ABSTRACTS OF
THESIS PROJECTS

SPRING 2019

The Honors Program
University Scholars

BAYLOR
U N I V E R S I T Y

G. Jon Abel, University Scholars
Sam Perry, mentor

Blood at the Root: Donald Trump and the Rhetoric of White Supremacy

This thesis examines and elaborates on the connection between the rhetoric of President Donald Trump, and the ideologies and rhetorical appeals of white supremacists, both contemporarily and throughout American History. *Blood at the Root* examines two case studies of Donald Trump's rhetoric as candidate and president, and traces the appeals of these words to their origins in white supremacist, anti-Semitic, and anti-immigrant rhetoric in the United States. We also show that these connections are unlikely to be coincidental, and that either Trump himself or those around him are aware of the racial signaling that pervades Trump's political rhetoric. Finally, *Blood at the Root* demonstrates that Trump is aware of and seeks to capitalize on racial tensions in the modern United States, as evidenced by the tailoring of his rhetoric to the language of White Supremacy today. In summary, Donald Trump uses old modes of racial signaling in ways that appeal to new, racist constituencies. President Trump capitalizes on modern racial tensions by invoking old racial tensions, framed through modern issues such as globalism, trade, and illegal immigration.

Sam Baham, History and Classics
Andy Hogue, mentor

I Can't Breathe: A History of Excessive Force and Race

This thesis analyzes how and within what context the Supreme Court of the United States has interpreted excessive force and police brutality since 1968, when *Terry v. Ohio* was decided, and the ramifications that these decisions have had on police encounters and practices until the present day. I specifically examine how these precedents and their implementation have contributed to the growing culture of mistrust between minority groups and law enforcement officials especially in the current "Black Lives Matter" era. By evaluating Department of Justice reports, the Center for Policing Equity reports, and court documents, I conclude that minorities are often disproportionately the targets of unjustified discrimination and excessive force while law enforcement officials frequently receive acquittals or are not charged at all for their actions. In order to remedy this issue, I evaluate the merits of substantive due process and suggest that by applying substantive due process to excessive force cases, policing practices would improve and instances of excessive force, particularly directed toward minorities, would decrease.

Lauren Barnes, International Studies
Steven Jug, mentor

From Lady Liberty to Gold Mountain: An Examination of Chinese, Japanese and Italian Immigrants to the United States

Beginning in 1850, America's doors really opened to the rest of the world, and the United States became a popular destination for people seeking life-altering changes. These people met prejudice and pressures to assimilate, but also formed strong communities, and developed identities unique from that of their home countries. In this thesis, I examine the plight and the triumph of Italian, Chinese and Japanese immigrants as they established new communities and grappled with their changing sense of self spurred on by their move across the ocean. In order to capture the immigrant experience from the immigrant perspective, I rely heavily on immigrant memoirs, autobiographies, and other sources written in the immigrant voice.

Heather Bayless, University Scholars
Chloe Honum**,** mentor

Lancer

The Oxford English Dictionary defines poetic license as "the freedom to depart from the facts of a matter or from the conventional rules of language when speaking or writing in order to create an effect." This definition leaves out the role of a poem to speak the truth: poetic license allows this Truth to be told without need for factual truth. This definition comes as a prelude to my disclaimer: if I were to say these poems were not about my life I would be lying; but if I were to say these poems were, indeed, about my life, I would also be lying. Whatever the direct or imagined experiences may be, it is my goal that the reader finds an emotional truth within the poems and stirring of thoughts from the collection as a whole. I do not mean for the reader to be satisfied: the resolution of many of the poems will make this evident. Within my own writing I have been influenced most noticeably by Marie Howe's use of the direct address, Sylvia Plath's signature caustic wit, and lastly I was inspired by Analicia Sotelo's ability to write about virginity as a language rather than a static state of being. I hope to have taken this farther by writing about it as an experience, and as a constant questioning of self. Where there is rigidity, I hope the reader as well finds specificity. Where there is disorder and seemingly random associations, I hope the reader will find subtlety and intentionality.

Kyle Binder, University Scholars
Jonathan Meddaugh**,** mentor

Limit Sets in Finitely-Generated Free Group and Monoid Actions

For dynamical systems with the shadowing property, the omega-limit sets can be characterized by a condition of internal chain transitivity. In this thesis, we define four limit sets in the context of finitely-generated free group and monoid actions. We give a characterization for two of these limit sets in terms of a kind of internal transitivity under the condition that the group or monoid action has an asymptotic shadowing property.

Caroline Blach, Psychology
Gaynor Yancey**,** mentor

An Examination of the Relationship Between Dating Violence, Suicide, and School Connectedness in United States Adolescents

This study examined the relationship between adolescent dating violence and suicidal ideation, using school connectedness as a potential protective factor. The study used secondary data from the National Longitudinal Study of Adolescent to Adult Health (n=3985). A regression analysis was used to examine the relationship between dating violence, suicidal ideation, and school connectedness in adolescents, controlling for race, gender, age, parent's education level, and friends and family suicide attempts within the past year. The relationship between dating violence and suicidal ideation did not yield significant results when protected by school connectedness (p = .506). Implications and future directions are discussed, and results from this study can be used to further educate the public on the risks of adolescent suicide.

