercially available products

and supplements derived from acai berries. In our study, we examined how a particular form – powder, pill, liquid supplement, or frozen – affected the phenolic content, total and individual anthocyanin concentrations, and antioxidant capacity within 15 commercially available acai berry products. Modified spectrophotometric assays were used to quantify the total phenolic and anthocyanin contents of acai berry products, and individual anthocyanin concentrations were analyzed by high-performance liquid chromatography (HPLC). In addition, antioxidant capacities were determined using the ferric ion reducing antioxidant power (FRAP) assay. Our results suggest differences in total phenolic, total anthocyanin, and individual anthocyanin content, as well as differences in antioxidant capacity, exist among the fifteen acai berry products studied. With the exception of one studied powder product, acai powders in this study generally had higher total phenolic and anthocyanin contents as well as greater antioxidant capacities when compared to other supplement forms, such as capsules, liquids, or frozen acai berries.

78. Determination of the Antioxidant Properties of Flavanones and Flavanone Metabolites

Kathryn Costello '16

Sponsor: Dr. Emily Niemeyer, Chemistry and Biochemistry Department

2:45 pm – Olin 209

Flavonoids are plant metabolites with a wide variety of functions. In the human diet, they are commonly found in fruits, vegetables, wines, and teas. There have been many studies conducted on the chemical and biological properties of flavonoids themselves, but less research exists on flavonoid metabolites. This study explores differences in the antioxidant properties of a classification of flavonoids called flavanones and their corresponding metabolites. High performance liquid chromatography (HPLC) analysis was used to analyze six flavanones (2'-hydroxyflavanone, 3'-hydroxyflavanone, 4'-hydroxyflavanone, 5,7-dimethoxy-4'-hydroxyflavanone, 6-hydroxyflavanone, and 7-hydroxyflavanone) and their metabolites. Reaction with the radical scavenging agent diphenyl-1-picrylhydrazyl (DPPH) revealed that two of the six flavanones exhibited similar antioxidant properties to their respective glucuronide metabolites. Three flavanones exhibited significantly more antioxidant activity than their metabolites. One flavanone, however, displayed less antioxidant activity than its metabolite. This presentation will discuss how flavanone structure affects the antioxidant properties of the resulting metabolite as well as the rate of flavanone glucuronidation.

79. Effects of Phenolic Acids on Radical-Induced DNA Damage

Katherine Ferrick '16

Sponsor: Dr. Maha Zewail Foote, Chemistry and Biochemistry Department

3:00 pm – Olin 207

Reactive oxygen species (ROS) inflict oxidative stress on cellular DNA, which ultimately leads to cardiovascular diseases, neurodegenerative diseases, and cancer. Intracellular iron(II) reduces hydrogen peroxide to form hydroxyl radicals, which are highly unstable ROS. Antioxidants protect DNA from oxidative stress by scavenging these ROS or by preventing the production of ROS. Antioxidants that chelate iron(II) are proposed to interfere with these ROS-producing conditions and inhibit DNA damage. To investigate the antioxidant potential of two structurally related phenolic compounds, we assessed the ability of rosmarinic (RA) and caffeic (CA) acids to inhibit ROS-mediated DNA damage by binding iron(II). Gel electrophoresis was used to determine the protective effect of these compounds under ROS-producing conditions. A dose-dependent inhibition of DNA single strand breaks was observed with both phenolic compounds, but RA (IC₅₀ = 45 μM) was found to be more than twice as potent as CA (IC₅₀ = 100 μM). Because RA contains two sets of adjacent aromatic hydroxyl groups (in contrast to the one set of aromatic hydroxyl groups in CA), the compound may derive its greater antioxidant potential from having two intramolecular sites capable of chelating iron(II).

80. Triplex Structures in the Yeast Artificial Chromosome

Colton Mikulencak '16

Sponsor: Dr. Maha Zewail Foote, Chemistry and Biochemistry Department

3:15 pm – Olin 207

Noncanonical DNA structures, including triplex and quadruplex structures, are irregular forms deviating from the standard double-stranded model that form through purine-rich DNA sequences. These particular forms of DNA have long been suspected as a direct factor in the development of many genetic diseases, including a number of forms of cancer. Using yeast as a model organism, this study investigates the formation of these noncanonical structures in the yeast artificial chromosome (YAC) located in the mitochondria. More explicitly, the uracil gene on the YAC is located alongside the triplex-prone sequence, which will form a triplex from its purine bases creating Hoogsteen hydrogen bonds, deactivating the uracil

gene. To test for the formation of the triplex sequence, two strains of yeast, SC-1 and MYCY-25, were exposed to reactive oxygen species (ROS) during the culture stage in order to induce mutation in the YAC. The control strain, SC-1, does not possess a purine-rich sequence in its YAC where MYCY-25 does. The cultures were plated on synthetic complete media in the presence of 5-fluoroorotic acid (5-FOA), a substance toxic to yeast with an active uracil gene. Survival on these 5-FOA plates indicates a formation of the triplex in the purine-rich sequence through the proposed method. It was found that the strain SC-1 did not form any colonies on the 5-FOA plates, whereas the MYCY-25 was able to survive, mutating at a rate of 2.9×10^{-5} mutations per cell plated. The survival of the MYCY-25 indicates the successful formation of the triplex mutant.

81. Determination of Polyphenolic Content and Antioxidant Activity in Beer

Galen Hernandez '16

Sponsor: Dr. Carmen Velez, Chemistry and Biochemistry Department

3:30 pm – Olin 207

Beer, a drink high in antioxidants, is seen in many diets around the world. Beer is one of the few alcoholic beverages that require refrigeration after packaging, this instability stems from a combination of polyphenols and sensitive proteins that react and, in turn, change the beer's flavor. This review explains and analyzes the methods behind the analysis of antioxidant activity and polyphenolic content in different varieties of beer. The data was gathered using HPLC and assays such as DPPH to measure radical scavenging activity and Folin-Ciocalteu (FCR) to measure polyphenolic content. The data showed a strong correlation between polyphenolic content and antioxidant activity ($P < 0.05$) in the 40 commercial beers tested. The average radical scavenging of the DPPH assay and polyphenolic content was 0.61 ± 0.17 mmol TE L⁻¹ and 168.23 ± 41.74 mg GAE L⁻¹, respectively. These results suggest that polyphenolic content contributors to antioxidant activity in beer. As a result of this literature review, it is proposed that lipophobic antioxidant activity should be measured via Total Phenols Assay by FCR and the lipophilic antioxidants should be measured by ORAC (Oxygen Radical Absorbance Capacity) assay. This proposal will explore alternative sources of measuring antioxidant activity in beer.

82. The Use of the Nok Surfactant to Promote Green Chemistry

Alex Wong '16

Biochemistry Department

Sponsor: Dr. Carmen Velez, Chemistry and Biochemistry Department

3:45 pm – Olin 207

An important concern in organic chemistry is the abundance of organic waste produced by the use of organic solvents. Many organic solvents are environmentally toxic and may cause harmful health effects. Therefore, it would be extremely beneficial to make a strong effort to improve reaction conditions by using greener methods in organic synthesis. Recent studies on surfactants have effectively used micellar catalysis in various organic reactions. Micellar catalysis provides a favorable orientation and solvation of reactants in an aqueous solution, which can increase reaction rates. In fact, these amphiphilic compounds have been proven to successfully solvate various metal-catalyzed reactions such as C-C couplings, nucleophilic aromatic substitutions, ring-closing and olefin metatheses, and dehalogenations, in aqueous solutions. Based on literature review and results from past research studies, it can be proposed that surfactants can be used to promote a safer, cost-efficient, and "greener" approach to study Wacker-Tsuji oxidation and Nozaki-Hijama coupling at room temperature and aqueous conditions.

83. Titanium-Mediated Synthesis of Cyclobutanols

Simon Gersib '16

Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department

4:00 pm – Olin 207

Cyclobutane-containing compounds represent an important molecule for the agricultural, and pharmaceutical sciences. Some known pharmaceutical compounds are Lobucavir, Piperaborenine B, and Magnosalin that treat viruses, cancer, and arthritis respectively. A novel methodology for the synthesis of cyclobutanes has been developed using 1,2-dicarbonyl organotitanium complexes. Treating one equivalent of titanium isopropoxide with two equivalents of a Grignard reagent forms these 1,2-dicarbonyl complexes. While considerable work has described the reactions of these complexes with esters to form cyclopropanols, little has been reported on their interactions with other electrophiles. The reactions of 1,2-dielectrophiles are proposed to yield cyclobutane rings through sequential nucleophilic additions. Herein, α -bromo aldehydes have been subjected to 1,2-dicarbonyl organotitanium complexes to form cyclobutanols. Initial results suggest the product was formed in moderate yields of 20 to 30%, work to replicate these results and further characterize the products is ongoing.

This novel method would allow access to a diverse set of substituted cyclobutanes that are not directly accessible through traditional methods.

84. A One Step Synthesis of Alpha-Hydroxycyclobutanone
Joshua Van Houten '16
Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department
4:15 pm – Olin 207

Cyclobutanes are a common motif in natural products and an important component of pharmaceutical products. However, cyclobutanes remain challenging structures to synthesize. Existing routes to cyclobutanes are lengthy and result in low yields, most likely due to the high ring strain of cyclobutanes. This research worked toward the development a one-step synthesis utilizing ethyl magnesium bromide with titanium(IV) isopropoxide to produce cyclobutanols from α -keto esters. The addition of ethyl magnesium bromide to titanium(IV) isopropoxide produces a titanocyclopropane intermediate which behaves as a 1,2-dicarbonyl equivalent. Previous work by Kulinkovich has demonstrated that this reactive intermediate will add to aliphatic esters to form cyclobutanols. In this study, α -Keto esters were exposed to the Kulinkovich reagent in hopes of generating α -hydroxycyclobutanones. Preliminary results indicate that addition occur readily to the more activated ketone, but does not lead to ring formation. Further work is necessary to develop a one-step synthesis of cyclobutanols using the Kulinkovich reagent.

85. GIS Aerial Modeling Tool
M. Anwar Sounny-Slitine, Caitlin Schneider '17, Amir Hessabi '16, Dakota McDurham '16
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
1:15 pm – Olin 209

The growth of geospatial technology and Geographic Information Systems (GIS) has demonstrated the need for higher resolution aerial imagery. This is particularly evident through fields such as disaster management, where aerial imagery is used to understand and visualize the extent of major disasters. The technology utilized to collect this imagery as greatly developed and changed over time. The development of unmanned aerial vehicles (UAV) or drones, has presented a unique technology to obtain more accurate imagery and expanded the possibility of GIS applications. Furthermore, these drones have both professional and recreational uses, demonstrating the wide ranging possibilities and applications for drones and aerial imagery. This project will utilize the DJI phantom pro four to provide accurate altitude, latitude, longitude, and high definition aerial images in a live feed. However, before it can be utilized, this imagery must be processed. This can often be a time consuming and tedious process, increasing the time need for analysis of these images. This project hopes to mitigate this that by designing a tool with algorithmic capabilities to analyze the metadata gathered from individual photos, captured with or without a drone. This tool will readily provide a spatial component to these photos, decreasing the time and effort typically required for analysis and allowing them to be more easily integrated to GIS and other geospatial analytic software. While there are other existing software that also accomplish this task, this tool will provide a better and more cost-efficient avenue for students and professionals who are passionate about geography.

86. Representations of Alzheimer's Disease in Contemporary German Film: Implications of "Giving Dementia a Face"
Alexandra Detmar '16, Kali Page '16
Sponsor: Dr. Erika Berroth, Modern Languages and Literatures Department (German)
1:30 pm – Olin 209

Alzheimer's disease is currently a major public health issue, especially in more developed countries such as Germany and the United States. As the number of patients grows to approximately 48 million worldwide, efforts to increase public awareness will be critical. While medical research aims to find root causes of and develop treatment for Alzheimer's disease, fields such as psychology, critical gerontology, and medical ethics aim to treat the disease in terms of its place within the aging experience, highlighting its subjectivity in a call for caregivers and doctors alike to engage with issues of personhood, memory and emotion. Cultural and media studies provide frameworks with which to analyze how film can reflect, challenge or change cultural beliefs. Taking cues from current scholarly discussion of German and World media portrayals of Alzheimer's, my method of investigation was an in-depth study of three recent German film s of various genres portraying life with Alzheimer's, my results suggesting that as a group, these three films contain several useful challenges to stereotypes surrounding aging and memory loss as well as sobering insight into the caregiver experience, with one film acting to confirm common fears about the isolating nature of the disease. I integrated these findings with current medical humanities findings to explain potential impact on public perception and treatment of the disease. My analysis supports the growing media trend

of "giving dementia a face," which involves representing it as a human experience rather than as a problem to be treated in a strictly biomedical sense.

87. Becoming Modern: The Victorians at the End of Age
Jennifer Fleming '16
Sponsor: Dr. Jessica Hower, History Department
1:45 pm – Olin 209

The Victorians have a huge hold on our imaginations. Today we recognize them as one of the first fully modern societies, something which many of their best thinkers were happy to attribute to themselves. However, modernity for the Victorian was not without its problems. First, being modern is fundamentally about being future oriented. Second, political and cultural modernity as understood at the fin-de-siècle had a distinctly continental European character. For an insular society that prided itself on its provincial past, becoming modern was a complicated and ambivalent process. My research, which draws on approaches borrowed from multiple disciplines—history, art history, and political and literary theory—untangles the complicated mindset of the Late Victorians and their culture. Emphasizing the different ways in which late-Victorian society constructed itself, whether through Whig History, Pre-Raphaelite Art, or Socialism, I recreate the intellectual and cultural milieu of this deeply self-conscious people who were at times uncomfortably aware of what it meant to live at a turning point in history. Showing remarkable ingenuity, I argue that the Late Victorians cobbled together a kind of modernity that embraced English singularity while still being a part of a global conversation, rooted in the past while future looking. As shown by our own fascination with imagined pasts, it seems clear that we have inherited their uneasiness with modernity. Accordingly, the Victorians have much to teach us about how to live in our own alienating world.

88. Symptoms and Sensibility: Medical Practices in Jane Austen's England
Elissa Graham '16
Sponsor: Dr. Jethro Hernández Berrones, History Department
2:00 pm – Olin 209

Jane Austen changed my life when I was twelve years old. Her novel *Pride and Prejudice* showed me a whole new world and sparked my love of all things British. *Pride and Prejudice* showed me some surprisingly simple ways people could die in Regency England. A cold could take you down for weeks and leave the threat of death hanging over the patient's head until fully recovered. Nerves were not just a body part but were key aspects of medical conditions. Medicine and views of medicine were not just present in *Pride and Prejudice* but appear throughout all seven of Jane Austen's works. My research focuses on *Pride and Prejudice* and *Sense and Sensibility*, her first two novels, and how medical practices appear in the novels. My research found that families played a large role in supporting the ill and were present for much of the illnesses. I argue that these two novels are sufficient primary sources that can be used to understand medical practices in the Regency era, roughly 1800-1820. I situate my research alongside Historian Roy Porter's previous works on medical practices in British history.

89. The Peacock Deplumed: Exploring Late Medieval English Church, Religion, and Lollardy Through the Life of a Heretical Bishop
Emily Grover '16
Sponsor: Dr. Jessica Hower, History Department
2:15 pm – Olin 222

The historical significance of the late medieval English heretical sect known as the Lollards has been a hotly debated topic, especially since the group went underground during most of the 15th century but was then credited with provoking the Protestant Reformation of the mid-16th century. My research fills this chronological gap, showing that the Lollards remained active enough in the interim to draw the attention of Welshman Reginald Pecock, a bishop in the Roman Catholic Church. He responded by publishing two extensive works, *The Repressor* and *The Book of Faith*, in the 1450s. Ironically, on the basis of these very books, Pecock was himself tried and convicted of heresy in 1457. In my study, I analyze these two great anti-Lollard works as well as a number of other documents related to his heresy trial. These sources allow me to reconstruct Pecock's life and legacy, recreate his intellectual connections, and use him as a vehicle through which to investigate the relationship between Lollard subcultures and larger medieval society. Strikingly, Pecock was both highly successful in traditional Catholic society and yet willing to engage Lollard thought and practices. Accordingly, his work speaks to the evolution of Lollardy and anti-Lollardy, the boundary between heterodoxy and orthodoxy, the mental world of 15th century London, and the interplay between church and state. As a whole, my research contributes to the religious, ecclesiastical, and literary study of medieval England. It also serves as a case study for carrying out the history of marginalized people groups.

90. "Heart to Help": Performing Whiteness in Development NGOs in Sub-Saharan Africa
Jennifer O'Neal '16
Sponsor: Dr. Melissa Johnson, Sociology and Anthropology Department
3:15 pm – Olin 222

"Talking about race in development is like breaking a taboo" (White, 2002). The purpose of this paper is to break this taboo and to examine how race works in development organizations. Although the body of scholarly literature around development has grown, very little attention has been given to the racialized structures within development and how development organizations might serve as sites of racialization. This paper is an attempt to attend to this gap with a particular emphasis on how whiteness is performed in the context of western-run non-governmental organizations (NGOs) in sub-Saharan Africa. Through an analysis of in-depth interviews and auto-ethnography gathered over the course of 2010-2015, I analyze how whiteness is performed in the "racialized assemblages" (Weheliye, 2014), racialized spaces, and racial hierarchies that constitute NGOs. Although never explicitly expressed, whiteness is not only present in the everyday workings of these NGOs, these organizations are critical sites for the reproduction and reinforcement of whiteness and its discursive separation from blackness and Africa.

91. Show Me Your Mussels: Impacts of *Limnoperna Fortunei* Attachment on *Pomacea* Species
Averi Segrest '16
Sponsor: Dr. Romi Burks, Biology Department
2:45 pm – Olin 207

Global distributions of goods indirectly results in an increasing number of introductions of non-native invasive species (NNIS). The Golden Asian Mussel, *Limnoperna fortunei*, represents one such successful NNIS in South America. South America hosts a high diversity of apple snail species, including those within the genus *Pomacea*, which, curiously, also contains a couple successful NNIS. Given the likelihood of overlapping ranges for these spreading species in native and non-native habitats, we examined potential impacts of bivalve attachment on shells of *Pomacea* species. We conducted experiments to determine if apple snails of varying sizes (small, medium, & large) and differing habitats (native and non-native) altered activity frequencies (feeding, mating, lung ventilating, resting) when attached with simulated *L. fortunei* (shells filled with sand) that mimic weight of live bivalves. The trials with small and medium snails occurred in Uruguay and lasted 48 hours with 30 minute observations every four hours. The trials with large snails occurred in Texas and lasted 12 hours with 30 minute observations every two hours. Snails with bivalves attached exhibited a reduction in non-mating activities, suggesting an increased cost in terms of energy expenditure from the additional weight and drag. Small snails with bivalves attached breathed significantly more time than small snails without bivalves attached. However, the number of breaths did not differ based on bivalve attachment. For the medium snails, we saw the opposite trend. Future work could examine if *Pomacea* species have similar responses if colonized by other bivalves, such as zebra mussels.

92. The United Nation's Power to End Gender Based Violence
Jayden Beatty '16
Sponsor: Dr. Bob Snyder, Political Science Department
3:00 pm – Olin 209

Violence against women has become a global pandemic that, according to the United Nations and the World Health Organization, is affecting up to 70 percent of the world's female population. Studies continue to show an increasing amount of gender based violence occurring in both the public and private sectors. In 1993 the UN General Assembly passed a declaration to end global gender based violence. As a result of this declaration the UN Women department has been charged with the responsibility of implementing and supporting initiatives in states around the world intended to create social change and to enforce the protection of women. Ultimately this paper will address the question of, how big of a role can the United Nations play in the effort to end violence against women? I argue that the UN has been largely ineffective when it comes to protecting women around the world and that, under current organizational conditions and under the state of international politics, the role that the United Nations can fulfill in the fight against gender based violence is limited. Through an historical analysis of multiple UN Women initiatives created to enforce the 1993 declaration, this paper will assess to what extent the UN has been able to affect state behaviors and if gender based violence statistics have improved as a result of UN initiatives. After this assessment is complete, my research will indicate the reasons as to why the UN has been ineffective in their attempt to enact social change on a global scale. Through a qualitative and quantitative analysis of the current state of this

social issue I will support my thesis and then make some policy and structural suggestions that the UN should employ in the future in order to become an effective force in the fight against gender based violence.