Madeleine Blunt, Nursing
Shelby Garner**,** mentor

Building Health Champions Among Youth in India for Non-Communicable Disease Prevention

Non-communicable diseases (NCDs) are a leading cause of death in India, creating a need to research strategies for preventing and recognizing these diseases. The purpose of this study is to develop and research an interactive health education program on NCDs in a rural subpopulation of Bengaluru, to build "health champions" among the youth to contribute to the prevention of NCDs in India. Students, aged 12-16, from a rural secondary school took part in a descriptive study. Participants were separated into five focus groups covering different NCDs including hypertension, diabetes mellitus, otitis media, oral cancer, and malnutrition. Each focus group was interviewed face-to-face before, during, and after all activities. Content analysis was completed using a directed approach. Findings were organized into themes that described aspects of learning that enhanced or detracted from student understanding of NCDs. The findings of this study show that creative methods have a positive impact on educating students ages 12-16 on NCDs.

Meghan Boersma, Biology and Great Texts
Thomas McGrath**,** mentor

Boron Chemistry and Its Uses in Medicine

This thesis aims to give a current account of the status of boron chemistry in medicine. The first chapter examines the chemical novelty of boron, and therefore the unique bonding capabilities that make it particularly useful in biological systems. The second chapter gives a detailed account of Boron Neutron Capture Therapy (BNCT) and its uses in treating high-grade gliomas, including a description of the several waves of research and development of BNCT. Built into this chapter is a discussion of the challenges that BNCT development poses for researchers. The third chapter investigates the criteria needed for an effective delivery agent followed by an in-depth analysis of the proposed delivery agents to date, examining the strengths and short-comings of each of these delivery agents. Finally, the fourth chapter discusses the far-reaching uses of boron in medicine beyond of the realm of BNCT. This paper serves to demonstrate that boron has many uses in the medical field and should be carefully examined as perhaps a superior alternative to contemporary medical treatments and pharmaceuticals.

Ruth Bondurant, University Scholars
Beth Lanning**,** mentor

Impact of Native-Language, Group Prenatal Care on Spanish-Speaking Patients' Satisfaction with Care

Hispanic individuals represent the largest minority group in the United States, and significant and creative measures must be taken to ensure that this population receives adequate, culturally sensitive medical care. This thesis examines the effectiveness of group prenatal care in improving Hispanic women's satisfaction with their care and in decreasing their perception and experience of cultural barriers in their care. Through the use of focus groups, Spanish-speaking women who had participated in the centering pregnancy program at the Family Health Center were asked to comment on their experiences in the centering pregnancy program. The participating women expressed appreciation for the additional opportunities for education and social connection that are afforded by centering pregnancy, and their cumulative comments indicated an overwhelmingly positive response to the centering pregnancy program. These results suggest that group prenatal care has the capacity to improve Hispanic women's satisfaction with their care and affirm the importance of supporting and expanding beneficial programs like centering pregnancy.

Joseph Brennan, University Scholars
Nathan Elkins**,** mentor

The Chigi Group: A New Interpretation of Protocorinthian Vase Painting from the Perspective of the Phoenician Metal Bowl Tradition

Attention to Phoenician art and particularly the Phoenician metal-bowl tradition, reveals an alternative reading of the imagery present on the Chigi Group's vessels. The iconography of the Macmillan Aryballos and Chigi Olpe shows that the Phoenician metal bowls profoundly influenced the imagery and themes incorporated into the Protocorinthian vessels produced by the Chigi Group. The similarities between the Macmillan Aryballos, Chigi Olpe, and Phoenician metal bowls demonstrate that the artisans of the Chigi Group attempted to create Orientalizing motifs, rather than the narrative scenes common in later Greek art. The combination of Phoenician themes, Greek stylistic details, and a mythological vocabulary suggests a goal of adaptation and synthesis, rather than direct imitation of Phoenician bowls. In addition, the artistic fusion apparent on the Protocorinthian vessels mirrors both the eclecticism of the Orientalizing era and that which defines Phoenician art. The examination of a fragmentary oinochoe and two more aryballoi suggests that the Chigi Group adapted the format of Phoenician bowls to compensate for the transition from metal bowls to small pottery vessels.