93. What's in a Name? Delineating Species Identities among Freshwater Snails (*Pomacea* spp.)
Paul Glasheen '16
Sponsor: Dr. Romi Burks, Biology Department
3:30 pm – Olin 209

Ampullariidae, commonly known as apple snails, make up the most diverse family of freshwater snails globally. In my research, I investigate diversity within the genus *Pomacea*, which contains 96 recognized species. I aim to quantify the frequency of hybridization between three species: *Pomacea canaliculata*, *Pomacea maculata*, and a cryptic congener, a currently undescribed species morphologically indistinguishable from closely related species. Recent work in Japan suggests that *P. canaliculata* and *P. maculata*, both documented as harmful invasive species in Asia and the United States, they may interbreed in their invasive range to produce hybrids. This work provided initial evidence for hybridization but also left many questions unresolved. To address these questions, my research includes snails from their native ranges and uses methods that will provide a more robust assessment of the frequency of hybridization. The challenge of this work lies in the difficulty of identifying hybrids. Species identification usually occurs by “barcoding,” or sequencing a short fragment of mitochondrial DNA. However, mitochondrial DNA is passed exclusively in the maternal line, limiting its utility in identifying the mixed lineages of hybrids. To address this, I investigated use of two nuclear DNA loci, EF1alpha and ITS-II. Here I will summarize the progress of this research. These issues of species delineation and hybrid identification matter because of the relationship between species and ecological function. Hybrids may prove better adapted to invaded environments than either original species, expanding existing invasions and exacerbating negative impacts.

94. Cholera as a Global Issue: Measuring the Effects of National Economic and Health Indicators
Yinlin Dai '16, Emma Groves '17
Sponsor: Dr. Therese Shelton, Mathematics and Computer Science Department
3:45 pm – Olin 209

Cholera is an infectious disease that has been a global health issue, particularly for South Asia and Africa. By using data from multiple countries, we compare associations between Cholera incidence rate and different economic and health indicators in order to produce mathematical models. People have a greater chance of getting cholera when they lack access to improved water and sanitation. We present various models, including simple and multiple regressions.

95. Engaging Sustainability Efforts on the Southwestern Campus
Bianca Perez '16, Heba Abdel-Rahim '17, Egan Cornachione '16, Patrick Garza '16, Daniel Ross '16
Sponsor: Dr. Joshua Long, Environmental Studies Program
4:00 pm – Olin 209

For the past three years, the Environmental Studies Capstone class at Southwestern University has been dedicated to improving the sustainability efforts of the Southwestern Campus. Despite recent strides in sustainability, only a relatively small group of students has introduced many of the initiatives. The Sustainability and Campus Involvement Capstone will attempt to understand why this occurs and raise awareness about existing sustainable practices to the wider campus community. The goals of the capstone group are two-fold: (a) to gauge what connects, and disconnects, SU students to sustainable behavior and both environmental and social activism and (b) initiate methods to increase sustainable activity and knowledge about existing programs on campus. This will be done through a three-phase program which will first survey student opinions, then attempt to connect students to social and environmental sustainability practices, and finally present the findings to the campus community with the goal of instituting new campus public relations programs. Some of these public relation programs include producing a video in partnership with the Southwestern Marketing Team, incorporating sustainability information into campus tours, and improving the school's sustainability web page. The capstone will use case studies of efforts put forth by peer-institutions to understand the progress of sustainability efforts in Institutions of Higher Education (IHEs) to succeed in our goals.

96. Cannabis Industry-Specific Accounting and Tax Challenges
Mary Coleman '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
1:15 pm – Olin 222

This research paper examines the business and accounting implications, challenges, and industry-specific issues surrounding the recent and impending legalization of medical and recreational cannabis in several states across the country while it remains, at the federal level, a Schedule I drug under the Controlled Substances Act of 1970. A summary of the current and proposed legislation is followed by a determination of the effects that legalization has had on CPAs, dispensaries, start-ups, and investors. Numerous cannabis industry-specific accounting and tax issues have emerged in this evolving climate, and regional CPAs are being challenged to construct strategies to support their clients in coping with the disparities between state and federal regulations, as well as with an increased audit risk and business risk. Through a variety of professional and legal sources, this research paper outlines the unique challenges facing regional CPAs, new business start-ups, and the state and federal governments linked to this unprecedented legalization. In addition, this paper exposes inequalities in the tax law in order to reason that the current federal regulation must be reevaluated so as to be fair and just to the thousands of now legal businesses across the country. By constructing an idea of the impacts that cannabis legalization is having on the accounting profession in general, this research paper provides a holistic picture of the developing pecuniary challenges confronting all accounting professionals serving the rapidly changing cannabis industry.

97. Is Fair *Fair*?: An Opinion on the Switch to Fair Value Accounting
Charles Fisher '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
1:30 pm – Olin 222

The recent push by the SEC and FASB to apply Fair Value accounting principles to U.S. GAAP has come under intense scrutiny. This report uses arguments by industrial professionals and academics, along with the author's own sense of ethical behavior, to establish why a shift to Fair Value accounting violates the core principles of accountancy and what problems would arise, chief among which is the increase in the use of the accountants' best judgment, which cannot be audited. The report focuses on a type of financial instrument, Mortgage Backed Securities, which is already governed by Fair Value principles and its contribution to the 2008 Financial Crisis. The report then extrapolates these findings to a general Fair Value accounting system.

98. "Learn With It and Lean With It": Accommodation, Power, and Identity
Drew Kotlarczyk '16
Sponsor: Dr. Brenda Sendejo, Sociology and Anthropology Department
1:45 pm – Olin 222

Though colleges in the United States are increasingly seeking to diversify their student bodies, disability is often overlooked as a valuable component of increasing diversity (Shallish 2015). Additionally, the engagement of anthropology with disability studies has often been limited to medicalized discourses (Ginsburg and Rapp 2013). This paper draws on anthropological and disability studies approaches to provide insight in to the rich diversity of experiences among college students who receive accommodations at a small liberal arts school in central Texas. Using interviews and in-person as well as online participant observation, this ethnography explores questions of shifting identities—from relationships with disability to what it means to be a "good" student and well as the power relationships that play out within a range of spaces on college campuses. As each of the eleven undergraduate students participating in this project discuss their experiences with the accommodations process, negotiations with professors, maneuvering campus, and interacting with other students, their stories illustrate how identities are questioned, transformed, and (re)defined. This paper also includes their suggestions for campus improvement. Ultimately, the future of diverse perspectives in academia depends on the encouragement and effective accommodation of students much like the students featured here.

99. Fighting Fraud with Big Data
William Haynes '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
2:00 pm – Olin 222

Millions of children play youth sports annually, yet there is a significant gender gap in participation. While literature within the sociology of sport has detailed gendered divisions, women's experiences are overlooked or valued only in comparison to men. The current study examines the influence of the non-profit youth running organization Marathon Kids on women who participated in during their childhood. Specifically, it explores how the women believe the organization impacted them during childhood, and how this informs their lives as adults. This research draws on analysis of nine in-depth, semi-structured interviews conducted between September and November of 2015 with college-aged women who participated in Marathon Kids during their childhood. The findings indicate the women were motivated by accessibility and perceived need to be active during childhood. These experiences continue to impact their lifestyles today, through enhanced self-efficacy and increased awareness of gender. Further research should explore how the influence of Marathon Kids with social hierarchies or inequalities.

100. Tax Incentives in the U.S. Film Industry: Focus on Film Production in Texas
Lucy Loewen '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
2:30 pm – Olin 222

Government officials and film producers have analyzed how certain accounting practices, such as tax incentives, affect the economic and creative power a film can have. Film productions can stimulate local economies and tax incentives make some films financially feasible. Although film productions create local jobs, these benefits can be very temporary when the film production is done and the production companies leave. Specific tax incentives can be harmful both to the creative aspects of the film and the local economy. Because of the complicated nature of the cost benefit analysis, we have seen a rise in popularity of using tax credits to bring film productions to their state, followed by an increased sense of disillusionment and subsequent political wavering on the value of these incentives. My paper identifies how to combine the best aspects of film location and tax policies in order to create incentives that are mutually beneficial to the film and the city or state. I prove that sustainable policies increase both the economic and creative power of the film. My argument is based on my evaluation of articles, blogs, maps, and overviews of film productions in Texas and their effects on the state. When accounting practices and creative missions come together, a film can be an effective long term source of revenue and inspiration.

101. All You Need Are Shoes, Shorts, and a Shirt: Women's Experiences in Youth Running
Marta Selby '16
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department
2:45 pm – Olin 222

Millions of children play youth sports annually, yet there is a significant gender gap in participation. While literature within the sociology of sport has detailed gendered divisions, women's experiences are overlooked or valued only in comparison to men. The current study examines the influence of the non-profit youth running organization Marathon Kids on women who participated in during their childhood. Specifically, it explores how the women believe the organization impacted them during childhood, and how this informs their lives as adults. This research draws on analysis of nine in-depth, semi-structured interviews conducted between September and November of 2015 with college-aged women who participated in Marathon Kids during their childhood. The findings indicate the women were motivated by accessibility and perceived need to be active during childhood and these experiences continue to impact their lifestyles today, through enhanced self-efficacy and increased awareness of gender. Further research should explore how the influence of Marathon Kids with social hierarchies or inequalities.

102. Fraternities, Campus Hegemony, and Safe Space Reconfiguration
Mitch Petersen '16
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department
3:00 pm – Olin 222

Existing literature examines student anti-rape activism and the creation of student-led safe spaces, as well as the hegemonic reproductions often found in Greek Letter Organizations (GLOs) – and specifically in fraternities (Van Dyke 1998; Yoder, Tobias and Snell 2011; Boswell and Spade 1996). However, little research has been conducted on the ways different student groups interact with each other to work for change in a climate where Greek life is critically questioned for its contributions to sexual assault. Through eleven in-depth interviews with fraternity and sorority leaders conducted from August to October 2015, as well as with leaders in the campus anti-rape group (ARG) and social justice organizations (SJOs), I illustrate the ways in which leaders of GLOs, SJOs, and the ARG all engaged to some degree in what I call the process of safe space reconfiguration. This

builds upon Connell and Messerschmidt's reformulation of the concept of hegemonic masculinity (2005), and incorporates an application of concurrent resistance and reproduction of power dynamics in performances of alternative masculinities (Anderson 2002, 2011) to further refine ideas that safe spaces are necessarily subjective, subject to constant change, and are relational to positionalities of adjacent spaces (Gotham and Brumley 2002, Fetner 2001).

103. "It is a Festival First": Organizers and the Apolitical Collective Identity of Austin Music Festivals
Daryan Green '16
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department
2:30 pm – Olin 209

Using qualitative analysis of in-depth, semi-structured interviews conducted in the fall of 2015 with 9 members of music festival organizations, I use collective identity to understand how Austin, Texas music festival organizers identify with their event's goals and what motivates their involvement. Informed by literature on the social and industrial landscapes of music scenes and the community-mobilizing functions of festivals, findings indicate that emotional rewards from work in music, accommodations for families, and degrees of anti-corporate sentiments are components of identification and motivation. This sample represents 6 annual music festivals that entertain thousands of attendees who contribute millions to Austin's economy. Organizers were asked if they incorporate dimensions of social justice into festival agenda and identity, in light of Austin's high rates of cultural and economic segregation. Findings reveal that organizers arrange their events to be as inclusive as possible. Appeals to politics could make attendees with differing beliefs feel excluded from the festival's ideal of a fun, immersive experience. This research is the first of its kind to address organizer perspectives on a music festival hierarchy in a single city. Studies with larger samples and closer attention to the socioeconomic makeup of organizers and attendees can broaden this topic.

104. Creating an "Egalitarian" Privileged Space: Displaying Works by Artists of Color in the Modern Art Museum
John Semlitsch '16
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department
3:30 pm – Olin 222

In recent years, critics of the modern institution of the museum in the United States have focused on the priority of the artistic canon, a set of works that almost entirely excludes those produced by artists of color. However, museums have responded, and are now the sites of a national trend toward more consistently incorporating artists of color into their programming and operations. This study examines the ways in which the concept of race affects the organization of the institution of the modern museum. As society has become more racially diverse, politics have come to affect nearly every aspect of our cultural institutions, not the least of which being the modern art museum. The national trend toward exhibiting works by artists of color, such as those of Latino or African American descent, indicates the existence of a strong structural-functional relationship between race and ethnicity and the representation of those demographics in the organization of the museum. This paper puts the experiences of artists of color and the work and efforts of curators, directors, and other museum professionals at the center of socially just development from American museums. In doing so, this study is intended to provide a sociological context and explanation for the Egalitarian Privileged Space, one in which works by artists of all racial backgrounds can be exemplified and engaged with equal respect.

105. Auditing, the Process and Its Evolution
Nora Delgado '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
3:45 pm - Olin 222

My paper discusses the evolution of auditing from the traditional audit to a more enhancing and demanding process. My objective is to analyze the development of the audit process, as well as to offer an insight into the historic traditional audit approach, how it has evolved, and how it might continue to develop into the future. In addition, I will discuss how movements and events that have taken place in years past like, the collapse of corporations like Enron, World Com, and others, reached a global crisis, which in turn gave birth to new laws and regulations that aim to help in the prevention of financial misstatements and fraud. From these new regulations, the future of auditing rests on the professions' ability to embrace the expanding roles and responsibilities with competence, integrity, and ethical values. Today, auditors are expected not only to enhance the credibility of the financial statements but also to provide value-added services. Financial professionals understand risk management, cash flow, financial instruments and complex functions and can offer strategic guidance to top executives. Through historical evidence, my research will illustrate how the auditing profession is continuing to evolve in that

direction, albeit with regional nuances. This paper identifies likely future consequences to auditing and the audit profession. Keeping the numbers in order no longer spans the entire extent of an accountant's reach.

106. "That's the Spark I Want to See": Mentorship and Empowerment of Girls in STEM
Bethany Lewis '16
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department
2:15 pm – Olin 209

Numerous studies have examined gender disparities within STEM-related careers. However, few have analyzed the ways the mentors of children interested in STEM portray STEM to their mentees. This research seeks to answer two main research questions: How do women's experiences in STEM fields lead to their own involvement in the non-profit organization known as Rocket Girl, and how do these experiences affect the ways they view themselves as mentors? Such questions are addressed through a qualitative study involving 23 semi-structured interviews conducted between July and November of 2015 with women involved in a STEM education program for girls based in Austin, Texas. Findings indicate that while the women interviewed often faced gender discrimination themselves in their STEM education and careers, they applied a post-feminist approach to their understanding of women in STEM and acted as gender gatekeepers. Thus, although the organization itself was designed specifically to address the barriers facing women within STEM, they emphasized self-efficacy and hid the possibility of future gender discrimination from the girls of the STEM education program, perpetuating what this study terms as a cycle of silence among women in STEM.

107. Finding Inspiration in Formula: Mathematical Invention in Painting
Kelsey Baker '16, Christine Harbour '16
Sponsor: Victoria Star Varner, Art and Art History Department
1:15 pm – Olin 226

Our project unites principles of art, mathematics and computer science in the form of four large-scale oil paintings in the vein of geometric abstraction, invented with the aid of formulas based on the golden ratio. The concept of the golden ratio is historically written about in a kind of spiritual context, described as a reoccurring phenomenon of sacred geometry in the universe, connecting the individual to the whole. Many religions and cultures throughout the world associate geometric art with spirituality, like the Hindu Mandala or the geometric patterns found in Islamic architecture and design. Drawing inspiration from Charles Bouleau's *The Painter's Secret Geometry – A Study of Composition in Art*, we create geometrical compositional frameworks for the paintings through what may seem like a methodical, clinical process of producing graphs composed with varying applications of the golden ratio. The large canvases are mapped out to follow certain patterns that are computationally predetermined, and then the piece is painted in a way that creates depth and engages the viewer. We aim to demonstrate the creative power of mathematics and computer science and to harness the spiritual nature of geometric art in these large paintings meant to inspire visceral, emotional responses from the viewer.

108. A Tale of Two Species: Comparative Phylogeography and Genetic Diversity of *Pomacea Canaliculata* and a Putative Cryptic Congeneric in the Rio de la Plata Basin
Sofia Campos '16
Sponsor: Dr. Romi Burks, Biology Department
1:30 pm – Olin 226

Knowledge of Earth's biodiversity remains insufficient for enumeration and conservation as evidenced by the Linnean and Wallacean shortfalls, which respectively refer to the fact we have only described a small portion of the planet's species and have an incomplete understanding of distributions of known species, especially invertebrates. Phylogenetic and phylogeography studies together can provide insights into fundamental processes shaping biodiversity and help address both shortfalls. In South America, high diversity, abundance, and wide distributions make apple snails (*Pomacea*) good candidates for biodiversity studies. Recent studies of apple snails revealed cryptic species in southern Brazil and Uruguay, and preliminary data suggest hydrogeological events played a major role in shaping their biodiversity. To examine patterns of *Pomacea* spp. biodiversity in the Rio de la Plata Basin and the role that marine incursions may have had in shaping these patterns, we collected snails across Uruguay, sequenced a fragment of the COI gene from two *Pomacea* species, and analyzed these sequences (N=530). Phylogenetic analyses confirmed previous findings of a putative cryptic species closely related to *Pomacea canaliculata*, and recovered 75 *P. sp.* (N=313) and 24 *P. canaliculata* (N=217) haplotypes. Haplotype network analyses revealed closer relationships among *P. sp.* haplotypes compared to *P. canaliculata*, potentially indicating a recent range expansion of the former. Uruguayan *P. sp.* did not share any haplotypes with Brazil, but Uruguayan *P. canaliculata*

shared several haplotypes with Argentina. With advanced statistical analysis, we continue to investigate the degree of range expansion of these species following marine incursions during the Pleistocene.

109. Johan Helmich Roman and His Piante Amiche - Bringing Baroque Music to Northern Europe
Allison Chappelle '17
Sponsor: Dr. Michael Cooper, Music Department
1:45 pm – Olin 226

The teachings of Baroque music are notably fixated on the music from select European countries including Italy, France and the German lands, with little acknowledgement of musical growth beyond these lands. Addressing the impacts these well-known countries had on other European nations, such as Sweden, is necessary in order to exuberantly celebrate the central innovations made and to understand the immensity and significance of Baroque music in history. Examining Johan Helmich Roman's (1694 – 1758) cantata *Piante Amiche* provides a template which shows the French, Italian, and English influences Roman was exposed to during his scholarly travels, and interactions with composers including George Frideric Handel, Giovanni Bononcini, and Francesco Geminiani. I will also address the manner in which the composer integrated his extensive knowledge of compositional technique and linguistic expertise to revolutionize the Swedish musical taste and ultimately develop his reputation as the "Father of Swedish Music." Through the promotion of lesser known composers, such as Johan Helmich Roman, perhaps studying musicians will be encouraged to step outside of the comforts of central Europe and gain more experience by seeking beyond the classrooms.