Libbi Brown, University Scholars
Julie Sweet**,** mentor

The Hopkins and the Browns: How Family Embodies History

This is an examination of the lives of my ancestors, the Brown and Hopkins families, who moved to the New World in the first half of the seventeenth century. I first examine the Hopkins family through whom I explore the Mayflower journey and the lives of the Pilgrims. I then explore the journal of a Puritan minister who exemplifies Puritan family life and beliefs about death. Finally, I examine the Brown family who were politically active, but also do not represent the typical Puritan and who also became involved in the Salem Witch Trials. They provide a starting point for further exploration into the lives of people who came to settle in Massachusetts Bay Colony. Some of the stereotypes of Puritans are exemplified by my ancestors while others are shown not to reflect the reality of the typical Puritan. Life in the New World, like it is now, was a varied experience. Through the experiences of my family and the people they interacted with, I attempt to provide a glimpse into the reality of the lives of Puritans living in the seventeenth century and how they do, or do not, live up to the modern stereotypes we have created in the centuries since they lived.

Rose Brugger, University Scholars
John Haldane**,** mentor

A Philosophical Analysis of the Concept of Culture

In this thesis, I argue that we can understand culture by drawing on the Aristotelian thesis that reality exists in four distinct domains: the natural, the logical, the moral, and the technical. Culture exists across all four of these domains, unifying realities from each of them. However, many modern analyses of culture tend to reduce its existence to one of the four domains. In particular, they tend to overlook culture's moral dimension. In so doing, they fail to offer a methodological approach to culture that accounts for human free choice. They tend in the direction of moral relativism, attempting to refrain from importing a moral framework into their analyses. But this reduction leaves their accounts without sufficient resources to justify their choice of cultural concepts, their ability to intelligibly describe those concepts, and their ability to engage in comparative cultural analysis. I argue that recognizing culture's existence across all four orders shows us the need for a value-laden methodology, explicating Aquinas's social theory as a viable alternative.

Miller Carbaugh, University Scholars
Peter Campbell, mentor

Augustine's Just War and Nuclear Weapons: From Hiroshima to Today's Nuclear Arsenal

President Truman's decision to drop two nuclear weapons on Japan to end World War II is one of the most contentious decisions in the 20th century. Those who abhor his decision argue that the use of nuclear weapons is inherently unethical and unjust. Augustine of Hippo is one of the earliest thinkers to write on the justice of war, particularly on *jus ad bellum* and *jus in bello*. His arguments for the justice to go to war and justice in war, though centered on his Christian faith, have influenced innumerable international agreements on the conduct of war. This thesis analyzes some of Augustine's arguments surrounding the justice of war and then applies them to both Truman's decision as well as the post-Cold War nuclear revolution, where the United States has sought nuclear primacy through low-yield, precision guided nuclear weapons. This thesis finds that Augustine's conception of the just war would likely have found Truman's decision justified under the circumstances. It also evaluates the highly advanced nuclear arsenal of the United States today. It finds that this arsenal, opposed by theorists of nuclear deterrence, enables a degree of ethical decision-making surrounding nuclear weapons that is more consistent with the just war than Cold War nuclear deterrence.

Matthew Carrano, Electrical and Computer Engineering
Scott Koziol, mentor

Combining Machine Learning with Stochastic Computing

Autonomous vehicles are limited by the size and power consumption of their on-board, combinational circuits. This paper explores the growing research around novel computing techniques that reduce the "cost" of such circuits by fundamentally changing the way they compute. Specifically, this paper first gives a thorough, yet easy to understand, overview of neural networks. Neural networks are a common processing algorithm aboard such vehicles that are computationally expensive and thus take up a large amount of space and power. Next, stochastic computing (SC) is introduced as the novel computing technique that promises to substantially reduce the complexity of such circuits. Finally, a summary of the existing work about combining neural networks with SC is given with a few contributions such as using an analog random number generator.

Julia Castillo, Great Texts and Spanish
Frieda Blackwell, mentor

Literary Critique of Female Identity under Spain's Francoist Dictatorship in Nada *and* Entre visillos

Two works by female authors during the Francoist dictatorship in Spain—*Nada*, published in 1945, and *Entre visillos*, published in 1957—use double discourse to critique society through their expression of female identity. Carmen Laforet and Carmen Martín Gaite worked past censorship to articulate an alternate vision of female identity formation to the policies of the Francoist dictatorship which articulated a limited role for women. The framework offered by these books' historical and literary contexts allows for a detailed analysis of each work individually. Andrea, the main character of *Nada*, discovers her identity during a tumultuous year with her family in Barcelona, its description shaped by the *tremendismo* literary movement. *Entre visillos*, published in the next decade, uses the technique of *neorealismo* to portray the lives of various young women and men in a provincial capital, with the character Natalia playing a critical role. As each book is an example of the *bildüngsroman*, identity formation is paramount. *Nada* and *Entre visillos*, through their different time periods and literary styles, present their female characters' struggles to develop their own identities in a repressive society.

Sam Cedar, University Scholars
Coretta Pittman, mentor

Walls Can Talk

Upon learning that a large factory in small-town Ohio is closing, tension between employees develops into violence. Though corporate greed is ultimately to blame, racial and social tensions result in a rage-fueled murder as once-friends struggle to support both their families and their dignity. Divided into three sections, *Walls Can Talk* is a feature length screenplay that focuses on the institutional and social powers that result in systemic poverty and discrimination, from corporate avarice to drug addiction to racial and class-fueled conflict. By portraying characters in a way that both realistically captures the nuance of intersectional communities and avoids the racial conciliation fantasies that dominant contemporary filmmaking, *Walls Can Talk* explores the divisions that define American society in the Trump era and the circumstances that influence individuals on all sides of the sociopolitical spectrum. Additionally, the film offers hope in the lessons learned by its characters about the value of friendship and love amidst the spread of hate.

Ben Christie, Professional Selling
Emily Hunter, mentor

Humility, Trust, and Satisfaction in a Salesperson Sales-manager Relationship

In spite of the increasing presence of virtues in business management theory and practice, humility is not considered one of the pertinent virtues in the corporate world. In addition, there exists an insignificant amount of empirical evidence regarding the importance of manager humility and its relationships with employee trust, performance, and satisfaction. This lack of research is even more significant within the context of business-to-business sales management. This paper explains the basic foundation of humility and it's traits and how they may manifest in a sales-managers profession and performance. The purpose of this research is to investigate and provide empirical evidence regarding sales-manager humility and its relationship with employee trust and satisfaction. Manager humility has a significant, positive correlation with salesperson trust for and satisfaction with that manager. There is a notable relationship between employee religiosity and trust and employee religiosity and supervisor satisfaction.

Joseph Clarkson, University Scholars
David Jeffrey, mentor

Idols and Empire: Preludes to Philosophy of Art in Early Christianity

Prior to the eruption of the Iconoclastic Controversy in the eighth century, complex traditions of artistic practices and theories had begun to emerge in Christian communities throughout the Roman world. As a minority religious group, Christians initially appropriated and often subverted Roman artistic styles and motifs to negotiate their identity within a polytheistic cultural context. Simultaneously, Christian apologists attacked polytheistic artistic practices as a way of showing the propriety of Christian religious practices. Contemporary scholarship often takes it as a given that Christian artistic practices and theory were at odds with each other from the time that Christians first began producing artworks. However, a careful consideration of the material and documentary evidence from the second century through the fourth century shows a greater harmony between Christian artistic practice and theory than is often assumed. By giving undue epistemic privilege to neither the visible nor the verbal evidence from early Christianity, I attempt to allow Christian images to contribute to our understanding of Christian artistic theory much as texts have done. I do so by examining images of idols in early Christian art and comparing various ways of interpreting these images. I conclude that early Christian artists shared many of the same concerns about images that Christian theologians and philosophers expressed in their writings.

Catherine Cleworth, University Scholars
David A. Smith, mentor

Lafayette in Hamilton*: History in Art*

Lin-Manuel Miranda's *Hamilton*, based on historian Ron Chernow's award-winning biography of the nation's first Treasury Secretary, quickly became a cultural phenomenon after opening on Broadway in 2015 and introduced a new generation to the medium and magic of musicals. This thesis discusses how *Hamilton* portrays the Marquis de Lafayette, a Frenchman who fought in the American Revolution. It compares the character presented in *Hamilton* with the historical figure of Lafayette and considers the historical accuracy of the portrayal. The thesis also looks at historical musicals and how they have employed history in their composition. Ultimately, I find that *Hamilton*'s portrayal of Lafayette is effective in engaging a broad audience with history even if it is not completely historically accurate. The balance of accuracy and engagement make it possible for *Hamilton* to reach a broad audience while still offering historical value.

Siena Condon, University Scholars
Joaquin Lugo, mentor

Development of Autistic-Like Behavior in C57BL/6 Mice Following Early-Life Seizures

The objective of this study is to investigate the effects of flurothyl-induced seizures in C57BL/6 mice on a single day (postnatal day (PD) 10) compared to a group that receives several seizures across a number of days (PD7-11) during neonatal development, to determine how differences in seizure load can impact neonatal communication and whether the PI3K/AkT/mTOR signaling pathway mediates the deficits in communication. Hippocampal tissue was collected at 1hr., 24hrs., on PD12, and on PD15 following PD10 seizures for use in Western blotting analysis of PI3K/Akt/mTOR pathway proteins. On PD12, pups were tested in an isolation-induced ultrasonic vocalization paradigm to evaluate communication impairments. Ultrasonic vocalization analysis indicated both qualitative and quantitative changes in communication following seizures, with a heavier seizure load leading to greater changes in communication. These results were associated with upregulation of specific PI3K/Akt/mTOR pathway proteins at various timepoints following PD10 seizures. These findings provide insights into the role of seizures in the development of one aspect of autistic-like behavior, namely communication deficits, and indicate that hyperactivity of the PI3K/Akt/mTOR pathway may underlie some of the deficits. These results also contribute to the existing body of evidence indicating that inhibition of the PI3K/Akt/mTOR pathway may serve as a therapeutic target for epilepsy and autism spectrum disorder.