110. Loosening the Chains: Shifting Public Opinion on Mass Incarceration in the United States
Alexandria Colurciello '17
Sponsor: Dr. Emily Sydnor, Political Science Department
2:00 pm – Olin 226

African Americans and other minorities have been systematically suppressed for so long that it has become ingrained in our society. After prisoners get out of jail, many states restrict their right to vote. They are unable to obtain a job due to felon discrimination. Most of the time, they are unable to return home, because their families live in housing paid for by the government, which does not allow felons. All of these problems and others are why the current criminal justice system is seen as the "the New Jim Crow". How can we make average citizens realize that the criminal justice is unfair? In *The New Jim Crow*, Michelle Alexander argues that there needs to be a call to action to change peoples' hearts. I argue that first we need to change peoples' minds by providing them with information, which will make them more sympathetic. I hypothesize that as people learn more about racial disparities in incarceration, they will see the system as less fair. This sympathy and understanding will change citizens' hearts, which will in turn change peoples' minds. To test this hypothesis, I conduct a survey experiment with two different groups: one who will receive information about the criminal justice system and one who does not. Each group must also rank how fair they think the system is. If reading a single news story can change citizens' perceptions of fairness, we're on the first step towards changing hearts and ending "the new Jim Crow."

111. Intermediate Mass Black Holes: Are They Really?
Taylor Hutchison '16
Sponsor: Dr. Mark Bottorff, Physics Department
2:15 pm – Olin 226

The smallest supermassive black holes provide tests of the active galactic nuclei (AGN) paradigm. Using data obtained from collaboration with the Madrona Peak Observatory, we searched for variability in a candidate central black hole housed in the galaxy SDSS J143450.62+033842.5. The data were taken with Sloan *r'* (red) and *g'* (green) filters. For this galaxy, we observed the light emitting region of the AGN for optical variability to determine the size of the black hole. In this study, we theorized two possible outcomes: If the variability was rapid compared to typical AGN with supermassive black holes, then the black hole's mass was most likely smaller and therefore could be identified as a true intermediate mass black hole. However, if the variability was not noticeably more active, then the mass would be closer to that of a characteristic supermassive black hole but with a smaller, possibly extended accretion disk surrounding it.

112. Finding the Right Questions: Sappho's Fragments and the Importance of Context
Madeline Ezell '18
Sponsor: Dr. Hal Haskell, Classics Program
2:30 pm – Olin 226

Both Sappho the figure and Sappho the poet persist in their mysterious natures to contemporary audiences. Dating from the sixth century BCE, Sappho and her works have long been read and re-purposed, and many of her lyrical fragments have been used to re-crystalize her into a more current context. Despite being the only female poet of her time, she has continued to appear as a crucial character in the poetic discourse. However, the Sappho of the 21st century is a widely different character than the Sappho of the 6th century BCE. Being from the island of Lesbos, Sappho has been termed a “lesbian” poet, which originally meant that she was from the island of Lesbos, not necessarily that she had sexual relations with other women. Yet this anachronism can be problematic. The practice of molding Sappho into a contemporary understanding cannot be the only side from which to experience her poetry. Sappho must also be placed within her own ancient context. My paper/presentation will use Stephen Greenblatt’s cultural theory to discover and form key questions, so as to deepen the perspective of the cultural values Sappho is reflecting. These constructive questions will enrich our reception of her works, appreciating both the re-appropriation of Sappho’s poetry as well as its earlier context.

113. A Calling for Success: A Math Model of Wireless Subscriber Growth in Cellphone Companies

Michael Gebhardt ‘16

Sponsor: Dr. Therese Shelton, Mathematics and Computer Science Department

2:45 pm – Olin 226

For a company, knowing how many people utilize their product is essential information to have readily available. Using this information, a company is more capable to plan for what their future holds. It is fascinating how many people rely on their cellular devices in today’s world and the implications this holds for society’s future. This is precisely why we focused our capstone project on this topic. We will present a competition model in which three cellphone companies- AT&T, Verizon, and T-Mobile- compete for wireless subscribers based on the numbers found in each company’s 2004-2014 Annual Reports. This presentation will examine how the company’s growth affects one another in the cellphone market in the years following 2014. This model can portray many different scenarios that cellphone companies could face. We will focus on T-Mobile releasing a successful product into the market, which will cause their company & rsquo’s growth to increase by a significant margin while AT&T and Verizon’s numbers will decrease. By changing the parameter values in the competition model we were able to simulate different scenarios of future growth among these three cellphone companies. By modeling different scenarios, a company is able to predict future growth, which will better prepare them for what’s to come. This project focuses on modeling wireless subscriber growth of cellphone companies, but could be extended to model growth of other companies as well.

114. "The Community is the Greatest Work of Art": Texas Art, History, and Identity at the San Angelo Museum of Fine Arts

Emily Grover ‘16

Sponsor: Dr. Brenda Sendejo, Sociology and Anthropology Department

3:00 pm – Olin 226

Due to the growth of borderland studies, Texas has become a significant site for cultural anthropology, yet little attention has been paid to the region of West Texas and the identity it espouses. In this paper, I will interrogate this cultural identity through the lens of the San Angelo Museum of Fine Arts in San Angelo, Texas, and illuminate the politics of historical representation in the museum’s collection of antique artwork. My research methods consisted of participant observation as a collections volunteer, interviews with museum staff and community members, and some historical research on the understudied area. My findings reveal the intentional ways in which the art museum attempts to connect with the racial and ethnic diversity in the surrounding communities and tell certain stories about them, both present and past, which may obscure more than they reveal. For instance, the museum uses Spanish colonial sacred art with white European themes to reconstruct the town’s Mexican heritage. Even as it forges a Texas-Mexican identity for San Angelo, the museum seeks to foster the multiculturalism found in larger, more reputable museums by bringing in artwork from East Asia and Europe. This multiculturalism reflects on the West Texas identity as an isolated, frontier outpost that is disconnected from the world and needs artistic enlightenment. In addition to being a contribution to Texas-Mexico borderland studies, this study will show how museums influence and are influenced by the populations they serve as well as how the construction of history and identity inform these relationships.

115. Girlstats: Understanding Data Through Software as a Service Using Behavior Driven Design
Kathryn Reagan '16, Nozuko Sutherland '16, Tanner Kell '16, John Daniels '16, Chancellor Clark '16,
Gabby Gonzalez '16
Sponsor: Dr. Richard Denman, Mathematics and Computer Science Department
3:30 pm – Olin 226

Girlstat is a nonprofit organization based in Austin, TX that focuses on providing quality STEM education for young girls, especially those who are at-risk (students that who need ongoing intervention in order to succeed academically). However, Girlstat suffers from what we like to call “death by spreadsheets” -- they have numerous Google spreadsheets that collect very similar data, but none of those spreadsheets share or communicate that data with each other. This makes it incredibly difficult for Girlstat to collect various subsets of data to present to their donors. The purpose of this project was to create a web application for Girlstat so they can better organize and make sense of their data. In order to accomplish their needs, we used an agile software development style. This means we worked closely and often with our customer to discuss our progress and their desired changes in real time. Our development style was behavior driven: we first defined tasks that our application should be able to carry out for different scenarios based on user stories, and then we implemented that behavior in our software. Our web application improved their overall productivity, helping their staff make better sense of their data and enabling them to see their impact on the girls they serve more clearly.

116. Upward Bound Electronic Classroom: Building a Web App in Ruby on Rails
Tyler Cantwell '16, Geoffrey Morris '16, Daniel Say '16, Christine Harbour '16, Ellie Enis '16, Austin Barber '17,
Bucky Maler '16
Sponsor: Dr. Richard Denman, Mathematics and Computer Science Department
3:45 pm – Olin 226

This year, students in the Computer Science capstone have worked to develop a web application with the programming language Ruby and the Rails framework. This application allows faculty, staff, and students of Upward Bound to better communicate and to improve organization throughout the program. To achieve this in Ruby we used Git as our source of version control to better improve our groups' organization. The application does so by allowing all of our members to contribute code to a single shared repository throughout the spring semester. We also utilized Heroku as our application host, allowing us to keep costs low for the client. In order to give our client continuous software we used Agile Development Cycles to deliver working software at regular intervals and to meet client deadlines. This software was designed by specification of the Upward Bound director to help the program spend less time on paperwork and more time focusing on the young adults of Upward Bound.

117. The Privilege of Power?: An Analysis of Sexual Harassment and Status in the Workplace
Bethany Lewis '16, Taylor Braselton '17
Sponsor: Dr. Reginald Byron, Sociology and Anthropology Department
1:15 pm – Olin 305

For at least three decades, there have been scholarly attempts to understand the phenomenon of sexual harassment in the workplace. This research relies on data gathered from civil rights cases pertaining to workplace sexual harassment within the states of Illinois and New York. During the summer of 2015 and under the guidance of Dr. Reginald Byron, longitudinal data from these states were content coded and analyzed to determine if any patterns exist. Extending the theoretical conceptions offered in previous studies, such as the “paradox of power” offered by McLaughlin, Uggen, and Blackstone (2012), this research seeks to answer two questions. First, are women who file formal sexual harassment charges with fair employment practice agencies more or less likely to be in a supervisory position within the company? And secondly, are there any patterns in the way that women describe these experiences? Preliminary findings suggest that, contrary to “paradox of power” argument, women who are in low wage-low status positions were more likely to have filed sexual harassment charges in these two states. The qualitative processes revealed in these data highlight their specific vulnerabilities.

118. Paradise Lost? Stories from the Tibetan Plateau
Hunter Jurgens '17
Sponsor: Dr. Patricia Schiaffini, Political Science Department
1:30 pm – Olin 305

The Tibetan plateau and its people have captivated the North-Western world since the 1950s. The plight of Tibetans (both in the region and in exile) has been extensively covered in academic literature, propelling Tibet to the forefront of the international stage as the quintessence of marginalized and oppressed minorities. Tangentially, many leading scientists and world leaders have recognized the significance of environmental degradation, and the negative ramifications associated with it. Tibet provides a unique intersection of these two important discussions: ethnic suppression and environmental degradation. Despite being those immediately affected by environmental issues in the region, few Tibetans have been asked how these problems directly impact their lives. This project aims to fill that gap by providing a voice to Tibetans living on the plateau. Stories are important, and the way that they are told speaks to the political, social, and cultural settings of the period. Through analyzing the stories collected during my time on the Tibetan plateau, I tackle the question of how Tibetans' daily lives are impacted by environmental change, and how they respond to their dynamic world. Ultimately, I argue that social, political, and economic structures largely shape the telling of these stories, as well as Tibetan response to environmental issues in the area.

119. Literacy and Orality in Higher Education
Austin McCrory '17, Kenny Knowlton Jr. '17
Sponsor: Dr. Omar Rivera, Philosophy Department
1:45 pm – Olin 305

The purpose of this creative works presentation is to explore the implications of literature and its imposition on the epistemological hierarchy present in formal higher education. Of immediate relevance is the unforeseen and implicit effect of the logic of colonialism that has permeated institutions of knowledge production. Dismissing, as it were, the validity of Orality as a form of legitimate and necessary expression of knowledge that has been systematically excluded. With that being said, the question at hand is the political and epistemological role of Orality as a means by which knowledge itself can be reconstituted and restructured within higher education.

120. Voting for Revolution: "Revolutionary" Rhetoric in the 2016 Presidential Primaries
Hunter Jurgens '17
Sponsor: Dr. Shannon Mariotti, Political Science Department
2:00 pm – Olin 305

The 2016 presidential primary race has proven to be extraordinarily interesting. Donald Trump, a business mogul with no prior elected office experience, is leading the Republican race, while Bernie Sanders, a self-proclaimed socialist, is challenging a high-profile, leading politician in the Democratic race, while simultaneously running one of the largest political grassroots campaigns in modern American history. Both Trump and Sanders have predicated their platforms on revitalizing—or, revolutionizing—American politics. Both have accrued widespread support for their “revolutions,” and their supporters are some of the most ardent amongst the candidates'. Nonetheless, neither Trump nor Sanders can really lay claim to advocating revolution in any true definition of the term. Why, then, is revolution repeatedly touted by these two campaigns? This paper addresses reasons why Trump and Sanders are able to garner support through “revolutionary” rhetoric, without actually positing revolutionary ideas. Furthermore, it rhetorically analyzes public speeches given by Sanders and Trump in order to deconstruct their “revolutionary” rhetoric, and determines whether what either is proposing is actually revolutionary. Drawing heavily on the existing literature pertaining to storytelling in relation to social movements, I analyze narratives and stories told by Trump and Sanders, as well as by their supporters, for their use in mobilizing the masses. Ultimately, I argue that both Trump and Sanders are charismatic leaders, who use revolutionary rhetoric to stir the masses by targeting their emotions. By drawing on widespread discontent in the American people (“Something has got to change”), Trump and Sanders give promises of “revolution,” without actually advocating for revolution itself.

121. Finding a Deficit in the Deficit Model: A Study of the Social and Academic Integration of First-Generation College Students
Kelly McKeon '17
Sponsor: Dr. Sandi Nenga, Sociology and Anthropology Department
2:15 pm – Olin 305

This study seeks to understand how social and academic integration of first-generation college students differs from their second or more-generation peers. To do this, 135 Southwestern University students (42 first-generation and 93 second or more-generation) completed the Southwestern University Students Social and Academic Integration Survey. First-generation college students experience less social integration, and in fact become less socially integrated over the course of their college

careers. However, they are not less academically integrated than their second or more-generation peers. It is also notable that a greater percentage of junior, sophomore, and senior first-generation college students desire first-generation college student support programs than first year first-generation college students. It appears that these first year students do not perceive any difference between themselves and their peers and that this changes by fall semester of the sophomore year. This suggests that deficit model approaches will not appeal to first year first-generation college students.

122. 'To Get on with the Work at Hand': Female Gender Performativity During World War II in Norman Rockwell's 'Rosie the Riveter' and J. Howard Miller's 'We Can Do It!'

Rachel Robinson '16

Sponsor: Dr. Kimberly Smith, Art and Art History Department

2:30 pm – Olin 305

The large-scale recruitment of women into the American workforce during World War II is most potently symbolized, both during the war and in present day, by the figure of Rosie the Riveter. In my presentation "'To Get On With the Work At Hand': Female Gender Performativity During World War II in Norman Rockwell's 'Rosie the Riveter' and J. Howard Miller's 'We Can Do It!'," I will use Judith Butler's theory of gender as performance, as written in her essay "Performative Acts and Gender Constitution," to argue that these two 1943 images of Rosie the Riveter display the visible preoccupation of American society with the regulation of appropriate gender performance during a time when traditional female gender performance was being altered by the very institutions that govern social norms. Norman Rockwell's "Rosie," very clearly identified by her name on a lunch pail, was the cover of the May 29, 1943 edition of *The Saturday Evening Post*, which was one of the most popular magazines of the time. J. Howard Miller's "We Can Do It!" poster, on the other hand, was displayed for a brief period in the factories of a manufacturing company, who commissioned the work as part of a series of motivational posters. These "Rosies" were visually portrayed as maintaining their femininity in the face of unfeminine occupations, which was a strategy employed by American social institutions to maintain cultural values of gender performance while fulfilling the need for labor.

123. The Political Vonnegut Abstract

Savannah Medley '17

Sponsor: Dr. Shannon Mariotti, Political Science Department

2:45 pm – Olin 305

This essay analyzes the teleological capacities of liberalism and the influence that these capacities have over the perception of reality and subsequent understanding of morality of the American liberal subject through a literary study of Kurt Vonnegut's works. Teleology studies progress, goals, and ends, all characteristics of modern day liberal capitalism. I argue that liberalism breaks down the dualism between the personal and political sphere in daily life. Liberalism is both political and personal because it calls into question values and judgments not just on a political or governmental level, but on an almost spiritual level for the individual. This essay looks at themes such as property, love, and modernity and analyzes them through works such as *Cat's Cradle*, *Timequake*, *Slaughterhouse 5*, and "Welcome to the Monkey House". I argue that my interpretation of Vonnegut's works helps me to further analyze liberalism as many of Vonnegut's works focus on dystopian societies that have blurred lines between the personal and political realms. This breakdown between the personal and the political realm is a key feature of liberalism, as my paper explains. This paper critiques liberalism and the effects of it. This paper works to prove that the negative spiritual and psychological effects of liberalism have manipulated individual identities in such a way that ensures that individuals remain loyal to liberal thought and participation, because they ultimately have no choice. This fracturing of identity breaks down independence of thought and destroys any moral values that do not have positive teleological connotations.

124. The Willing Slave: A Foucaultian Analysis of Jean-Leon Gerome's "The Bath"

Wilhelmina Watts '17

Sponsor: Dr. Kimberly Smith, Art and Art History Department

3:00 pm – Olin 305

This methodological examination of Art Historical theory places Michel Foucault's concept of the docile body in the context of Orientalist paintings and the colonized bodies these paintings depict. Foucault's theory initially dismisses slaves and servants in its scope; a body that is docile submits to domination subconsciously, but willingly. However, Foucault mentions nothing of those colonized persons whose bodies are caught between freedom and enslavement. Through applying Foucault's ideas to Jean-Leon Gerome's 1880 painting *The Bath*, I will explore the impact of French domestic culture upon perceptions of freedom and consent in both past and present contexts. This paper draws upon histories of servitude and slavery in France

along with my own analysis of nineteenth-century Orientalist paintings in order to explain the false illusion of black female agency portrayed in *The Bath* and the subsequent ripple effects of subjugation it creates. *The Bath* is couched in a culture intent on protecting the illusion of the great French ideal of freedom, resulting in an entire category of Orientalist artwork that fetishizes and normalizes black enslavement.

125. Genealogy of Whiteness: Deconstructing the Rosa Parks Narrative
Savannah Medley '17
Sponsor: Dr. Shannon Mariotti, Political Science Department
3:15 pm – Olin 305

This paper asks the central question, how is a genealogy and interrogation of whiteness necessary as a method of opening space for previously silenced perspectives on transportation policy. My paper will build off of Michel Foucault's theory of genealogy. Genealogy, the technique of questioning normative belief by accounting for the complete epistemology of the ideology, will be applied in order to deconstruct to the ideology of whiteness. In order to account for this genealogy, I plan to deconstruct the normative assumptions present in the Rosa Parks narrative. I will apply the genealogy of whiteness through this deconstruction to modern discrepancies in access to transportation infrastructure between races. In the interest of specificity, I will focus mainly on racial discrimination in terms of transportation infrastructure in the city of Houston, Texas.

126. Violence and Townships: Slashing Away the Post-Apartheid Rainbow Nation Illusion
Caroline Young '16
Sponsor: Dr. Brenda Sendejo, Sociology and Anthropology Department
3:30 pm – Olin 305

In *The Wretched of the Earth*, Frantz Fanon theorizes the role of violence as such, "The colonized man finds his freedom in and through violence," (86). Fanon's conceptualizations of violence inform my research in South Africa on the prevalence of violence in the black township of Gugulethu, which manifested itself to me through the healthcare system. Data for this research was conducted through participant observation of the Gugulethu township hospital. I conducted interviews about the violence surrounding the community with doctors, EMT students from this hospital, and with my host-mother whose son experienced violence in Gugulethu. This research explores the ways in which individual acts of violence can be used as forms of resistance against the systemic violence that impacts marginalized communities impacted by poverty and racial segregation. I argue that such acts are remnants of the apartheid legacy that persists in Gugulethu despite the official end of apartheid in 1991. This paper analyzes the ways in which communities respond to violent crime as it is performed directly against them. This research works to expose the ways in which the Rainbow nation still needs to heal from the wounds of the apartheid, especially for those who remain on the peripheries of government's concern. Through this work, I attempt to dismantle the ways we conceptualize violence as inherently bad or evil and instead explore why certain types of contextual violence occur and become acts of resistance to help the self-assert their agency by regaining control through violence.

127. Reproduction of the Georgetown Salamander (*Eurycea naufragia*)
Samuel Guess '17
Sponsor: Dr. Benjamin Pierce, Biology Department
3:45 pm – Olin 305

The Georgetown salamander, *Eurycea naufragia*, is a spring and cave dwelling neotenic salamander endemic to the San Gabriel watershed of Williamson County, Texas. Using monthly surveys of salamanders at two sites over five years, we examined the reproductive biology of these animals. We found individuals with eggs (gravid salamanders) from October to April at each of our sites during all five years of the study. The percent of gravid salamanders peaked within the winter period of the reproductive season, from October to December, and peaked again within the spring period, from January to April, in each year of the study. We found no significant difference between size or body condition of salamanders reproducing in the winter period and salamanders reproducing in the spring period. We have evidence that some gravid individuals are producing two egg clutches within a single reproductive season. Information about reproduction provides insight into the life history of the Georgetown salamander and improves conservation planning for this federally protected species.