Amanda Cordero, University Scholars
Michael-John DePalma, mentor

Wide-Eyed: Essays and Reflections

Wide-Eyed: Essays and Reflections is an anthology of creative non-fiction essays. It focuses on the author's thoughts and experiences throughout her four years at Baylor, tied together by her relationships with people. Explicitly, *Wide-Eyed* explores a variety of subjects including toxic masculinity and religious cultural identity. Implicitly, the author asked questions about the ethics of truth and the consequences of telling stories.

Jessica Cox, University Scholars
Kendall Artz, mentor

Camp Joy: A Vehicle for Promoting Contemporary Human Flourishing

The concept of human flourishing has been explored throughout time by many great thinkers in philosophy and psychology. While these thinkers may not have agreed on all points, I argue there are common threads of thought that persisted nonetheless. Contained in this thesis is a brief review and synthesis of the human flourishing concepts presented by Plato, Aristotle, St. Augustine, C.S. Lewis, Abraham Maslow, Edward Deci, Richard Ryan, and Mihaly Csikszentmihalyi. This synthesis is then employed in analysis of contemporary American public education. Finally, the program structure, business model, and feasibility analysis, of a summer camp designed to supplement contemporary American public education in promoting human flourishing is detailed.

Samuel James Evans Cox, Great Texts

Perry L. Glanzer**,** mentor

The Unusual Reign: An Illustration of the Relationship between Spirituality and Leadership Development in Undergraduate Student Leaders

Traditional four-year universities face challenges in their attempts to articulate a vision of what qualities their student leaders ought to develop over the course of their undergraduate experience. In a narrative of leadership development, The Unusual Reign offers a fictionalized account of how one student leaders' spiritual growth allows for the cultivation of intellectual virtues. These intellectual virtues result in a capacity for sensemaking, a process by which leaders make sense of their organizations and promote individual and collective growth. The narrative follows Oxford Brickmann, a Resident Advisor whose spiritual combat with God and guilt force him to reevaluate himself, his college community, and his own education in the endeavor to become a wiser leader. In conjunction with other student leaders, Oxford learns how to strengthen the relationships that bring purpose to individual lives and foster community. A novel, The Unusual Reign pulls from studies in virtue epistemology and virtue ethics, students' spiritual development, higher education research, and organizational theory.

Joshua Crum, University Scholars

Bill Neilson**,** mentor

An Analysis of the Opioid Crisis: History, Strategy, and Solution to America's Current Drug Crisis

The U.S. is in the midst of an epidemic of unrivaled proportions: opioids. Nourished initially by the doctor's pen, the opioid epidemic has affected all facets of American life. The solutions are complex and complicated by the biochemistry of addiction; however, various strategies are explored to help provide solutions that can be temporary answers. In order to assess the impact of policies, Vermont and New Hampshire are compared on their response to the opioid crisis, and potentially, provide a role model for opioid addiction treatment. In particular, the U.S. should consider implementing Vermont's medication-assisted treatment (MAT) program, and this thesis suggests why its potential has not been realized and what can be done to overcome these barriers.

Sarah Cruthirds, University Scholars

Michael Muehlenbein**,** mentor

What Happens When a Woman Cannot Conceive?: Social Media's Role in a Women's Journey with Infertility

The psychological effects of infertility on women are documented well in the research literature. However, the pervasive notion that women do not want to speak about their experiences with infertility still exists. Challenging this, women, in recent years, have been taking to social media to share their stories about infertility, but the stories often seen are from women with 'happy endings.' Where are the stories from women who never have a child, from the women who cannot adopt? Utilizing articles by Balen and Bos, Raque-Bogden and Hoffman, and McQuillan et al., a survey, aimed at understanding the relationships between a woman's sense of self and motherhood, how she experienced infertility, and who she chooses to communicate with about her experiences, was constructed. The survey did not yield any data; thus, the objective of this project has become a review of existing data, assessing gaps in the literature, and proposing methods of filling those missing gaps. The conclusion: women who do not post or talk about their experiences with infertility experience a changed sense of self which affects their views on being a woman, motherhood, and whether they will share their stories with others, either verbally or on social media.