128. A Poem Begins as a Lump in the Throat: Schools as Powerful Places

Brandon Baker '16, Amy Goodman '18, Amy Gu '17, Kron Heilman '16, Raylan Long '16, Matthew Prindle '18, Quinlan Kubacak, Victor Arellano, Connor Bracken, Brandi Campos, Afsonah Esfandiari, Anna Faust, Kelsey Faykus, Jordan Herbert, Michael Kitner, August Laird, Sir Majors, Caleb Martin, John McDaniel, Paige McShan, Ivet Millan, Haley Moffett, Sarah Norys, Ashlea Parks, Stefan Simanton, Julia Tape, Hannah Winkler, Chayce Hobelman, Jared Welsh, Brandon Baccam, Wallis Harvey
Sponsor: Dr. Stephen Marble, Education Department
1:30 pm Presentations Begin– Olin Lobby

In this oral and visual session, 30 students enrolled in Foundations and Curriculum in American Schools will read short poems they have created to capture the sense of place resulting from visiting area sites of learning. Poems will be visually accompanied by maps and photos of the site that inspired the poetry. Starting with the above title quote by Frost about where poems come from, these poets step back in time to see anew important moments from their youth that have shaped their present. Sometimes funny, occasionally sad, always surprising, each individual poem represents an emotional journey taken by the poet into his/her understanding of how these sites have influenced their character and development. Individual poems tell stories of bravery and fear, kindness and bullying. When taken together, the set of poems evokes the powerful and lasting influences that schools have had on the poets' personal, physical, emotional and cognitive lives.

129. Introduction to Statistics Global Health Gapminder Presentations

Jiyoun Ahn '17, Brandon Baccam '18, Austin Baker '18, Tyler Bludau '16, Allie Cortez '18, Kathryn Costello '16, Samuel Cox '19, Taitte Drews-Jones '19, Katie Dyo '19, Morgan Forteith '19, Michael Gebhardt '16, Gillian Glover '19, Katie Harris '19, Loryn Hernandez '19, Nour Hussein '19, Myriam Ibarra '19, Cole Kelly '19, Jordan Kessler '19, Bella Kidd '19, Andrew Landon '18, Jamie Lynch '19, Jessey Martinez '19, Myna Martinez '19, Vasthy Maurival '19, Greg McDade '19, Chickie Murphy '18, Maxx Prado '18, Jordan Riggs '16, Kassie Saenz '19, Denise Sandoval '18, Colby Schmidt '18, Anna Schneemann '19, Jordan Smits '19, Camille Soto '19, Ethan B. Widoff '19
Sponsor: Dr. Alison Marr, Mathematics and Computer Science Department
1:30 pm Presentations Begin – Olin 324

Data about health is everywhere, but sometimes we don't have the right, easy tools to use to be able to view and understand that data. Gapminder is an internet tool that easily helps us view health related data in a dynamic and interesting way. In this session, students from Introduction to Statistics will each give a brief 3-minute presentation comparing two variables related to health using Gapminder. They'll show their plot and discuss some of the trends/patterns they found.

130. Wide Ranging Themes in Theatre and Performance

Brock Boudoin '16, Brandon Baker '16, Ally Oliphint '16, Allison Young '16, Amber Riedel '16, Max Lakavage '16, Caroline Gaspard '16, Noah Kopit '16, William Swift '16, Olivia Woodward '16, Avery Rogers '16, Alejandra Navarro '16
Sponsor: Dr. Kathleen Juhl, Theatre Department
1:30 pm Presentations Begin – Olin 322

The 2016 Theatre Capstone was given the title of "Wide Ranging Themes in Theatre and Performance" as the stepping stone for this year's capstone research. Each member of the class was responsible for developing a topic that sparked their interest in theatre. Ranging from Stage Management to Acting Techniques to Social Justice in theatre, the senior class hopes to inform the reader of multiple areas.

Poster Presentation abstracts

131. Science and Math Achiever Teams (SMaRT)
Claire Schumann '18, Greer Miller '18, Ryan Peraino '18, Wilson Parker '18, Amelia Fuchs '19, Abby Toppins '18, Austin Baker '18, Alison Riggs '18, Mary Cavanagh '17, Shannon Walsh '18, Sam Roa '19, Jiyou Ahn '17, Ryan Gallo '18, Blake Smithson '17
Sponsor: Dr. Romi Burks, Biology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Science and Math Achiever Teams (SMaRT) is an interdisciplinary mentoring program that provides Southwestern students a unique opportunity to share their interests for science and math to 3rd-5th graders from a partnered Georgetown ISD school. Each elementary school student is paired one-on-one with a mentor in order to encourage inquisitive thinking, an excitement for learning, and a love for science and math. Therefore, each SMaRT pair was expected to design and create their own research project that was centered on answering a key research question during the course of nine weeks. In order to learn the scientific concepts behind their questions and answers, each pair chose to design an experiment, dissect an animal specimen, or to creatively model a new and interesting concept. Examples of investigated research questions include, "How is a planet formed?" and "How are video games coded and designed?" The answers to these questions and more can be found in individual poster presentations created by the collaborative efforts of each SMaRT pair. Please join us as we celebrate and present their findings to the Southwestern Community.

132. Paideia Distinction: Distinctive Way to Continue Liberal Arts Education
Emma McDaniel '16
Sponsor: Dr. Sherry Adrian, Paideia Curriculum
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Paideia's role at Southwestern is to catalyze meaningful ways for students to create interdisciplinary connections. Paideia Distinction adds two more intensive tools, studying abroad and community engagement, to the Paideia tool box. The Representing Gender Cluster has three thematic questions, "Why is the world sexed and gendered?", "How do sex and gender vary across space, place, and time?", and "What are the consequences of living in a sexed and gendered world?" Of course, these questions are studied in Representing Gender Cluster classrooms, but Paideia Distinction requires making more thought provoking connections in order to enrich the liberal arts further. The summer of 2015, I studied abroad in Bengaluru, India, where I was able to see how my gender and my race changed my experience significantly in comparison to my fellow Indian classmates. For my community engagement component, as an aspiring teacher, I was drawn to volunteering at the Georgetown N.E.S.T., after school empowerment center for high schoolers in Georgetown Independent School District. In the fall of 2015, I helped the center's seniors begin their college application process. And each week I volunteered, the center held an empowerment session that focused on teaching high schoolers soft skills; many of the sessions' topics covered the gender binary and heterosexism, which included how to be open as well as accepting of difference. My Paideia Distinction experience has added two more tools to my Paideia tool box; it has required me to connect my Paideia cluster questions to more personal aspects of my life in Bengaluru, India and career-focused goals.

133. Fighting Fire with Fire: Suicidality as an Unintended Consequence of the Use of Antidepressant Drugs in Children and Adolescents
Jenna Griffis '16, Maxime Boneza '16, Dante Sims '16
Sponsor: Dr. Sherry Adrian, Education Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

With increasing use of antidepressant drugs across the world, it is ever more important to assess the efficacy and potential externalities caused by usage of these drugs. In terms of prevalence, The National Center for Health Statistics reports that 1:10 Americans over the age of twelve takes antidepressant medication. The introduction of a "black box" warning label on antidepressant medication has brought attention to suicidal actions and thoughts as potential risks when taking these medications. The purpose of this study is to examine suicide as an unintended consequence of antidepressant use in children and adolescents. There is much debate and ongoing research on whether or not children and adolescents are at risk of suicidal thoughts and actions when taking antidepressants. Some studies have shown statistically significant results of declining suicide rates with increased use of antidepressants in children and adolescents. While suicidal thoughts may

increase during early use, and also when treatment is poorly implemented, there is not enough conclusive evidence to suggest that these thoughts will lead to action. We will attempt to explore these discrepancies in order to determine whether or not suicide is an unintended consequence of antidepressant use in young individuals.

134. A Treacherous Journey: The Consequences of the Syrian Refugee Crisis
Sebastian Gualy '17, Brandon Hanley '16
Sponsor: Dr. Sherry Adrian, Education Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Millions of human beings in Syria and other countries affected by homegrown terrorists have been displaced from their homes, and face the imminent threat of genocide. This, and the rhetoric from Western nations, ensures that danger awaits a great many innocent people who stay in their homelands. Many refugees have chosen to leave their homes and seek a safe haven outside of their countries, in refugee camps, and in countries where they hope to find opportunities for work, education, but above all safety. The great number of people in need of primary care will undoubtedly strain health services; however, to ignore the refugee's fleeing war torn areas has far greater unintended consequences, for not only the states involved, but also the state of humanity. This paper recognizes the very real strain of an influx of population, but counters these notions as they do not excuse action from helping those who are in need of sanctuary. This is a complicated issue, with many perspectives valuable in their own right; this case study does not seek to provide a singular answer, but rather the consequences (& unintended consequences) of refusing or helping fleeing refugees.

135. Don't Sign! Your Life Depends On It
Katie Smithson '17, Mac Light '17, Will Cates '16
Sponsor: Dr. Sherry Adrian, Education Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Bioethics, or the ethical issues brought on by advances in science and medicine, is a thought-provoking and esoteric topic. Our tremendous advances in technology have led to greater understanding of health and illness, life and death. The discussion of bioethics often encompasses the controversial actions taken by patients and medical professionals, which include do-not-resuscitate (DNR) orders and physician assisted suicide. The utility of these practices can be evaluated using econometric models, as well as medical outcomes. Previous studies have failed to draw conclusions about the unintended consequences generated by the externalities of DNR and physician assisted suicide. Our metaanalysis includes primary research papers on the economic damage (or gain) to various groups as an (in)direct result of utilizing DNR and physician assisted suicide. We were able to conclude that DNR, however ethically controversial, provides a positive economic effect on the healthcare system, while physician assisted suicide has a negative effect on the healthcare system.

136. Unintended Consequences of Post-Traumatic Stress Disorder Treatment of Post-War Veterans
Melanie Theriault '17, Nicole Kuhn '16
Sponsor: Dr. Sherry Adrian, Education Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Over the past decade, the number of veterans with a Post-Traumatic Stress Disorder (PTSD) service-related disability has increased steadily to a point where PTSD has become the most prevalent compensable mental disorder within the U.S. Department of Veterans Affairs (VA) disability system. While the VA attempts to assess the severity of individual cases, many of these cases go misdiagnosed, mistreated, or denied treatment for various reasons. In any of these cases, veterans exhibiting signs of PTSD may go untreated and symptoms can worsen over time, which can lead to unintended greater health risks. In our meta-analysis, we examine previous literature that identifies and exploits the various explanations for post-war veterans to seek treatment for PTSD symptoms elsewhere due to the inadequate healthcare provided by the VA for PTSD symptoms. We also pinpoint unintended consequences of the VA failing to properly treat PTSD on a structural level, thus affecting budgetary and policy-level decisions.

137. Standardized Testing: Does It Pass the Test? A Study on the Effects of High Stakes Testing on Global Health
Mary Cavanagh '17, Michael Measom '17, Courtney Olson '17
Sponsor: Dr. Sherry Adrian, Education Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Standardized testing has been used as a benchmark to assess intelligence and comprehension since as early as the Han Dynasty in Imperial China; however, it has become more prevalent in academia in recent years. While this study will focus mainly on current standardized testing in the United States, the consequences stemming from increased performance demands have become a global health concern. Recent studies question the efficiency of these exams, while alarming trends (including an increased incidence of cheating and use of antidepressants in youth) have critics calling for a re-evaluation of the current testing system that institutions heavily rely upon today. Standardized testing has driven structural changes in teaching design and school initiatives, resulting in detrimental performance pressures on educators. This study attempts to analyze how high stakes testing affects the stress levels of students, parents, and educators, within the United States and across cultures. As a result of increased stress levels, standardized testing has played a major role in the growing incidence of depression and suicide in youth populations. Moreover, this study examines standardized testing from socioeconomic and racial perspectives, highlighting the inequalities among interpersonal relationships, access to resources, and the span between expectations and aspirations. We conclude that more education research is needed to expose the main flaws of our standardized testing system in order to promote an alternative system of student evaluation.

138. Water Recycling for Energy Efficiency

Diana Beltrán '18, Susana Beltrán '18, Michael Measom '16, Kyle Zarosky '17

Sponsor: Dr. Mark Bottorff, Physics Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Currently dehumidifiers are running in each of the observatories, and during the summer heat, these dehumidifiers need to be frequently emptied. The dehumidifiers serve to protect the valuable equipment stored in the observatories. Dr. Mark Bottorff, as the Fountainwood Observatory Director, has been in charge of constantly going to and from campus throughout the year to empty the five gallon cisterns. To aid in the Fountainwood Observatory, we planted *Viburnum Suspensum* shrubs around the east building. When the shrubs reach maturity, they will shield the building from direct radiating sunlight which overheats the observatory. Lowering the heat index in the building, will consequently lower the energy consumption from the air-conditioning and the dehumidifiers. We also installed a 20 Watt solar panel that powers the water pump used to run the water from the rain barrel to the dripline. To end Dr. Mark Bottorff's daily multiple trips to the observatory, we installed this drip irrigation system which re-uses the wasted water from the dehumidifiers to water the screening shrubs without any human intervention. By protecting the \$89,500 worth of equipment inside the observatory from being damaged by the central Texas elements, Southwestern will not only help protect their current assets, but will allow for further student and faculty research. It is too early to have any significant results that show the decrease in energy usage. These results will start to be seen in about six months, but Dr. Bottorff no longer has to empty the cistern inside the east building.

139. Proof of Concept Study for Inertial Propulsion System for Deep Space Exploration

Yash Gandhi '18

Sponsor: Dr. Steve Alexander, Physics Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Advance propulsion systems are necessary to enthruse humanity and achieve global goals for deep space exploration and colonization. The most recent breakthroughs have multi-year operating lives, but the fuel supply is limited, expensive, and can be a risk. An efficient propellant for deep space exploration is one that does not use a limited fuel source or need to be replenished often it can be easily transported, and has a small risk factor. Our proposed propulsion engine would use no propellant instead it uses an electrical engine and inertial moments to develop vectored thrust from rotating masses. To test this concept, one geared system and one micro controlled system will be built. The geared system will be mounted on a steel track with an impulse measure on one end to determine if there is a positive moment in the desired direction. The micro controlled system will be built on an air track and the velocity will be measured to determine the possible acceleration in an almost frictionless environment.

140. The Synthesis of a Gold-Cleavable Protecting Group

Caitlin Lacker '16

Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Protecting groups are important tools used to create efficient syntheses of new compounds. They allow chemists to perform transformations on one part of a molecule without affecting other functional groups. Specifically, alcohol protecting groups prevent deprotonations and other deleterious side reactions in large molecules. This provides more freedom when

developing syntheses of complex molecules allowing for more efficient routes to biologically interesting natural products. It is important that the protecting group be stable in a wide variety of reaction conditions so that it will not accidentally be cleaved from the alcohol during the reaction. Therefore, a novel aryloxymethyl acetal alcohol protecting group that is stable under basic, acidic, and reducing conditions and is selectively cleaved with mild gold(I) catalysts has been designed. The synthesis of the chloromethyl protecting group featured a copper-free Sonogashira cross coupling which was optimized in acetonitrile. The protecting group has been successfully coupled with two primary alcohols, and initial attempts at gold (I)-catalyzed deprotection have afforded 86% recovery of the alcohol. Further optimization of this reaction is underway.

141. Thiosemicarbazone and Thiadiazole Ligand Synthesis

Ryan Peraino '18

Sponsor: Dr. Willis Weigand, Chemistry and Biochemistry Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Organometallic complexes, such as cisplatin, have been used as anticancer drugs for many years. Many classes of organic compounds also exhibit anticancer and antibiotic properties. Two of those classes of organic compounds are semicarbazones and thiadiazoles. Organometallic complexes of these compounds containing transition metals such as copper, cobalt and nickel may provide enhanced activity against cancer tumors or bacteria. This project is exploring the synthesis and characterization of semicarbazones and thiadiazoles with the transition metals of copper, cobalt and nickel. A semicarbazone ligand was characterized by melting point, proton NMR and IR spectroscopy. Synthetic work is continuing on the thiadiazole compound. Further research will involve reaction of these ligands with copper, cobalt and nickel along with attempts to grow x-ray quality crystals such that the crystal structure of the organometallic complexes can be determined. Anticancer and antibiotic testing will begin after characterization of the complexes is complete.

142. Oxidative Damage in Triplex-Forming DNA Sequences Increases the Mutation Frequency in Mammalian Cells

Sarah Coe '17, Olivia Drummond '16

Sponsor: Dr. Maha Zewail Foote, Chemistry and Biochemistry Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Triplex-forming DNA sequences are ubiquitous throughout the human genome particularly in promoters of disease-linked genes. The formation of intramolecular triplex-DNA structures significantly increases the mutation frequency in mammalian cells and is thus considered to be an endogenous cause of genetic instability. In addition, DNA is susceptible to damage from exogenous sources such as reactive oxygen species. Triplex-forming regions may be a target for damage induced by reactive oxygen species since triplex formation occurs within mirror repeats of purine and pyrimidine sequences. Here, we asked to what extent oxidative damage would affect triplex-induced mutation frequency. Plasmid DNA either containing a triplex-forming sequence from the human c-MYC promoter or a non-triplex forming sequence was oxidatively damaged using hydroxyl radicals. DNA strand breaks and 8-oxoguanine levels were similar between triplex-forming and non-triplex-forming plasmids as measured by agarose gel electrophoresis and enzyme immunoassay, respectively. Our results show that damaging the plasmid containing the triplex-forming sequence increased the level of mutation frequency in mammalian cells when compared to the non-damaged, triplex-containing plasmid. Analysis of the mutation spectra suggests that the oxidatively-damaged, triplex-containing plasmid was processed differently by the cells compared to that of the triplex-containing plasmid. Results from these studies will provide insight into the mechanisms involved in processing damaged DNA within triplex structures.

143. Cell Fate Decisions in Mouse Embryonic Fibroblasts

Alexandra Taylor '17, Morgan O'Neal '17

Sponsor: Dr. Kerry Bruns, Chemistry and Biochemistry Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Balb 3T3 (non-transformed) and K-Balb (transformed) cells were cultured in both nutrient rich and nutrient limiting media to determine whether a difference in growth media would affect cell fate decisions of mouse embryonic fibroblasts. Proteins from these cell lines were visualized for cultures grown in minimal essential media (MEM) and Dulbecco's modified Eagle's medium (DMEM) to determine if nutrient deprivation specifically had an effect on apoptotic and autophagic mechanisms in cancer cells. Western blot analysis was used to investigate enzyme levels related to apoptotic and autophagic cellular pathways. Analysis revealed proper binding for the Phospho-Jun, Cleaved Caspase, Atg 12, and LC3 A/B proteins. These analyses reflected a higher amount of cleaved caspase levels in cell lines that were grown in MEM, leading to the conclusion that cells grown in nutrient deprived conditions will likely undergo apoptosis. Inconclusive results were observed more often

for experiments of apoptotic proteins than for those of the autophagic proteins. It is possible that the integrity of some antibodies used in blotting had been compromised. The study has not been completed; future research will consist of using antibodies obtained from different commercial sources.