Andres Cruz, International Studies
Richard Jordan, mentor

How the Internet has Affected Coups

An analysis of four cases has revealed that modern information communications technology (ICT) does not offer a comparative advantage to coup plotters. Instead, it will provide an advantage to the regime if the regime has both popularity and is perceived as legitimate by its constituents. The first two cases deal with coups that took place before modern ICT, and the second two with coups that took place after the advent of modern ICT. For the attempted coup in Algeria in 1961, the regime had, in addition to both enough popularity and legitimacy, the opportunity to make an appeal to the people. The regime's appeal kept support for the coup low enough to easily suppress it. The Turkish regime in 1980 had no popularity and chronic instability that was linked to a lack of legitimacy. Even if the regime had been able to reach out to the people, their appeal would have been ignored. Consequently, the regime fell. In Egypt in 2013, the regime had no popularity, and its legitimacy had worn out. The government reached out to the people using modern ICT, but their appeal fell on deaf ears. The coup ultimately succeeded. In Turkey in 2016, the regime had popularity, and legitimacy. In addition to the police and the military, the people answered the president's call to oppose the coup. This mobilisation led to the defeat of the coup. Essentially, if the regime is legitimate and enjoys enough popularity, the internet will facilitate the outreach to the people that would, in turn, consolidate the position of the regime.

Kendall Curtis, University Scholars
Victor Hinojosa, mentor

Populism and Party System Weakness in Latin America and Europe

This thesis analyzes the relationship between populism and party system weakness from a cross-regional perspective. After first determining the ideational definition of populism as the appropriate approach for this type of research, the viability and generalizability of prominent causal models for populist success is discussed. A preliminary statistical analysis shows significant correlation between party system weakness and populist electoral success. Building upon these findings, a case study of populist successes in the most recent election cycles in Brazil, Italy, Mexico, and Spain shows that party system weakness causes populist electoral success. While other causal factors play a role in the success of populist actors, the results of this case study suggest that party system weakness is a cause of populist success that crosses regional, structural, and ideological lines. The recent wave of populist success is then discussed in the context of concerns about party dealignment and presidentialization that call into question long-standing assumptions about democratic consolidation.

Ashley Dyer, Political Science and French
Davide Zori, mentor

Toubert or Not Toubert: Reconciling the Narratives of Incastellamento *in Archaeology and Text*

During the Middle Ages, castles propagated across the Italian countryside in a process called *incastellamento*, during which the population moved from dispersed settlements to concentrated and fortified sites atop hills and plateaus. The French historian Pierre Toubert spearheaded intensive study of this phenomenon in 1973 with a landmark work outlining its mechanisms and chronology. However, archaeologists found issue with several of Toubert's key findings, calling his research into question and exemplifying the inherent tension between textual and material sources. In this thesis, I analyze Toubert's monumental work and examine archaeological critiques of it. I then formulate my own definition of *incastellamento* before exploring how it is observed in the archaeological data, using several examples of sites from archaeological excavations and applying the analysis to the ongoing excavation in San Giuliano, Italy. Ultimately, this study acts as an illustration of the importance of interdisciplinary studies in the analysis of archaeological sites moving forward.

Mattilyn Egli, University Scholars
Sam Perry**,** mentor

Negotiating Stronghold Table: Figuring the Badlands in National and Local News

In 2012, the Oglala Sioux Tribe and the National Park Service published their joint proposal to create a Tribal National Park in the South Unit of the Badlands National Park. In this study I compare the narrative told by two nationally recognized papers, *The New York Times* and *The Washington Post,* and two locally based papers, *The Rapid City Journal* and *The Lakota Country Times.* While the stories told by the national newspapers square with one another and those told by the local sources are similar as well, the narrative represented by the national papers is entirely dissimilar from the local narrative. I then compare the stories told by media in the mid-2010s to stories told by the media in the 1890s and the 1970s, concerning interactions between the Oglala Sioux Tribe and the federal government. In each instance, national newspapers rely primarily on already-established characterizations of the members of the tribe. The connections between the perceived reality of the American public concerning the Wounded Knee Massacre of 1890, the occupation of Wounded Knee in 1973, and the vote to reject the proposed Tribal National Park in 2015 show that racial reconciliation is a cyclical process that has yet to be resolved. While the way that national newspapers figure the events within Badlands National Park has value because it shows the way that Americans figure themselves within a narrative, it restricts the ability to utilize real data to practically solve present problems, prolonging a cycle of ineffective communication.

Suzi Elnaggar, Classics
Julia Hejduk**,** mentor

Howling: Hecuba in Ovid's Metamorphoses *XIII and Beyond*

Hecuba, the ill-fated Queen of Troy, appears in great works of literature from Homer's *Iliad* to Shakespeare's *Hamlet*. While Hecuba's depiction in Euripidean tragedy has warranted much attention and discussion, Ovid's rendering of her in epic poetry is rather overlooked. This paper will appraise Ovid's portrayal of Hecuba in *Metamorphoses* 13.399-575 through a close reading of the text in Latin, noting both repetition of the verbs *haurio* and *gemo* and the canine description of Hecuba at the tomb of Hector as foreshadowing of Hecuba's crime and fate. Additionally, Ovid's interest in depicting women and their emotional lives informs a comparison of his portrayal of Hecuba to Ἑκάβη of Euripidean tragedy and Canidia of Horatian poetry. Finally, this paper will examine and explain the importance of the transformation of Hecuba into a *canis* in Ovid's *Metamorphoses.* It concludes that this beastly transfiguration can be read as a commentary on the nature of maternal grief, female rage, and feral madness.

Emily Engelhardt, University Scholars
Jason Whitt**,** mentor

Irenaeus and Athanasius on the Significance of Embodiment

What is the significance of the human body, and how does our understanding of the body influence the way we live? In a culture that proclaims freedom and autonomy above all other virtues, the Christian understanding of a person's body *not* belonging to oneself but to God is radical. Irenaeus in *Against Heresies* and Athanasius in *On the Incarnation* defend the Christian faith and understanding of the body against heretics of their day, upholding the intrinsic goodness of creation and of human bodies. These saints point to the Incarnation as the necessary way in which God has thoroughly redeemed human flesh and the whole of man. Irenaeus and Athanasius' understanding of the body as handiwork of God, integral to being human, and fully redeemed by God influence the way humans consider their bodies and treat them in the medical field.

Noelle Flores, Corporate Communication

Christina Crenshaw**,** mentor

Global Sex Trafficking and Nonprofit Communication

I will research and discuss the ways in which anti-trafficking nonprofit organizations raise awareness of the sex trade and communicate its nature, history, and dangers to the public. I hope to determine what kinds of methods and content have been successful and what have not as well as how various demographics respond to different types of messages and media. I will also explore any differences in the successes and failures of faith-based nonprofits and those that are not faith-based, and I will examine how portrayals of sex trafficking in the media have influenced public knowledge and opinion on the subject. To achieve these objectives, I will interview individuals involved in certain anti-trafficking organizations and ask for their opinions on the influence the efforts of their respective nonprofits have had. Additionally, my research will analyze how the sex trade is presented ethically in the news, socially in the media, and educationally in schools.

Krupa George, University Scholars

Matt Bradshaw**,** mentor

Correlations between Prayer, Scripture Readings, and Mental Health Measures

Throughout history, healing has been associated with spirituality. Even today, many believe in the power of prayer for wellness and healing, and find it especially relevant to areas of mental health. This thesis gives a historical glimpse into the topic, the state of current research, data from surveys conducted among U.S. adult populations, as well as a novel interventional survey of Baylor students. The findings show a significant positive correlation between different types of prayer, scripture readings, and pre- and post- mental health measures.

Denae Gerasta, University Scholars

Bill Neilson**,** mentor

Analysis of Hypertension Prevalence and Associated Disease Mortality Among Low-Socioeconomic Status Residents of Cook County, IL

The socioeconomic (SES) gradient in health is well established in the field of public health, but studies of this phenomenon as it relates to chronic disease in vulnerable populations yield mixed results. This thesis statistically analyzes data from the Illinois Department of Public Health, National Behavioral Risk Factor Surveillance System, Chicago Department of Public Health, and Healthy Chicago Survey for a variety of demographic, socioeconomic, health, and mortality indicators, in order to identify relationships between socioeconomic determinants and mortality related to chronic hypertension. Although the socioeconomic determinant of primary importance was expected to be related to income level or poverty status, the study revealed that race appears to demonstrate a stronger relationship with mortality from diseases associated with chronic hypertension. Hypertension itself demonstrates a weak relationship with poverty, though analysis of various combinations of SES indicators implies a complex interaction mechanism that influences health outcomes. Access to quality nutrition and management of diet demonstrates the strongest correlation with hypertension management, so eliminating barriers to sources of healthy food for low-SES populations is a key mechanism to improving health outcomes in this population. Creating better access to primary care is also a promising method of improving management of chronic disease. Overall, many interesting relationships between social determinants and health outcomes have been identified; future research may include regression analyses to create predictive models for health outcomes based on socioeconomic status. This study also revealed a need for better data collection mechanisms to accurately reflect the current state of healthcare of disadvantaged populations.

Christopher Hardister, University Scholars

Matt Bradshaw**,** mentor

Religiosity and Pre-Med, the Relationship between Them

This paper examines the relationship between religiosity and Baylor pre-med students. The data was collected using a survey which was sent out to Baylor pre-med students. The data was then used to look at the change in attendance and prayer of the

students since entering Baylor. The results showed there were no statistically significant correlations between changes in attendance and prayer and being pre-med. A few of the other variables measured did have statistically significant correlations with changes in attendance and prayer.

Catherine Haseman, University Scholars
Lisa Lacy**,** mentor

Arab American Racialization and its Effect on American Islamophobia

Over the past three years, anti-Muslim and anti-Arab rhetoric and discrimination has surged. Prejudice against Arabs and Muslims has moved from the fringes of American society to the mainstream. The American Islamophobic discourse is so deeply rooted in U.S. history, culture, and society that we often misunderstand its origins as well as its manifestations. This paper proposes a critical dialogue about how to understand one contested concept (Islamophobia) by using another contested one (racialization). This paper seeks to understand if--and if so, to what extent--racialization is central to understanding America's pernicious brand of Islamophobia. In addition to reviewing the historical connection between racialization and Islamophobia, this paper analyzes the results of a survey of Texans' views of Islam and Muslims. The survey results are used to understand how racialized conceptions of Arab Muslims correspond with Islamophobic tropes.