144. Infection Detection: Molecular Detection of *Angiostrongylus Cantonensis* in Uruguayan Apple Snails

Carissa Bishop '17

Sponsor: Dr. Romi Burks, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Freshwater mollusks occupy a central, intermediate position in food webs through direct connections, either as consumers or as prey. Certain mollusks, such as snails, indirectly facilitate trophic interactions by serving as intermediate hosts for parasites, including the nematode *Angiostrongylus cantonensis*. This roundworm causes encephalitic meningitis in humans, or brain swelling, when people consume raw or uncooked, infected gastropods. While humans become accidental hosts after ingestion of infected larvae, mollusks serve as vital intermediate hosts. We sought to quantify *A. cantonensis* infection prevalence within apple snails (*Pomacea* spp.) collected from Uruguay. Uruguay represents the southern limit for *Pomacea* spp., known intermediate hosts for the parasite. We screened for the presence of *A. cantonensis* in apple snails by extracting total genomic DNA from foot tissue and conducting a species-specific PCR targeting the ITS-1 gene (internal transcribed spacer-1). We identified infected individuals through visual comparison against three positive controls using gel electrophoresis. To date, we have found no positive samples but have only screened a small subset of potential hosts. We plan to amplify the ITS-1 gene for *A. cantonensis* in 700+ apple snail tissue samples collected from site locations across Uruguay during previous field excursions (2011-2015). We also want to expand our screen to include 250 samples from Brazil. Other researchers have detected *A. cantonensis* in apple snails from northern Brazil, but no study has yet examined southern Brazil. Our study will provide the first molecular screen for *A. cantonensis* within freshwater apple snails in Uruguay and southern Brazil.

145. New Record of Japanese Mystery Snail (*Cipangopaludina japonica*) in Texas

Bianca Perez '16, Sofia Campos '17, Averi Segrest '16

Sponsor: Dr. Romi Burks, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Whether intentional or unintentional, increased connectivity encourages transport and introduction of non-native species through vectors such as the aquarium or food trades. These trades often include non-motile groups, including mollusks. Two species of Asian mystery snails, *Cipangopaludina chinensis* and *C. japonica* (Viviparidae), entered the United States through the food and aquarium trades and now occur in 27 states (Figure 1). Distinguishing between these two species only using morphology poses difficulty. Both species reach similar sizes and exhibit smooth, light to dark green shells with 6-7 concave whorls and indented sutures. The USGS Nonindigenous Aquatic Species database lists three collections of *C. chinensis* in two Texas counties. No records of *C. japonica* from Texas exist, although this species occurs in Oklahoma. During fieldwork [October 2015], we collected one male and one female *Cipangopaludina* spp. from the Missouri City Community Pond in Harris County, TX. Dissection of the female yielded 52 juveniles in the brood pouch. Phylogenetic analysis based on the cytochrome oxidase c subunit I gene (COI) allowed us to determine the identity of the individuals as belonging to *C. japonica*. Our collection stands as the first record in Texas. Our finding suggests the presence of a potentially viable population of non-native mystery snails in Harris County.

146. The Rattler's Tale: Why the Timber Rattlesnake Should be Protected

Daniel Gonzalez '17

Sponsor: Dr. Romi Burks, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When discussing conservation of threatened and endangered species, we often leave out reptiles because they appeal less to the public than mammals and birds. In particular, one group of reptiles faces a fair amount of controversy: snakes. Whether loved or feared, snake conservation, particularly that of venomous snakes, often faces opposition due to the perceived threats that people believe about snakes. Despite these misconceptions, snakes actually do more good than harm to both their natural environment and people. This poster project will show the value of snake conservation by focusing on the timber rattlesnake. The timber rattlesnake warrants particular interest because it serves a keystone species, yet suffers as a threatened or endangered species throughout most of its range. The poster will be divided up into three parts. The first part will explain how the timber rattlesnake benefits the ecosystem in which it lives, including an emphasis on how the timber

rattlesnake benefits humans as well. The second part will describe the threats that the timber rattlesnake faces, with a focus on issues caused by humans, such as habitat fragmentation. The third part will inform the audience on current conservation efforts and possible future conservation efforts, including what individuals can do to preserve the timber rattlesnake as well as other snake species.

147. How do Microplastics Impact the Biodiversity of Organisms in the Ocean?

Tolga Gulyasar '16

Sponsor: Dr. Romi Burks, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Over the last 40 years, ocean pollution has continuously increased, resulting in substantial accumulation of plastic due to its inability to break down. Currently, humans put 8 million tons of plastic into the ocean each year and over 150 million tons of plastic exist in the ocean right now. Once in the ocean, large pieces of plastic further breakdown into microplastic, or, microplastic particulates of synthetic materials. Microplastics harm many organisms in the ocean, including vertebrates such as fish as well as primary producers such as cyanobacteria. Microplastics bind to the cyanobacterial cells and affect the ability of the organisms to photosynthetically fix carbon, which indirectly releases oxygen in the process and fix nitrogen which get utilized in their own cellular processes and eventually get moved through the food web. Over time such disruption in these processes will lead to a noticeable shift in climate. Fish consume microplastics in the ocean resulting in death due to the plastic being a nonviable food source. Constant death of fish over a long period of time causes predators of that fish to starve, negatively impacting the food chain and disrupting the balance of the ecosystem. Microplastics will ultimately cause the loss of biodiversity in ocean systems stressed by many other factors. To bring attention to this problem my poster will elaborate on the harmful effects microplastics have on cyanobacteria and fish as well as propose solutions to solving our plastic problem including microbial remediation.

148. A Look Into the Plant World: Are We Valuing the Right Organisms?

Nalehya Singleton '18

Sponsor: Dr. Romi Burks, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When thinking about endangered species, the public too often sees only large vertebrates. Larger and more relatable animals draw the public eye, followed by "lesser creatures." These others include smaller vertebrates, invertebrates, and finally, the base of the food chain, plants. Certain vertebrates, such as sea otters, do play important roles as keystone species, but, as a whole, the public undervalues the majority of plant diversity. Scientist value and research plants with a greater appreciation than the public. While large vertebrates make contributions in their trophic levels, plants produce important impacts on the environment, including nutrient cycling, food, pollination, and other ecosystem services. For instance, the Panamanian fig serves as a large food source for pollinating insects, and provides important ecosystem services. To show the audience the value of plants in comparison to popular vertebrates, my watercolor painting will outline the disproportionate public support of vertebrates in comparison to plants. I will make an argument for environmental importance over public view by using size distortion to place different level of value on plants and animals I will illustrate the chosen vertebrate and plant species as respectively sized organisms based on their contributions to the environment. My intended result will hopefully inform and change the outlook of the public regarding the importance of plants in comparison to vertebrates. Instead of focusing on more popular endangered species, the audience could consider the importance of conservation of less publicized and less relatable species.

149. Selective Protein Degradation of DNA Polymerase V, RumA₂B, from the Integrative Conjugative Element R391

Samar Dawy '18, Veronica Pardo '18, Harlin Stuart '18, Erin McGuyer-Huffman '18

Sponsor: Dr. Martín Gonzalez and Dr. Stacy Brown, Biology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The Integrative Conjugative Element R391 is a mobile genetic element which can be transferred between bacteria and carries resistance to the antibiotic kanamycin. R391 also encodes genes for an error-prone DNA polymerase V homolog designated RumA₂B. DNA polymerase V, or UmuD₂C, has been implicated in establishment of resistance to certain classes of antibiotics. Activity of UmuD₂C is regulated at both the transcriptional and posttranslational level. The Lon protease is responsible for the unstable nature of both UmuD and UmuC. The goal of this study was to determine if individual polypeptides making up RumA₂B exhibit similar instability demonstrated for UmuD₂C. The *rumA* (*A'*) and *rumB* genes were individually cloned into plasmids under control of an IPTG-inducible promoter, transformed into the *E. coli* strain EC10 and the gene product assayed

for instability. Our results show that RumA is relatively stable while RumA' and RumB demonstrate instability which suggests both similarities and differences in the posttranslational regulation of RumA'₂B relative to UmuD'₂C

150. Post-Translational Regulation of the R391 Error-Prone DNA Polymerase, RumA'₂B
Samar Dawy '18, Veronica Pardo '18, Harlin Stuart '18, Erin McGuyer-Huffman '18
Sponsor: Dr. Martín Gonzalez and Dr. Stacy Brown, Biology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When DNA within a cell is damaged, DNA polymerases attempt to repair the DNA. When DNA damage is extensive, DNA polymerase III stalls and cannot continue repair. To continue the reparation of DNA, the cell can produce error prone DNA polymerases that do not stall at such DNA damage. Error prone DNA polymerases have the potential to create mutations within bacterial cells, such as mutations that convey antibiotic resistance. RumA'₂B is a highly mutagenic error prone DNA polymerase V found on the Integrative Conjugative Element (ICE) R391. Downstream from the *rumAB* operon is ORF 13, a hypothetical protein that shows homology to known proofreading epsilon subunits. In this study, the post translational regulation of RumA'₂B by the putative epsilon subunit was investigated through histidine mutagenesis assays and found to reduce the number of mutations produced by the presence of RumA'₂B.

151. The Presence of the Persister Genes *hipBA* on the Integrative Conjugative Element R391 and Their Effects on Host Cell Growth
Kabi Kamau '16, Katelyn Kimble '16
Sponsor: Dr. Martín Gonzalez, Biology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Persistence is a genetic advantage which allows a small fraction of a bacterial population to survive in unfavorable environments. The expression of persistence-inducing genes temporarily shuts down host cell metabolic processes, often blocking lethal environments, including the presence of antibiotics, from killing the host cell. This has been shown to cause treatment failure and recurrent infections. Known persister genes *hipA* and *hipB* of *Escherichia coli* function as a unique toxin-antitoxin combination. Interestingly, the Integrative Conjugative Element (ICE) R391 harbors genes with homology to the *hipBA* operon of *E. coli*. Therefore we hypothesize that these putative R391 persister genes function in cessation of growth due to the down regulation of host cell metabolic processes. To test this, we cloned the R391 putative homologs *hipA* and *hipBA* into separate plasmids thereby placing the expression of the gene(s) under control of an arabinose inducible promoter. We then transformed the plasmids *hipA* and *hipBA* individually into the *E. coli* strain MG1655. Persistence assays demonstrated that *HipAR391* inhibited growth of the host cell. However, when both *HipAR391* and *HipBR391* were present in the cell, growth was unaffected. These findings suggest that *HipAR391* and *HipBR391* function similar to the *E. coli* homologs. Identification of persister genes on a mobile genetic element such as R391 is problematic because one can envision movement of R391 between different species of bacteria thereby imparting antibiotic tolerance. We look to continue to dissect the mechanism of R391-mediated bacterial persistence in order to help facilitate the development of enhanced drugs that can effectively target persister cells to decrease chronic infections.

152. Effects of Kinesio Taping® on Muscular Motor Unit Recruitment in the Quadriceps in Healthy Individuals
Courtney Carlson '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Kinesio Tape® is widely used as an intervention by athletes and recreational exercise enthusiasts that have considered injury prevention regimens and has been suggested to enhance muscle performance and function in uninjured muscle. Purpose: To investigate the effect of muscular facilitation and inhibition taping methods using Kinesio Tape® on muscle activity during knee extension in healthy individuals. Methods Sixteen college-students (20.19±0.98 yr, 170.59±11.71 cm, 74.60±19.37 kg) performed unilateral concentric knee extensions on the dominant leg at two loads (35%max, 70%max) with three Kinesio Tape® conditions (no tape, facilitation, inhibition). Neuromuscular activity (EMG) of the vastus medialis and vastus lateralis was represented as a percentage of maximal effort as determined during a maximum effort knee extension. A counter-balanced presentation of the three taping conditions was used. Results: Two 3x2 rANOVAs were used to analyze measurements for VL and VM efforts. No significant difference was found in neuromuscular activity between taping condition in VL ($F(2,30)=0.308$, $p=0.737$); however, effort for the 70% load was significantly greater than the 35% load ($p<0.001$). A significant interaction in effort was found between taping condition and load in VM ($F(2,30)=5.750$, $p=0.008$). For VM effort, the 70% load was significantly greater than the 35% load ($p<0.001$). A 2x2 rANOVA revealed no significant difference between taping conditions at the 35% load ($F(2,30)=2.072$, $p=0.144$). Conclusion: Kinesio Tape® does not alter muscle performance in

healthy individuals based upon facilitation and inhibition taping, but there is a slight decrease in muscle effort when performed at lighter loads with Kinesio Tape® than without.

153. Evaluation of the Effectiveness of Smart Cells® Surface Technology on Vertical Jumping Forces
Kaitlyn Corbett '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

A majority of lower extremity injuries in volleyball can be related to overuse or overtraining due to the high frequency of jumping and landing during practices and games. Further, it has been suggested that playing surfaces could contribute to these injuries. Purpose: To examine the effectiveness of SmartCells® Cushioning Technology in reducing impact forces experienced while playing volleyball. Methods: Twelve collegiate women's volleyball players (20.01 ± 1.29 yr, 172.85 ± 6.26 cm, 73.45 ± 13.02 kg) performed two separate jumping tests. The first test included a series of drop-jumps, where participants stepped off a platform onto a force plate and immediately performed a maximal effort vertical jump. Drop jumps were performed from two heights (30 or 60 cm) and onto two different surface conditions (with or without a SmartCells® mat). For the second test, each participant performed maximal effort 45 s repetitive jumping tests, with and without the mat. Results: The forces experienced while landing were greater dropping from the 60 cm box for both mat (5.2 ± 0.9 BW) and no mat (5.3 ± 1.1 BW) conditions versus the mat (2.7 ± 0.5 BW) and no mat (2.9 ± 0.6 BW) conditions dropping off of the 30 cm box ($F(1,11) = 356.02$, $p = < 0.001$). Further, in the repetitive jump test PPF decreased at a 31.6% greater rate on the mat ($-.0077 \pm .0042$ BW/ jumps) versus no mat ($-.0056 \pm .003$ BW/jumps) ($t(7) = -3.235$, $p = 0.013$, $d = 1.14$). Conclusion: Use of the SmartCells® mat had no effect on jumping performance or landing characteristics. The more rapid drop off in PPF in the repetitive jump test suggests that the participants became fatigued more rapidly while jumping on the mat.

154. Evaluation of Kinematic Variables in Swimming Relay Start Performance
Nathan Townsend '17, Shelby Hall '17, Kaitlyn Corbett '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The addition of an approach to a traditional relay start has become more prevalent in competitive swimming despite previous findings suggesting no widespread differences between start techniques. To re-evaluate the use of a step-up approach in relay start performance to determine if these starts offer a performance advantage. Nine collegiate swimmers ($19.8 + 1.3$ yr, $181.7 + 12.8$ cm, $73.8 + 8.9$ kg) completed three trials each of four relay starts (no-step, single-step apart, single-step together, and double-step). Two synchronized cameras captured each movement above and below water and a 21-point model of the body was used to determine center of mass position. Exchange time, takeoff velocity and angle, entry velocity and angle, and time to 5 m were evaluated between conditions. The only significant difference was observed in takeoff velocity between start techniques ($F(3,15) = 3.437$, $p = 0.04$, $\eta^2 = 0.41$). The mean (sd) takeoff velocity for the double-step approach ($4.41 + 0.14$ m/s) was significantly faster than single-step apart ($4.19 + 0.18$ m/s, $p = 0.04$) but not the single step together ($4.28 + 0.20$ m/s, $p = 0.70$) approach nor the no-step ($4.24 + 0.27$ m/s, $p = 0.93$) start. These preliminary results suggest that a step-up approach is not advantageous over a no-step approach.

155. The Effects of Playing Surface On Plant Leg Knee Kinematics of Men and Women Collegiate Soccer Players'
Ashley Moulder '16, Kirsten Mazur '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Most ACL injuries for soccer players are non-contact, with women having more non-contact ACL injury than men. It has been reported that women have a smaller knee angle while planting than men. Data suggests that knee injury rates are higher on artificial turf. Purpose: To determine if playing surface effects men and women soccer players' plant leg knee angle when performing power (PS) and finesse (FS) shots. Methods: Sixteen collegiate soccer players (8 female, 8 male, age = $20.17 \pm$ yrs, mass = $73.67 \pm$ kg, height = $162.41 \pm$ cm) performed three trials of four different shooting conditions. Participants completed a dribble up shot, with an electrogoniometer and accelerometer attached to their plant leg. One 2x2 (field surface x gender) Repeated Measures ANOVA was used to analyze data for each shot type. Results: For PS, plant leg knee angle at contact did not differ ($F(1,14) = 0.251$, $p = 0.624$, $\eta^2 = 0.018$) between NG ($28 \pm 8^\circ$) and AT ($30 \pm 14^\circ$). It was also not different ($F(1,14) = 0.012$, $p = 0.913$, $\eta^2 = 0.001$) between men ($31 \pm 9^\circ$) and women ($27 \pm 13^\circ$) for the PS. For FS, the angle at contact did not differ ($F(1,14) = 0.082$, $p = 0.779$, $\eta^2 = 0.006$) between NG ($27 \pm 11^\circ$), and AT ($26 \pm 8^\circ$). It was also not significantly different ($F(1,14) = 3.128$, $p = 0.099$, $\eta^2 = 0.183$) between men ($30 \pm 7^\circ$) and women ($24 \pm 6^\circ$). Conclusion: Additional studies should

be performed as artificial turf becomes more popular to narrow down the cause of the increase risk of knee injury on those surfaces.

156. Effect of Four Week Medicine Ball Training on a Peak Ground Reaction Force and Peak Moments in Collegiate Lacrosse Players
Dakota Skinner '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Medicine ball training has been shown to improve performance in baseball batting and handball-throwing. Given the similarity of the kinetic link dynamics of these activities with those of a lacrosse shot, a medicine ball training program may offer a similar performance benefit for a lacrosse shot. Sixteen collegiate lacrosse players (control $n=8$, treatment: $n=8$) volunteered to participate in this study. The treatment group participated in medicine ball training 3 days/week for 4 weeks. Overhand lacrosse shot consisted of an approach such that their lead foot landed on a force plate. Medicine ball throw consisted of lead foot perpendicular to the length of the football field with trail foot shoulder width apart. Participants squatted with arms extended, and released the ball with maximal effort. Average peak vertical GRF was similar before and after training for both the control group and treatment. Average peak moment in the X direction was similar before and after training for both the control group and treatment group. Average peak moment in the Y direction was similar before and after training for both the control group and treatment group. Average peak moment in the Z direction was similar before and after training for both the control group and treatment group. Average medicine ball throw distance was similar before and after training for both the control group and the treatment group. Despite a mild improvement in medicine ball throw, a four-week medicine ball training program had little effect on an overhand lacrosse shot.

157. The Effects of Prior Caffeine Ingestion on Respiratory and Cardiovascular Responses During Submaximal Exercise in Trained and Untrained Women
Kaitlyn Foster '16
Sponsor: Dr. Jimmy Smith, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Caffeine consumption prior to exercise has shown to produce beneficial effects during subsequent exercise in trained men. Benefits include decreased RPE, reduced respiratory exchange ratio (RER), and decreased oxygen deficit. While these effects have been demonstrated in men, little work has evaluated the effects of prior caffeine ingestion on exercise responses in untrained women. Twelve women (6 trained, 6 untrained) completed two submaximal bouts of cycling, at 60% of maximal HR, 45 min after consuming either caffeine (3 mg/kg) or a placebo. During these bouts, RPE, RER, VO_2 , and HR were measured, and oxygen deficit was calculated post-exercise. Data were analyzed using a mixed model ANOVA with two independent groups, trained and untrained, and two caffeine conditions repeated across participants. Results: Caffeine was found to significantly decrease RER values during exercise ($F(1,10)=22.62$, $p<0.01$) across groups, caffeine being responsible for about 69% ($\eta^2=0.69$) of the change in RER. RPE values were lower during exercise after caffeine ingestion across groups ($F(1,10)=4.42$, $p=0.06$) and was responsible for about 30% ($\eta^2=0.31$) of the change in RPE. Caffeine was not found to have a significant effect on VO_2 ($F(1,10)=2.00$, $p=0.19$) or HR ($F(1,10)=2.40$, $p=0.15$) during exercise, or on measures of oxygen deficit ($F(1,10)=0.48$, $p=0.51$); however, the trained group did have a significantly higher oxygen deficit than the untrained group ($F(1,10)=5.35$, $p=.04$). There were no significant interactions between the caffeine treatment and group for any dependent variable. Conclusion: Results indicate that ingesting caffeine 45 min prior to exercise can lead to increased fat oxidation and lowered RPE without affecting VO_2 or HR during submaximal exercise.

158. Use of the "Talk Test" to Determine Physiological Responses to Exercise and Elements of HIIT Protocols
Tyler Vaughn '16, Audrey Anglin '16, Kaitlyn Foster '16, Tony Wilkins '16
Sponsor: Dr. Scott McLean, Kinesiology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Studies have shown that the "Talk Test" (TT) can be used to identify ventilatory threshold (VT) outside of a laboratory. High-intensity interval training (HIIT) generates positive physiological responses similar to endurance training, with shorter exercise bouts at higher intensities. Purpose: The purposes of this study were to use the TT to estimate physiological measures associated with moderate intensity exercise, and prescribe intensities for a HIIT protocol. Methods: Five participants completed three laboratory sessions each. The first session consisted of a graded exercise test (GXT) to volitional exhaustion. The second visit, participants performed a GXT while doing a TT at the end of each stage. For the TT, participants recited the

pledge of allegiance and signaled how comfortable speech was using hand signals. On the third visit, a HIIT workout was completed using intensities determined from the TT. Results: The time at VT was not correlated with the time of the “thumb sideways” signal ($r(3) = 0.56$, $p = 0.32$) from the respective two GXTs. Also, the HR at VT was not correlated with the HR at the “thumbs sideways” signal ($r(3) = 0.14$, $p = 0.83$). Four of five participants achieved a VO₂ of 80 - 90% of VO₂max during the HIIT trials with the mean (sd) percent of VO₂max being 83.3 (5.5)%. Conclusion: Results of this study suggest that the “thumbs sideways” signal from the TT did not accurately represent VT. However, the TT was useful in selecting exercise intensities that defined successful HIIT protocols.

159. Effects of Footwear on Performance in a Barbell Back Squat

Tony Wilkins '16

Sponsor: Dr. Scott McLean, Kinesiology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Varying philosophies exist on the type of footwear that is most beneficial to wear when strength training. Olympic/power lifters prefer to train in a stiff shoe with a raised heel (0.6-0.75 inches) to provide more stability through the movement. Bodybuilders prefer lifting barefoot or with a minimalist shoe. The purpose of this experiment was to determine the effects that a weightlifting shoe has on peak vertical force, peak vertical power, total center of pressure migration (COP), anterior-posterior (AP) COP migration, and mediolateral (ML) COP migration. Eleven participants, (178.7±7.2 cm and 84.6±15.3 kg) performed barbell back squats while wearing a weightlifting shoe and a running shoe with a minimal drop height. All trials were performed atop a force plate with force and moment data collected at 200 Hz. Participants reported on three separate days for testing. Day one was used to determine 1-RM using a multi-rep test (Brzycki, 1993). Participants then were given 48 hours rest before reporting for the next day. Day two and three were used to collect data kinetic data from a submaximal (70% 1-RM) squat trial while wearing either a weightlifting shoe or running shoe. The same 48 hours rest was given between the two days. Peak vertical force while wearing weightlifting shoes (2096±449 N) was not different than when wearing running shoes (2086±486 N) ($t_{32} = .154$, $p = .87$, $d = .015$). Similarly, peak vertical power while wearing weightlifting shoes (30.7±19.6 W) was not different than when wearing running shoes (31.1±23.4 W) ($t_{32} = -.12$, $p = .9$, $d = .01$). Wearing running shoes decreased total migration of the COP (0.61±0.18 m) by 34% from the weightlifting shoe (0.93±0.67 m) ($t_{32} = 2.82$, $p = .008$, $d = .45$). Likewise, AP COP migration wearing the running shoes (0.35±0.13 m) was reduced by 51% compared to using the weightlifting shoe (0.71±0.73 m) ($t_{32} = 2.96$, $p = .005$, $d = .47$). As indicated by Cohen's d , approximately 45% of the reduction in COP migrations was accounted for by shoe type. These data suggest that use of a flatter, less stable shoe resulted in more stable body position throughout the squat exercise. Less body sway during the movement may produce a more effective lifting technique that minimizes the risk of injury.

160. Effect of Two Week L-Arginine Supplementation on Variables Related to Endurance and Strength Performance in Collegiate Football Players

Bobby White III '16

Sponsor: Dr. Jimmy Smith, Kinesiology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

It has been shown that a month-long supplementation period of L-arginine, coupled with training, increases performance more than supplementation or exercise alone (Hambrecht et al., 2000). To examine the effects of 2 wk L-arginine supplementation period on factors related to endurance and strength performance. Twelve collegiate football players participated in this study. The control group ($n = 6$) and treatment group ($n = 6$) both participated in the same off-season training program that consisted of strength training 3 d/wk and agility training 2 d/wk. In addition, the treatment group received 1g of L-arginine twice daily, whereas the control group received a placebo twice daily. Initially, participants performed a baseline bench press maximum repetitions test at 70% of their most recently recorded bench press 1 RM (MMR). The participants also performed a graded exercise test (GXT) on a cycle ergometer to volitional exhaustion. Following baseline testing, participants immediately began supplementation period, and retested in the MMR and the GXT after 2 weeks of supplementation. ANCOVA did not reveal significant effects of L-arginine supplementation on MMR ($F(1,9) = 1.71$, $p = 0.22$), VO₂max ($F(1,9) = 1.08$, $p = 0.33$), time to exhaustion in the GXT ($F(1,9) = 0.19$, $p = 0.67$), or HRmax during the GXT ($F(1,9) = 4.79$, $p = 0.06$). Conclusion: A 2 wk supplementation period coupled with training may not be of sufficient length to improve factors related to endurance and strength performance in trained college-aged men.

161. Effects of Warm Up Intensities on VO₂ deficit, RPE, Heart Rate, and Steady State VO₂ measures

Dylan Wilburn '16

Sponsor: Dr. Jimmy Smith, Kinesiology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Athletes use warm ups to enhance performance and decrease risk of injury. There seems to be optimal warm ups for each type of exercise to improve performance. This study looks at how the intensity of a warm up at 60% ventilatory threshold (VT) 100% VT, and 120% VT impacts O₂ deficit, RPE, HR, and other aspects of performance during a 5 min steady state. A cycle ergometer was used as the mode of exercise for the sessions and pedal cadence was kept at 70 rev/min. There was a significant decrease in O₂ deficit as the warm up intensities increased ($F=(2,9)= 9.148, p = .002, \eta^2=.53$) without any negative performance effects with the chosen intensities. RPE for the 5 min steady state period was significantly easier with the higher intensity warm up ($F=(2,9)=6.88, p=.007, \eta^2=.462$). The findings suggest that a higher intensity warm up has the most performance enhancing capability affecting mental and physiological factors that impact performance. The specificity of the warm up may also include reaching the desired cardiorespiratory output of the steady state exercise to see the most physiological performance benefits.

162. Comparison of Calorie Counting vs. Self-Evaluation Methodology for Weight Loss

Sarah Hachar '17, Marissa McCormack '17

Sponsor: Dr. Brittany Crim, Kinesiology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Obesity is a major health concern in the United States and one way to control it is through proper nutrition monitoring. Calorie counting regulates energy intake, while mindful eating requires understanding and interpretation of internal cues that control hunger. Both techniques have been proven efficacious in specific settings, but the two techniques when supported by digital applications have never been compared. The purpose of this study was to analyze and compare the effectiveness of digital support in both methodologies for weight loss. Participants were recruited and randomly assigned into four groups; 2 mindful eating groups, one with and one without an app, and 2 calorie control groups, one with and one without an app. Individuals received education based on their assigned group and implemented the plan for four weeks. Pre and post assessments included weight, height, BMI, blood pressure, waist to hip ratio, fasting glucose levels, fasting total cholesterol, and body composition. A repeated measure ANOVA revealed that only calorie control with an app had a significant decrease in weight loss ($p=0.032$). A one-way ANOVA showed significantly greater decreases in BMI and diastolic BP in that group than the other three groups ($p=0.017; p=.009$). A combination of portion size education and an electronic medium for calorie counting was the superior weight loss technique compared to portion education without an app. This evidence shows that educating the American public on portion sizes and appropriate caloric intake is important for combating obesity.

163. The Advantages of Groups: How Identifying With Being Supported by a Group Alters Stress Responses

Saira Fazalbhay '16, Aimee Slagle '16, Charlie Berndt '16

Sponsor: Dr. Erin Crockett, Psychology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Researchers investigated whether individuals' interdependence type (i.e., relational or collective interdependence) and support source (i.e., a single person or a group) altered cortisol reactivity during a speech task. Seventy-two participants (36 women, 35 men, and 1 other) read a letter providing support, gave a 3 min speech, completed questionnaires, and provided three saliva samples which were used to determine cortisol levels at baseline, during the speech stressor, and during recovery. A series of repeated measures ANOVAs revealed an effect of collective interdependence on cortisol reactivity; the higher individuals' levels of collective interdependence, the greater their decrease in cortisol across the three samples. Researchers also found an effect of support source on cortisol reactivity; receiving support from a single person increased cortisol whereas receiving support from a group did not increase cortisol. In short, we have preliminary evidence that receiving group support and having a group orientation benefits individuals.

164. Do As I Do: Expressions and Desires of the Five Love Languages

Aaron Garcia '17

Sponsor: Dr. Traci Giuliano, Psychology Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

In his 1995 book, *The Five Love Languages*, Gary Chapman proposed five methods that people can use to express love and affection in relationships: physical touch, receiving gifts, quality time, acts of service, and words of affirmation. Recently, researchers have begun to investigate the importance of these five love languages in relationships. For example, Brashier and Hughes (2012) found that use of both physical touch and words of affirmation predict relationship satisfaction. Similarly, increased quality time has been found to predict lower levels of intradyadic stress (Milek, Butler, & Bodenmann, 2015). Nevertheless, although the overall role of the love languages in relationships has been studied, research has yet to investigate the relationship between a person's love language expression and his or her love language desire. In order to address this gap, we surveyed 108 undergraduates (49 men, 59 women) at Southwestern University and assessed their use of, and preference for, each of Chapman's love languages. As expected, participants' love language use with their romantic partner was strongly positively correlated with their desired love language from their partners for all five love languages, all r s > .53, all p s < .001. Thus, the more that participant's desire receiving expressions of a particular love language from their romantic partner, the more frequently they expressed their love through that same love language. Taken together, the present study may offer a greater understanding of affection exchanges in relationships.

165. Be Yourself! (Or Your Mom): Parents' and Offspring's Love Languages
Helena Lorenz '18, Maddie Straup '18, Matt Gonzales '18
Sponsor: Dr. Traci Giuliano, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When people say that children grow up to be just like their parents, the phrase may seem stereotypical and trite, but there is a growing body of scientific evidence to support this claim (e.g., O'Connor, Matias, Futh, Tantam, & Scott, 2013). Specifically, research indicates that children tend to mirror the relational behaviors of their parents, particularly conflict behaviors (e.g., Cui & Fincham 2010). Although there has been extensive research into the consequences of negative marital behavior, there has been comparatively little investigation into the repercussions of expressions of love between parents. To address this gap, the current study used Chapman's (1992) love languages as a benchmark for judging the connection between parents' relationship and their offspring's romantic relationships. One hundred and eight undergraduate students (59 women and 49 men) completed a questionnaire that inquired about their own personal romantic history as well as that of their parents. The results revealed the predicted positive correlation between parents' and offspring's use of the love languages of gift giving ($r[100] = .27, p = .007$), words of affirmation ($r[100] = .22, p = .025$), and quality time ($r[100] = .28, p = .005$). However, there was no relationship between parents' and offspring's use of the love languages of physical touch or acts of service. These findings suggest that only certain expressions of love are absorbed through children's observations of their parents, opening up more possibilities for future research into the impact of parents' relationships on their children.

166. It's All About Me: Narcissism as a Predictor of Love Languages
Sarah Matthews '17, Kayleigh Thomas '18
Sponsor: Dr. Traci Giuliano, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Narcissists, who exhibit extreme self-love and hold inflated self-perceptions, are concerned with self-enhancement and have little regard for other people; as a result, they often employ exploitive strategies on others for their own benefit (Campbell & Foster, 2002). Based on previous research on that narcissists undervalue their partners in comparison to their own self-concepts (Campbell & Foster, 2002; Campbell, Rudich, & Sedikides, 2002), it could be expected that that people who scored higher in narcissism would express love in the form of Chapman's (1995) five love languages (i.e., quality time, gift giving, words of affirmation, physical touch, and acts of service) to their partners less frequently than would people with lower narcissism scores. To test this hypothesis, 108 (59 women, 49 men) predominantly White undergraduate students from Southwestern University were selected using convenience sampling and given a questionnaire measuring their attitudes towards relationships. Surprisingly, and contrary to the hypothesis, our results showed that individuals who scored higher in narcissism were more likely to show love to their partners through acts of service than were individuals who scored lower in narcissism. These findings suggest that narcissists may serve their romantic partners in order to gain favor with their partners. In other words, narcissists indirectly serve themselves by pleasing their partners, which increases their chances of being shown love in return.

167. Frisky Business: The Role of Self-Monitoring in Public Physical Touch
Marissa Rosa '18, Delaney Dunn '18
Sponsor: Dr. Traci Giuliano, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Given rising divorce rates, it is important to identify characteristics that predict relationship success. One characteristic currently being examined is the personality trait of self-monitoring (i.e., the extent to which individuals change their behavior across different social situations; Snyder, 1974). In general, research has shown that relationships consisting of two high self-monitors have less trust than do relationships with two low self-monitors (Norris & Zweigenhaft, 1999), and couples with less trust engage in public touch more than do couples with more trust (Montoya & Hibbard, 2014). Therefore, it follows that high self-monitors will trust their partner less and use touch to “claim” their partner in public. The current study examined the relationship between self-monitoring and public relationship behavior. We surveyed 108 Southwestern University undergraduates (49 men, 59 women) about their romantic relationships. The questionnaire measured self-monitoring using one item from the Self-Monitoring Scale (Snyder, 1974), and three items ($\alpha = .76$) adapted from Chapman (2010) assessing the frequency of public touch between relationship partners (e.g., “I rarely kiss my partner in public.”). Surprisingly, and contrary to predictions, the lower people were in self-monitoring, the more likely they were to physically touch their partner in public, $r(102) = -.29, p = .003$. In short, our findings suggest that self-monitoring, along with other personal qualities (e.g., gender, self-esteem), should be considered when examining predictors of public relationship behaviors between partners.

168. Happiness in Past, Present, and Future: The Relationship Between Gratitude and Optimism
Issa El Hage '17, Roanne Shoubaki '17
Sponsor: Dr. Laura Hennefield, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Recent research on positive psychology has identified gratitude, optimism, and religiosity as factors that are influential to the strength and wellbeing of humans. Gratitude is a feeling of thankfulness for past and present benefit received from interaction with the environment. Optimism is having a favorable bias toward future outcomes related to the self. Given that these constructs appear similar, yet distinct, it is important to more fully understand the relationship between them. In present study, 135 college students from a small liberal arts university in Central Texas completed a questionnaire with items that assessed gratitude, optimism, and religious coping strategies. The results revealed a significant positive relationship between optimism and gratitude. Furthermore, a positive relationship was found between religious coping mechanisms and optimism, and between religious coping mechanisms and generosity. These findings suggest that individuals who have more optimistic attitudes also exhibit a more grateful outlook on past and present interactions with their environment. Furthermore religiosity is thought to be one way in which stressful life events are given meaning, help people understand the nature of life and hardship, and are able to gain control of their situation. In addition individuals who are more grateful might be more inclined to try to sustain all that they appreciate, thus actively contributing to the maintenance of their happiness.

169. The Relationship Between Academically Reckless Behavior and Optimism in College Students
Kuhlen Smith '17, Julie Swets '18
Sponsor: Dr. Laura Hennefield, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

This study investigated the relationship between academic recklessness and optimism in college students. Previous research has implicated several factors, including poor homework performance, not understanding the teacher, and inability of interact with peers, as contributors to lower academic success (Brady et al., 2012). The purpose of this study was to accumulate support for one of these two opposing theories. As part of a larger study, a survey was used to assess the relationship between optimism and academic recklessness in 135 college-aged students (88 female, 47 male). Optimism was measured using Scheier and Carver's (1985) Life Orientation Test. Academic recklessness was measured using four items created specifically for this research. Examples of academically reckless behaviors include choosing to not study for a test or just trying to “wing” an assignment (i.e., approaching an assignment with insufficient or no advance preparation). The results of this study revealed a negative relationship between optimism and academic recklessness. Participants who scored higher on optimism also scored lower on levels of academically reckless behavior, $r(133) = -.165, p = .05$. A negative correlation was also found between responses on the academic recklessness scale and GPA, $r(127) = -.397, p < .001$. Thus, our findings are consistent with the hypothesis that the more optimistic a person is, the more academically successful they will be in college. In addition to previous literature, these results suggest another way in which the characteristics of a student might affect behaviors that contribute to his or her academic success.

170. Childhood Competitiveness Predicts Social Anxiety in College Students
Marieke Visser '16, Sean Smith '18
Sponsor: Dr. Laura Hennefield, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Previous research has found college students with high levels of social anxiety report lower self-esteem (Nordstrom, Goguen, & Hiester, 2012). Further, a meta-analysis of past research revealed that participation in sports in childhood and adolescence is associated with positive psychological health. Whereas previous research has primarily focused on childhood sports participation as a predictor of future outcomes, it is unclear whether simply participating in sports provides these benefits, or whether another variable, such as competitiveness, might drive this relationship. Considering that competitive children are likely to have been exposed to more social situations through competition, we predicted competitive children would be less socially anxious in college. As part of a survey research design, a measure of childhood competitiveness was created to assess the individuals' desire to win in interpersonal situations in childhood. One hundred thirty-five college students completed a questionnaire that examined the role of childhood competitiveness in predicting social anxiety in college students. As predicted, the more competitive a student was as a child, the fewer symptoms of social anxiety they reported. These results indicate that the less competitive individuals were as children, the more socially anxious they are in college. Interestingly, childhood competitiveness was associated with several additional positive outcomes including lower levels of media consumption, greater likelihood of participation in collegiate sports, and more leadership characteristics; therefore, an individual who was competitive as child has more positive outcomes later in life.

171. What Makes a Leader? The Relationship Between Leadership, Optimism, and Social Anxiety
Abigail Wilson '18, Marguerite Dora '18, Amy Goodman '18
Sponsor: Dr. Laura Hennefield, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Leadership is becoming an important part of college life, and is great way to get involved and expand personal horizons, but being a leader might not be for everyone. Optimism, in contrast, appears to benefit everyone, and is associated with self-efficacy (Sezgin & Erdogan, 2015), a positive outlook on education (Bandura et al., 1996), and personal health (Applebaum, 2014). Whereas few studies have specifically investigated leadership qualities and potential in young adults, several researchers have suggested that success is related to both optimism and leadership (Sezgin & Erdogan, 2015). Thus, students who report being more optimistic might be more likely to hold leadership positions. Furthermore, there might be a negative relationship between social anxiety and both optimism and leadership, which could indicate reasons why individuals with social anxiety might struggle to succeed. Negative relationships have been found between depression, general anxiety, and optimism (Morton et al., 2014). However, none of these studies have focused on social anxiety, which is the fear of being negatively evaluated by others in social settings, and could lead individuals to avoid roles of leadership. A survey was used to assess optimism, leadership, and social anxiety in 135 college students. Leadership was positively correlated with optimism. Social anxiety was negatively correlated with optimism and leadership. These findings suggest that individuals with leadership qualities hold positive expectations about the future. Furthermore, individuals with higher levels of social anxiety are less optimistic and pose fewer leadership qualities. Thus, those with social anxiety might be less likely to take on leadership roles.

172. The Role of Cognitive Consistency and Psychopathic Traits in Sexual Fantasy
Samantha Weaver '16, Lennon Day '16, Natalie Lane '16, Sanna Maknojia '16, Brianna Turney '16,
Grace Wood '16
Sponsor: Dr. Bryan Neighbors, Psychology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Evolutionary psychologists have proposed that psychopathic traits facilitate exploitative, short-term mating strategies leading to attempts to understand their relationship to sexual behavior. Psychopathic traits have been linked to stronger sex drive and more "deviant" (socially less acceptable) sexual fantasies. We propose that as fantasy proneness and the frequency of deviant sexual fantasies increase there may be an accompanying increase in the belief that the fantasies are inconsistent with one's self-concept - the fantasies become egodystonic. We predict this relationship may be moderated by the frequency of psychopathic traits such that higher psychopathy would weaken the relationship between fantasy proneness and egodystonicity and the relationship between deviant sexual fantasies and egodystonicity. Thus, the purpose is to examine the pattern of intercorrelations between psychopathic traits (i.e., boldness, meanness, and disinhibition), frequency and types of sexual fantasies and frequency of acting on these sexual fantasies, general fantasy proneness, and egodystonicity in an undergraduate sample. A survey research design was used to measure the variables described above and basic demographics. Data collection is ongoing with 205 Southwestern students having participated. The proposed model of intercorrelations will be tested via multiple regression analysis, and results will be presented. Implications of the findings will be discussed, and may include benefits to the public welfare from a more comprehensive understanding of the relationship between psychopathic traits and sexual fantasy. The findings may also enable clinicians to consider the relationship between sexual

fantasy and psychopathic traits when treating relevant diagnoses, and help inform criminal investigation and crime prevention.

173. Service Dogs: Shelter vs. Work-Bred

Duncan Bradley '16

Sponsor: Dr. Laura Hobgood, Animal Behavior Program

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Service dogs are very important in the lives of many people and the quality of these dogs' training and abilities is of the utmost importance to their work and service for their owners, whose lives are in their paws. Some suggest that the best way to produce a dog at this level is to breed, train, and observe from birth. Some organizations utilize dogs rescued from shelters and train them. But selection and production of these dogs is much more difficult and filled with many variables. Thus, selection tests need improvement as they are not very thorough at selecting appropriate dogs. This paper compares and contrasts the two ideals of service dog organizations that are in practice today: those that utilize rescue dogs and those that breed dogs for service dog work. Issues considered are the efficiency of the organizations, the economics of different production methods, the type and quality of dog produced, and the risks of each organization's practice and style. Dogs not suited to service work are neither cost-effective nor beneficial, but can be dangerous to the lives of people relying on them. After reading the research and interviewing people involved in both types of organizations, the different practices produce dogs of different service capacities that can work in different service fields. The dogs produced from the different systems are not the same and cannot be used for the same jobs.

174. Understanding Dog-Human Interactions: Health, Attachment and Abandonment

Andrea Lee '16

Sponsor: Dr. Laura Hobgood, Animal Behavior Program

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Dogs and humans have coexisted for thousands of years in reciprocal relationships. Early on, dogs helped nomads track prey and nomads likely shared some of their kill. Still today, dogs and humans greatly benefit from one another. Dogs evolved to assist humans mostly due to the selection of specific desirable traits and tasks, such as hunting, herding and companionship. Dogs improve human lives in many other ways, including contributing to physical and mental health. Studies measuring stress levels show that dogs have calming effects on humans. These benefits could explain, in part, why humans grow attached to their dogs and why they consider dogs a part of their family. Even with all these benefits and attachments, millions of dogs in the U.S. end up in shelters every year when owners surrender them. Reasons for surrendering dogs vary from death or illness of the owner to moving to behavioral issues. Many shelters become over populated due to this influx. The present study investigates various ways shelters can reduce the number of surrendered dogs, prevent dogs from being returned to the shelter after adoption and help those in need of temporary aid. Interviews with shelter managers, staff and liaisons shed light on issues related to intake suggesting that education of staff and potential adopters and specific programs are helpful in lowering intake and returns. This study also suggests that because humans benefit significantly from our relationship with dogs, we should advocate for them, as they are unable to help themselves.

175. Shattered Dreams

Amber Riedel '16

Sponsor: Kerry Bechtel, Theatre Department

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The "Shattered Dreams" program involves the dramatization of an alcohol-related crash on or near a high school campus, complete with fire, police and EMS response, emergency room treatment, family notifications, and the arrest and booking of the driver. As a student this project is an important civic engagement opportunity to show high-schoolers the consequences of choosing to drink and drive. Not only is underage drinking illegal but it can cause serious injury and in some cases death. My role in this program is to make the accident real; to create trauma and wounds that lend themselves to reality. Hopefully this portrayal will enlighten these children to the dangers of choosing to drink and drive. This can only happen through research, planning, and communication with everyone involved, including: the Georgetown Fire Department, the College Preparatory School in Georgetown, Southwestern University faculty and students, including Mask and Wig, Southwestern's longest running student organization.

176. Kings in Pink Lace and High Heels: A Case Study of Shifting Gender Norms in European Textiles and Fashion Over the Past 200 Years
Eris Tock '17, Bridgett Krienke '16, John Paul Navarro '18, Ashlynn Houston '17
Sponsor: Dr. Kathleen Juhl, Theatre Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

As our understanding of gender as a socially imposed structure expands, this case study aims to provide a historically based argument against one of the earliest gender dichotomies imposed on us in the western world- pink or blue. Additionally, we will examine the hegemonically structured ideologies of current fashion and the implications of resisting these ideologies. For instance, in current society dresses and high heels are assumed to be feminine clothing options but historically these fashions have been utilized by men and seen as part of masculine clothing norms; currently, individuals who cross gender norms by utilizing fashion which is not associated with their gender risk being cast out of society as the 'other.' Separate fashions and textiles, such as lace, have also crossed genders throughout time. Utilizing first-hand accounts from European courts in the early to mid-20th century, and texts on the classed availability of botanical dyes and textiles we will illustrate how adornments that are today classified female were once considered the height of masculinity. Having destabilized the notion that modern concepts of gender color coding are neither timeless nor inherently true we will make an argument for continued change and suggest possible trajectories of future fashions beyond outdated conceptions of gender.

177. Making Connections: Integrated Learning in the World Through Internships
Emily Semon '16
Sponsor: Maria Kruger, Office of Career Services
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Within the field of Psychology, there are many avenues to pursue. Exploring the world that is the criminal justice system provides a learning experience unlike anything else. The application of psychological concepts gained from coursework on individuals in the juvenile justice system and the opportunity to gain experience in the law enforcement field as well as experience court proceedings and other aspects of the criminal justice system are just some of the integral elements to the culmination of my academic career. Through the opportunity to intern not only with the juvenile justice system, but with a Southwestern alumnus on Capitol Hill provides the perspective of creating a broader understanding of the law, its relationship and impact at the various levels of the population involved in these processes. Each experiential learning opportunity provides an added foundation of lessons learned that will serve as the basis of reflection for this poster presentation in making connections within a liberal arts education.

178. Making Connections: Integrated Learning in the World Through Internships
Grace Atkins '17
Sponsor: Maria Kruger, Office of Career Services
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Think. Create. Connect. These three words comprising President Burger's strategic vision for our campus community echo similar tenets to my internship with Glasshouse Policy and its efforts to create crowdsourcing policy solutions to some of the key issues facing communities locally and statewide. As our liberal arts curriculum integrates various disciplines, my internship provided realistic applications of how that is carried out in the world of work. Creating policy is more than just ideas and solutions on paper at the hands of a few. Within our local Austin Metro area, I focused on the issue of transportation with Mobility ATX. By working with community leaders, individual citizens, and elected officials, I gained insight into the crowdsourcing policy process and how one individual can have their voice be heard and impact decisions affecting the quality of life for a whole community. The opportunity to make the connections between my academic career and my internship provide the basis for my poster presentation and its relevance to that idea of creating positive change.

179. Making Connections: Integrated Learning in the World Through Internships
Kaitlyn Campbell '17
Sponsor: Maria Kruger, Office of Career Services
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Language at its core is about connections - connections to ideas, to people, to communities, and to the world. It is through language that we can learn. My internship with the Early Foreign Language Education Program (EFLEP) brings Chinese and Spanish language and culture to elementary school students, free of charge, using an innovative, collaborative approach

involving a local non-profit organization, local public schools with the help of Southwestern students and faculty. As our world becomes increasingly connected through social media, shared experiences and opportunities to travel broadly, the importance of learning foreign languages can enhance a better understanding of our global connections and our place and responsibility in that dynamic. My internship allowed me to share my passion for Chinese within a classroom of eager students. This poster presentation provides the opportunity to share that experience of teaching Chinese, as well as the added value it provided me as I look towards incorporating my love for Biology and Chinese moving beyond Southwestern.

180. Making Connections: Integrated Learning in the World Through Internships

Amy Gu '17

Sponsor: Maria Kruger, Office of Career Services

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When you think about making connections through internships, your mind might immediately assume that opportunities for that can only occur within organizations external to Southwestern – a local non-profit, an international organization while studying abroad, or working with a government or business entity in an urban area. My connections have included some of those options, but my ability to connect my academic interests in Education, English, and Race and Ethnicity Studies has been fostered on campus through my internship with our Office of Diversity Education (ODE). Whether exploring socio-economic issues of diverse groups SU students represent, or being involved with offering the documentary premiere of Finding the Light through Diversity, I gained a better understanding of how to design and implement resources and outreach programs to help in furthering the mission of diversity education on a college campus. An integral component of learning has been my ability to become a leader of diversity education rather than just being educated about diversity. Fostering diverse perspectives and encouraging multicultural respect are lifelong lessons critical to the global world we all share.

181. Making Connections: Integrated Learning in the World Through Internships

Hannah Lewis '16

Sponsor: Maria Kruger, Office of Career Services

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The Early Foreign Language Education Program (EFLEP) is all about teaching foreign languages through an immersive language classroom to elementary school students allowing children to be acquainted with a second language earlier and more easily than the typical progression of studies. My experiences teaching Spanish with EFLEP contributed to my Education Capstone in which I studied my own teaching's impact on student interest and motivation to learn a second language. The ability to incorporate various methods of instruction aimed at making learning interesting and fun provided the connections for students to retain concepts and build confidence in their abilities to learn. Making connections for students, no matter the age, is an essential component to creating a love of lifelong learning, providing a lasting impact in the success of a student. Integrating strategies from this internship into my ongoing development in the field of education serves as the basis of reflection for this poster presentation.

182. Making Connections: Integrated Learning in the World Through Internships

Mustafa Tajkhanji '16

Sponsor: Maria Kruger, Office of Career Services

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

St. David's Cardiac Rehabilitation Center serves as an integrated learning site that provides experience to work within the issues of healthcare. The opportunity to interact with clients from all walks of life recovering from heart attacks, stents, catheterization, heart surgery, or a diagnosis of heart disease, provides an internship experience that incorporates learning from both Kinesiology and Biology courses and application of those skills in a rehabilitation center. In addition, the added projects, such as developing health education materials and presenting those on-site, provided integration of concepts acquired through my curriculum with the sciences. A key takeaway from this internship is the importance of building relationships with the clients and how consistent engagement can benefit not only the intern, but them as well as they progress through their treatment plan. The invaluable lessons learned serve as the basis of reflection for this poster presentation in making connections within a liberal arts education.

183. Making Connections: Integrated Learning in the World Through Internships

Ilka Vega '17

Sponsor: Maria Kruger, Office of Career Services

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Building community has long been the mission of faith-based organizations. Within the Transformative Mission Ministries through First United Methodist Church of Georgetown, I learned about the integration of social justice, sustainability and community development using community asset mapping of the southeast region of Georgetown. Community asset mapping has approached the process of community development through identification of all talents within a neighborhood, including the skills of individuals, political capital, infrastructure, organizations, informal networks and financial resources available for that community to engage and mobilize on issues of importance to them. Being able to incorporate my interdisciplinary coursework as part of the mapping project to better serve our local community helps provide a framework to understanding how this same process can be applied in communities of varying size to better enable growth, engagement and hopefully positive change that builds success for its members. The basis of my poster presentation is to showcase the elements of this process and how it combines the various components of an integrated curriculum.

184. The Legacy of Lynching Photography: Spectatorship and Spatial Realities of Incarceration

Wilhelmina Watts '17

Sponsor: Dr. Charlotte Nunes, Information Services – Research/Digital

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

"Spectator violence," as I will term it in this project, refers to how the American public interacts with and romanticizes depictions of violent behaviors and institutions. Chiefly through the social institution of "lynching postcards" and other similar images of black people being tortured, black agency has been set within the parameters of visual archives of slavery. Both modern and Reconstruction-era consumption of these images engage the viewer in a form of spectator violence. The lasting effects of spectator culture on the treatment of black bodies in the American penal system are only one portion of the legacy of these photographs. By walking the line between trivializing black experiences through shock value and recording historical engagement with an atrocious chapter in American history, lynching postcards invite discussion about structural and social legacies of slavery. This poster presentation will explore the history of lynching and spectator rhetoric in post-Antebellum America, then look ahead and draw connections to the present disenfranchisement and dehumanization of black people within the penal system. Original artifacts, texts, artworks, and academic analysis have been collected through public records and databases and are organized into a timeline format in order to present moments of violence within relevant social contexts. Due to the sensitive and provocative nature of lynching postcards, especially in the context of spectator violence, any graphic content will be covered with a removable disclaimer so that viewers may choose whether to exclusively engage with the academic discourse or to directly confront these images through viewership.

185. Representations of Gender Through the Horror Genre's Final Girl

Taylor Charette '16, Ryan Stoll '16, Mackenzie Elrod '17, Nyokabi Kamau '17

Sponsor: Dr. Aaron Prevots, Modern Languages and Literatures Department (French)

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Horror films contain common tropes that represent societal problems and dichotomies. One of the most striking dichotomies is that of male monster versus female victim. This dichotomy is visibly played out by means of the characterization of the Final Girl Theory. The Final Girl Theory is the only character who can ultimately defeat the (male) monster/murderer. But, she can only do so by taking on typical masculine characteristics. This reasserts problematic cultural norms and stigmas that dictate that only men are powerful, strong, and capable. The Final Girl trope also works to reinforce that idea that "the slut always dies." In horror films, women are disproportionately targeted in ways that men are not, and this targeting is often paired with sexual activity. That being said, the Final Girl, the only female to survive, is often also the only female to not have sex. By consistently reusing this trope in horror films it helps secure old vestiges of puritanical, conservative, and religious ideology in the public mind. Thus, the societal idea that women's sexual freedom should, and will, be punished is reinforced and physically played out through the horror genre. We plan to analyze how the concept of the Final Girl, how it represents some of the ways in which our world is sexed and gendered, and the consequences of living in a sexed and gendered world. In doing so, our case study will utilize John Carpenter's 1978 film *Halloween*, the 2012 film *The Cabin in the Woods*, amongst several others as primary artifacts to look at how this trope of the Final Girl is enacted, and how at this point it is so overused it can practically function as a parody of itself.

186. Irigaray's Influence on French Film

Katie Kelly '19

Sponsor: Dr. Aaron Prevots, Modern Languages and Literatures Department (French)

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

This presentation examines the ways in which Luce Irigaray's feminist approach to identity may have influenced contemporary French filmmaker Agnes Varda. The focal point of Irigaray's theory is often the interplay between the "self," the "other," and the space between the two entities. We define ourselves in relation to others, by the things which differentiate us, along with the things which bring us together. An integral part of self-actualization, then, is acknowledging the elements within ourselves which cannot be adequately shared, and respecting these aspects of others—even those we feel closest to. Somehow, by accepting the unknown, we are able to better understand. Varda, in her autobiographical piece "Les Plages d'Agnes" (The Beaches of Agnes), visually represents the complex relationship between herself and others: friends or strangers, dead or alive. It is through - not despite - the elusive quality of human personality that we are better able to understand ourselves.

187. Individual and Universal in Contemporary French Literature, Philosophy, and Film

Elisabeth Reilly '16

Sponsor: Dr. Aaron Prevots, Modern Languages and Literatures Department (French)

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

When examining feminism through the lens of contemporary French writers like Luce Irigaray, Marguerite Duras, Elise Turcotte, and Agnes Varda one can see the importance of the road to self-discovery in light of universal gender equality. Each author presents the idea of "becoming" in a very different, but equally effective sense. In most of her writings, Marguerite Duras paints a picture of feminism through a strong female main character through which we see a portrait of personal development and growth. Elise Turcotte presents snapshots of life, pivotal moments that bridge the gap between self and other, a bridge of self-discovery that extends from self-deprecation and insecurity and becoming one's true self. Luce Irigaray provides the structure of feminism necessary to observe the world; a guideline for the world to create a realm of equality. Finally, Agnes Varda has created a fusion of the two through her docu-fiction, *Les Plages d'Agnes*. The ideas of silence, nature, peace, and communication are paramount in Irigaray's system. Varda demonstrates feminine structures in a masculine world through her film, combining both the individual and the universal ideas of Irigaray. My presentation at this symposium will demonstrate the importance of both the depiction of the individual and of the system depicted in *Les Plages d'Agnes*.

188. Meditating on Misogyny

Alexandria Shipman '16

Sponsor: Dr. Aaron Prevots, Modern Languages and Literatures Department (French)

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Touching on what Irigaray addresses about the circle of meditation, mindfulness, and listening, in my creative works symposium project I intend to address the necessity for mediation, meditation which is important for reminding oneself to have compassion when dealing with others rather than making an instant judgment based on circumstance. More specifically, meditation makes us better listeners. For example, according to Habermasian theory, he used to say that a secular state excluding the voice of religion was the only way to run a state. However, he changed his mind because one cannot exclude (democratically) a whole group of individuals' opinions. Therefore, we must become better listeners in order that people can come to change their opinions. (One example in which listening does not occur is in Israel Palestine, a fact which makes coexistence impossible). One opinion we can change, according to Irigaray, is how we use language. During meditation we realize the flaws in our language which are a big influence in social constructs. Our language for example marginalizes those of race, lower-class, those of the MOGI community, and women. Thus we must reorganize our language so that we do not continue to systematically subjugate these people. Our language is also incredibly militaristic which is conducive to violence and is the opposite of listening and having compassion. Each time we meditate we realize more and more what makes us violent and keeps us from having compassion and thus each time we can go back and reorganize these things which we realize.

189. The Silence of Feminism

Emma Walsh '18

Sponsor: Dr. Aaron Prevots, Modern Languages and Literatures Department (French)

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

For this symposium, I hope to analyze the format of Elise Turcotte's Caravane and its relationship with feminist movements. Essentially, Turcotte shares stories from her life in order to reflect what she sees as her identity. She shares these stories and that is all, she offers no other background no explanation for the choosing. In her final chapter she creates an image of snapshots, she is looking at photos and says nothing. She simply offers the photos, which are comparable to her short samples of her life. As a statement of feminism I believe this is extremely important. Women are often expected to explain themselves; defend their choices if a woman does not conform to the expectations of her gender. Similarly, this intentional way of sharing stories is a way to take agency back. Turcotte has autonomy in her decisions of which aspects of her life to share and which to keep for herself. I intend to analyze how this format creates autonomy and agency for herself, and how this can be seen in current climates through a creation of snapshots of my own life which can be used to suggest identity without full explanations. She did not want to explain herself nor her actions, but she will tell you about them. She can discuss what she did without defending why.

190. Flush Eliminating Urinal Retrofit
William Haynes '16, Ryan Satterfield '18
Sponsor: Dr. Steve Alexander, Physics Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

This project explores a novel method allowing conventional urinals to operate without flushing through the implementation of a specialized membrane. The device created demonstrates the viability of using a mesh coated with several substances that create simultaneously hydrophilic and oleophobic membrane, meaning the device will retain a layer of oil while allowing water to pass through, in order to create a seal that can be placed in the drain opening of a urinal. This seal consists of a cartridge with two layers of mesh at the bottom, which will retain a layer of oil inside the cartridge to act as the drain seal, preventing unpleasant smells from escaping much like a normal flush-less urinal. This project saw success after a period of testing the permeability of the membrane to both water and oil, and a longer-term test of the durability of the membrane. Through the use of inexpensive and environmentally friendly components this project seeks to demonstrate its viability as a device that can be retrofitted on existing urinals in order to decrease both their cost and their environmental impact.

191. 2007 Financial Crisis Simplified
Natli Sepulveda '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Although the 2007 financial crisis has been a popular media topic over the past several years, the audience that was the most affected by the crisis was largely left out of the conversation. Type "2007 financial crisis" into any search engine and websites full of technical and financial jargon appears which can bring up more questions than the initial query. My paper will simplify and explain how banks and regulations played a role in the crisis to anyone who has a desire to understand the topic but cannot due to insufficient understandable material. This paper will help fill the gap by analyzing the crisis through a process broken into sections; I will further simplify the crisis through analysis of one of the popular voices on this topic, Elizabeth Warren. Giving those who were left out of the conversation an opportunity to understand what happened will give a platform to begin a dialogue that would not have occurred otherwise. & Id quo; Mortgage backed securities, subprime loans, tranches... Pretty confusing right? Does it make you feel bored? Or stupid? Well, it's supposed to. Wall Street loves to use confusing terms to make you think only they can do what they do" (The Big Short). By the end of my paper my audience will not be confused by these terms, and will realize that it was not their fault if a lack of understanding lead to their houses being taken away because lenders, brokers, and bankers were all counting on their lack of understanding.

192. Forensic Accounting
Samantha Villa '16
Sponsor: Dr. Linda Ruchala, Economics and Business Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

This research explains forensic accounting and how it is incorporated into corporate and government business environments. This research helps people understand that accounting may go far beyond their typical views of the profession; while giving insight into how other accounting practices and elements of fraud have led to the development of forensic accounting. Two case studies, one from the government and one from the corporate sector, will help clarify how accounting, auditing, and investigative skills are used in fraud prosecutions. When it comes to forensic accounting cases verses typical auditing cases

the two differ variously. Forensic accounting cases are typically involved in court cases, whereas auditing cases are usually done for the benefit of the company, or to comply with government laws. Information from the FBI, CIA, and other sources is used in this research to understand the forensic accounting environment.

193. An Empirical Evaluation of Approximation Algorithms for Online Bottleneck Matching
Christine Harbour '16
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

There are many important problems in computer science for which calculating a solution is exponential in the size of the problem, rendering them computationally intractable. Despite their intractability, these problems are still relevant, motivating research in approximation algorithms which find solutions that are provably 'good enough'. While much work in theoretical computer science has focused on finding these algorithms and proving their bounds on performance, less work has been done on determining how they behave in practice on various data sets. We conduct empirical evaluations of approximation algorithms for the online bottleneck matching problem. We are given a set of servers in a metric space and a set of requests that arrive over time. Each request must be permanently assigned to an unused server, and each match must be made in a way that minimizes the maximum distance between a request and its assigned server. 'Online' means the algorithm only learns the location of the next request in the sequence after it has assigned the previous request. We test three known approximation algorithms for online bottleneck matching: Greedy, Balance, and Permutation. Our experimental results focus on different arrangements of data sets that affect the approximation algorithms' performance. The code for each algorithm is written and tested in C++, and we compare the results against an optimal solution computed by brute-force for small instances. Our results indicate that the experimental performance can often be significantly better than the approximation guarantee.

194. Symmetry and the Fourth Dimension: An Introduction to Visualizing the Quaternion Julia Set
Christi Ho '16
Sponsor: Dr. Fumiko Futamura, Mathematics and Computer Science Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Discovered by mathematician Gaston Julia in 1918, the Julia sets are fractals on the two-dimensional complex plane derived from a simple quadratic function. This technique for creating Julia sets has been extended to 4D quaternion space by Dr. Paul Bourke in 2001 and Dr. Keenan Crane later in 2004. We cannot see these four dimensional fractal shapes, but similar to how we can slice a 3D shape to see its 2D cross-sections, we can visualize the three-dimensional cross sections of a four-dimensional quaternion Julia set. Observing renderings of 2D Julia set fractals and inspired by the research of Dr. Bourke and Dr. Crane, we became interested in expanding our visualization to higher dimensions in attempt to discover aesthetically pleasing forms to inspire sculptural works. Following the footsteps of Dr. Crane, we used a technique to render 3D models on the computer called raytracing to visualize these cross-sections of the quaternion Julia set. By systematically varying the simple quadratic equations used to create these quaternion Julia sets, we were able to determine patterns of the fractal shapes. Furthermore, they were also compared to their two-dimensional Julia set counterparts to gain greater understanding of their shape. This project reveals an interesting relationship in symmetry between these three-dimensional cross sections and its two-dimensional Julia set counterpart through visual observations and understanding of the Julia set's computational properties. We conclude that in certain situations, the outline of each three-dimensional quaternion Julia set cross section mimics the form of its two-dimensional Julia set counterpart.

195. Old Math Model Had a Farm: The Math Behind Chicken Farms
Julia Sykora '16
Sponsor: Dr. Therese Shelton, Mathematics and Computer Science Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

In our new age, people are becoming much more conscious of exactly where their food comes from. Whether for health related or environmentally driven reasons, people are taking a stand and being proactive in making healthier and more sustainable food choices for themselves and their families. With this awareness has come an increase in homesteading, or having a small-scale personal farm, and people raising plants and animals to generate their own food. This allows for ensuring personal choice in the use or avoidance of hormones/pesticides and humane treatment of animals. In this project, we investigate the ins and outs of domestic chicken farming through the use of mathematics, specifically difference equations. We use ratios to create a mathematical model that tracks the coming and going of hens from a flock, as well as illustrating the

resources that those hens produce. We consider a flock of multiple breeds and calculate profit from egg and meat production. We look specifically at the Rhode Island Red and Production Red breeds, comparing the outputs of these birds as dual-purpose hens. We also use random number generation to provide a more realistic estimate of how many eggs a domestic flock such as this might produce, resulting in a stochastic model.

196. "Drop It Like It's Hotspot": Implications and Costs of Implementing Free Public Wi-Fi in Austin, Texas
Chancellor Clark '16
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

In today's technology race, Wi-Fi has been essential tool for people around the globe traveling, working, or even living. Since more businesses, such as local coffee shops, offer free Wi-Fi, this draws customers and tourists to these locations, increasing business and pedestrian traffic. Cities have recognized the need for providing free public Wi-Fi to help attract new and innovative people to their captivating cities. Free public Wi-Fi has been a huge contributor to the growth of cities. For example, cities like Houston, Texas, Springfield, Ohio, and Cambridge, Massachusetts are amongst a plethora that offers free public Wi-Fi. This not only aids in the growth of cities but attracts young, innovative, professionals that contribute to shaping the city's economy and culture. In addition to this, free public Wi-Fi offers cost deductions for businesses, makes the city 'smarter' by connecting the city government and its' citizens, and increases mobility. Given these benefits and its exponential growth, a city such as Austin, Texas would benefit from a free public Wi-Fi program. This study analyzed both the implications and costs of implementing free public Wi-Fi in Austin, Texas in high traffic pedestrian areas. Various approaches concerning the placement of new Wi-Fi Hotspots downtown and surrounding downtown areas and neighborhoods was also looked at. Also, the study focused on security issues that are involved with providing free public Wi-Fi.

197. SU Community Garden: Cultivating Sustainability on SU Campus
Ben Galindo '16, Chelsea Allen '16, Gabby Hunt '16, Craig Bradley '16, Kali Page '16, Lauren Childers '16
Sponsor: Dr. Joshua Long, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

As Southwestern University attempts to establish its continued commitment to environmental sustainability in order to remain a competitive institution of higher learning and maintain its core values, it's important to strengthen current sustainable initiatives. The Southwestern University Community Garden is an important institution of sustainability on campus that provides students a unique place to learn and engage with tangible examples of truly "green" practices. As one of three Environmental Studies 2016 Capstone groups focusing on campus sustainability, our project is specifically interested in ensuring the future of the SU Community Campus as a long-lasting keystone initiative valuable to students and the broader university community. Overall goals are varied but the three broad project themes include functional and aesthetic improvements to the garden, increasing its visibility on campus, and transforming the internal organizational structure for future students. Specific projects to be completed by the end of Spring semester include building wheelchair accessible raised-beds, regenerating the hillside, establishing relationships with key campus partners, and developing a co-operative business model. While these goals are ambitious and varied, this project seeks to ultimately build a foundation for the garden to remain a shining example of Southwestern's sustainability efforts.

198. Hello ESA: Is it too Late Now to Save Species?
Heba Abdel-Rahim '17, Janae Nordwall '16
Sponsor: Dr. Romi Burks, Biology Department
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The Endangered Species Act only yields minimal positive effects towards preserving biodiversity. Strong criticism of the ESA points out that it takes too long for species to get listed. Furthermore, a low probability of delisting exists. Strong influence from politics and private landowners prevent the act from remain enforced causing the distribution of wealth for the ESA to be skewed. While the International Red List protects species globally, the ESA has no influence outside the United States. To add artistic intent, we revised lyrics from two popular songs (Justin Bieber's Sorry and Adele's Hello) to emphasize the top five problems with the current Endangered Species Act. For instance, our song states, "I know you know that it made some mistakes due to influence; Politics are involved and land owners aren't making a difference". Furthermore, our song suggests that political polarity prevents adequate protection of species. We supplemented the lyrics with a video of species still listed on the ESA that highlights the year listed. Together with the lyrics, this allows the audience to visualize how this act has failed to reestablish the population sizes necessary to get a species delisted. By emphasizing the lack of impact the ESA has had on

the endangered species of the U.S., we can educate people on why it should not be renewed, but rather replaced. Therefore, a new conservation plan needs to be implemented that further addresses the needs of endangered species and provides them with the resources and protection that they deserve.

199. Geographic Analysis of Mental Illness in America
Egan Cornachione '16
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

This project examines the effects of socioeconomic variables on mental health at the state level. The United States has very strong regional differences in the prevalence rates of mental illness. This project seeks to determine why these regional differences exist, and if they exist once all relevant variables are controlled. Several studies to date have found a positive relationship between lower socioeconomic status and rates of mental illness (Gardner and Oswald 2006, Fryers et al 2003, McInerney et al 2012). Data for this project comes from the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS), the Bureau of Labor Statistics, and the US Census in 2013. Mental health is measured by the average survey response to the number of days in the past thirty days where respondents had poor mental health. This project uses a geographically weighted regression (GWR) run in ArcGIS to estimate the effect of income on mental health, controlling for population, state and local government spending on health care, unemployment rate, obesity, alcohol consumption, race, and insurance. Results suggest that higher levels of income, alcohol consumption, and insurance lead to reductions in mental illness, while lower levels of unemployment and obesity lead to reductions in mental illness. Additionally, regional differences in the error of the GWR model exist, which means that the variation in mental illness rates across the country is not fully explained by the model. Future research should control for more regional factors in order to obtain a better fit model.

200. "Hot or Not?": Micro Heat Islands on Southwestern University Campus
Rachel Ehler '16
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Urban heat islands (UHI) are a specific region that can be charted using a heat map. UHI are a city or other metropolitan area that is significantly and consistently warmer than its surrounding rural areas due to human activities, principally because of the modification of land surfaces. These UHI were studied on a local level instead of regional level, which is how they are usually recorded. Thus, Southwestern University was studied as a "micro heat island." This study analyzed the distribution of urban heat islands on Southwestern University campus to conclude whether or not Southwestern was in fact a micro heat island itself. This study targeted parking lots and large concrete expanses versus green spaces that are located on campus, in both sunny and shaded conditions. The temperatures in these areas were measured within a short period of time to avoid measurement errors with a thermometer, and a GPS was used to record coordinates of the measurements. It was expected that higher temperatures would be measured in uncovered concrete expanses, versus areas that were covered with foliage or green spaces. The results confirmed that Southwestern University was a micro heat island, and that parking lots had higher ambient temperatures than the areas with grass. Areas exposed to more sun were also hotter than the shaded areas, and it is worthy to note that the open grass area was the equivalent temperature as the average temperature for that day.

201. Environmental Studies Capstone in Sustainable Infrastructure for the Walzel Gymnasium
Rachel Ehler '16, Dakota McDurham '16, Nick Espino '16, Kron Heilman '16, Dalton Teague '16, Aaron Moyer '16
Sponsor: Dr. Joshua Long, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The aging lighting in the Robertson center has burdened Southwestern's energy infrastructure by utilizing outdated HID (High-Intensity Discharge) lights. These lights are inefficient, require more energy, and have significantly shorter lifespans than modern LED fixtures. In addition to enhancing the safety of Southwestern students and athletes, updating allows the university to use less energy to provide higher quality lighting and reducing the cooling load on the building's air conditioning units. The cost of operating this antiquated system is approximately \$7,700, annually. An upgrade to high efficiency LED lighting would cut costs in half, saving the university ~\$3,500 annually. To establish the benefits gained by replacement, we audited the existing technology in use in Walzel Gym, allowed contractors to assess the facility, and submitted bids to establish a baseline analysis. At this time, efforts continue to select a contractor from the existing pool of bids and complete the installation of the products. Pending the funding we receive for this project we hope to have the updated the aging lighting in the Walzel Gymnasium. The savings accrued from this initiative can then be used to help update the lighting

throughout the rest of the Robertson Center. The ongoing efforts to improve and update the infrastructure of Southwestern University is increasing in scope and momentum due to inter-disciplinary efforts of students and faculty committed to bolstering sustainability while mitigating the environmental impacts of higher education.

202. What Even is "Green"?

Lucas Evans '18

Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The year of 2015 marked the first year for a City in Texas to convert solely to renewable wind energy, leading some to consider Georgetown Texas "the Greenest City in Texas"! Before we jump to conclusions, let's make clear the change was made by the city that based this decision "primarily on cost". Not with consideration of land use, current building types, ecosystem health, or really any consideration other than the ability for humans to read at night (and every modern amenity we enjoy). This map merely represents either human or natural landscapes within the greater Georgetown Area and their relationship. This has been proven with any ecological study to drastically impact the natural distribution of flora and fauna. My goal is to show that the origin of our "energy" or power has no correlation with the restoration of the entire environment, but only the human environment. In hopes to help define the term "Green" in respects to the earth and not confined to meeting solely human needs. We are reaching a point that technology and intelligence is blatantly discrediting and surpassing the "genius" of the industrial age and all they had discovered as sources of power and progress. With the replacement of fossil fuels imminent, it's time to turn our attention from the illuminated mirror and look out our windows at all has gone on in the darkness of the 19th and 20th century.

203. Preparing for the Future: Water Policy and Capacity in Georgetown, TX

Isaiah Galvan '17

Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

With the population of Georgetown growing at a rapid pace, the city will have to face drastic changes in regards of their water supply and conservation. As of 2014, the estimated population of Georgetown within city limits is about 59,000. The city of Georgetown predicts a population projection of 96,567 by the year 2030, an increase of 63.67%. With Lake Georgetown being the city's main water source, how can the city make sure this water is more than enough to satisfy the needs of 96,567 people by the year 2030? What can be done in order to further prepare Georgetown's water supply for this population increase? Using Geographical Information Systems (GIS), Georgetown's water supply is analyzed to measure the capacity of water. By analyzing the capacity, along with its changes, we measure how well Georgetown has handled their water when faced with population growth. Georgetown water-use is measured on a general and district level by using a consumption summary of districts, provided by the city of Georgetown, to determine what parts of Georgetown demand the most water. GIS determines why these parts of Georgetown demand higher amounts of water than others. The analysis of Georgetown policy provides the information of what the city has been executing to conserve water and will be used to further prepare Georgetown's water conservation for the projected population increase.

204. Texas vs. California

Thomas Gromatzky '17, Logan Spalding '19

Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program

4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

In the past several decades, Austin has become a haven for business' and technology. The rise in job availability has resulted in an exponential growth in the city's population in recent years. Companies such as Whole Foods, Google, and Apple have made Austin a center for their company. Many of the companies that have expanded to Austin originated in California. As a result, there has been a massive migration between Central Texas and the Bay Area because of the development and progress of these businesses. Many Austenite's have suggested that the migration of Californians into the city has changed the culture and created congestion. However, there has also been a migration from Central Texas to the Bay Area in some instances. Using information from the Census and the Census Flows Mapper, this project will determine and analyze the migration patterns between these areas and which region has seen more people arriving or leaving. In addition, a choropleth will show which Bay Area counties and which Central Texas counties have seen the greatest migration patterns in past years. This information is valuable in determining which area has seen the most growth and possibly a greater impact on the original and local culture.

205. Where the Sidewalk Ends: Mapping Pedestrian and Cyclist Vulnerability
Simone Yoxall '19
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

Urban planners have long disagreed over how to balance the competing concerns of motorists, cyclists, and pedestrians. Numerous innovative street designs have been developed in an attempt to create spaces that allow for the safe interaction of these different users. However, there is a lack of research into how to identify already-existing streets with potentially faulty designs. My paper addresses this issue by using a GIS-based method to identify specific streets and intersections in downtown Austin that may not be safely serving the needs of all users, especially pedestrians and cyclists. I examine crash and collision data from the Austin Police Department, utilizing spatial analysis to determine where accidents between motorists, cyclists, and pedestrians most frequently occur. I then analyze the locations of different street attributes, including bike lanes, bus lanes, and crosswalks, to determine if intersections with such features are indeed safer. By identifying these problematic spaces, this paper seeks to provide the City of Austin with new insights into the design of both current and future streets.

206. Instagram Georgetown: Utilizing Social Media to Uncover Sense of Place
Hailey Johnson '17
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

The social media site, Instagram, is not only a photo-sharing site; it is a place sharing site that contains a network of captions attached to photos of places creating a type of pschogeography that can be applied to city planning. The specific locality unique to a certain place can therefore be analyzed through a social media lens. I applied this idea to specific well-used places in Georgetown, TX, including, San Gabriel River, the Square, Wolf Ranch, Southwestern University, Georgetown High School, and Eastview High School. The Instagram tab of "Places" and "Tags" were used to uncover various photos taken within each of these places and the captions as well as hashtags assigned to these places. Once this dataset was acquired, I used GIS applications to provide visualizations of the dataset. Through this research, I hoped to communicate how social media can provide insight on positive and negative attitudes experienced within certain places, and how a location can spark shared as well as individual senses of place. Analyzing this data can provide a creative tool that city planners can use in order to understand why certain places carry certain emotions and "hashtags" and what factors contribute to a positive and negative sense of place.

207. Mapping Teen Court: Locations That Lead to Success
Monica Miller '16
Sponsor: M. Anwar Sounny-Slitine, Environmental Studies Program
4:00-5:30 pm - McCombs Campus Center, Bishops Lounge

In previous research, I analyzed different perceptions of juvenile rehabilitation, and how those concepts of rehabilitation were accomplished and expressed through diversion programs in California. Specifically, my research aimed to illustrate how Teen Court programs enabled students to become knowledgeable about the justice system, encouraged students to engage in peer-to-peer accountability, and most importantly, learn from their mistakes – all while fostering a sense of growth and rehabilitation. Relying on organizational materials in the form of websites, phone interviews conducted from October to November 2015, and existing literature, my findings suggested that through an intentional model that both educates student volunteers and supports juvenile offenders, youth who participate in Teen Court are successfully rehabilitated upon completion of their obligations. Furthermore, findings illustrated how these programs lower juvenile recidivism rates and therefore keep children out of the Juvenile Justice System to begin with. My current research utilizes and adds to these findings in the form of maps; by utilizing Geographic Information Systems (GIS), I am able to create maps detailing where Teen Court programs would be most successful. Examining attributes such as race, socioeconomic status, and geographic location of schools, alongside data highlighting racial breakdowns of public schools in Austin, this research pinpoints effective sites for Teen Court.

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