Kaitlyn Havlik, Biology
Robert Doyle**,** mentor

Re-evaluating species boundaries in the freshwater mussel Fusconaia mitchelli

Freshwater mussels (Bivalvia: Unionidae) are one of the most imperiled groups of organisms in North America. Accurately defining species boundaries and distribution is vital for ongoing biological conservation and management efforts. *Fusconaia mitchelli* (Simpson in Dall, 1896) is a freshwater mussel found in the Brazos, Colorado, and Guadalupe drainages. Previous studies focusing on molecular data have shown significant intraspecific genetic variation which may be indicative of speciation occurring between the geographically separated populations. This project sought to use multi-locus sequence data to reevaluate systematic relationships of the three populations of *F. mitchelli*. We sequenced both mitochondrial DNA (mtDNA) and nuclear DNA (nDNA): the protein-coding mtDNA genes *cytochrome oxidase subunit 1* and *NADH dehydrogenase 1*, and the nuclear ribosomal *internal transcribed spacer 1*. Phylogenetic and phylogeographic analyses indicate molecular divergence of two groups within *F. mitchelli:* the Guadalupe drainage, and the Brazos and Colorado drainages. The name *Fusconaia iheringi* is available for the Brazos and Colorado populations and could be applied in the future if strong support for speciation is discovered.

Sarah Heady, University Scholars
Junius Johnson**,** mentor

Made in God's Image: A Multidisciplinary Study of Personhood and Faith

The question "what is a person?" haunts countless disciplines and debates, from theology to neuroscience, abortion to artificial intelligence. For Christians to engage meaningfully in such areas in a way consistent with their religious ideals, they must have a carefully considered perspective on personhood. In this project, I present a model of how to consider such a challenging topic. I first establish a biblical anthropology consisting of twelve principles of personhood derived from Scripture. I next present three different perspectives on personhood - traditional theological, emergent, and reductionist - which originate from the disciplines of theology, sociology, and neuroscience, respectively. I analyze the compatibility of these three perspectives with the established biblical principles of personhood. From this, I conclude that the traditional theological perspective is most compatible with Scripture. However, I more significantly argue that one should adopt the perspective on personhood that bears the greatest consilience with both Scripture and other forms of knowledge, while giving priority to Scripture. I ultimately conclude that the traditional theological perspective is the most consilient of the three perspectives with Scripture and the wider body of knowledge.

Adriana Herrera, Biology
Mikeal Parsons, mentor

Healing of the Marginalized: How Jesus's Healing Ministry can be a Model for Christian Healthcare Professionals

Many modern-day, Christian health professionals describe their work as a ministry—a way to share the gospel, even if indirectly. What would it look like, however, to have a healing ministry like Jesus? To answer this question, this thesis explores the unique aspects of Jesus's healing practices, first by defining the concept of health and healing in the Graeco-Roman and Jewish traditions and then determining how Jesus's practices were distinct. Next, the work will explore how aspects of Jesus's healing ministry, such as healing out of compassion and addressing the needs of the ostracized, appeared in early Christianity, namely through the development of Christian philanthropy and hospitals for the poor. Finally, the precedent established by Jesus and the early Christians will be used to develop a model of care for the marginalized in our modern society.

Becca Huerta, Political Science
Rebecca Flavin, mentor

The Future is Female: A Philosophical and Legal Understanding of the Control of the Female Body

During a time in which the dominant narrative is that women are equal in all regards, this thesis will argue the opposite. Through an understanding of liberty, the concept of negative and positive rights will demonstrate that the Constitution was not crafted to encompass positive rights which ensures that reproductive rights are left up to interpretation and not guaranteed for all women in all places. Shifting to an examination of the role of the female, it will be evident that the role of the female in society has grown yet remained constant in its emphasis on the role for reproduction. Yet until women can exist in society without being defined by her body and her biology, she will not be truly equal to her male counterparts. Finally, an examination of Supreme Court cases and different legislation will demonstrate that the control of the female body has been placed in the hands of the government. The future of equality depends on a new understanding of what it means to have rights, what it means to be protected by the government, and what it means to be female.

David Humphrey, University Scholars
Robert Darden, mentor

Crowdsourcing Rescue: Empowered civilian natural disaster response in the social media age

When official first response systems are overwhelmed in the wake of natural disaster, civilians take it upon themselves to do whatever they can to help those in need of rescue. This spontaneous volunteer response is not new to the world of natural disaster, but it is growing in new ways. In this thesis, I explore how certain technologies in the age of social media assist and empower civilians to respond to natural disaster in meaningful and effective ways. Particularly I take a close look at the story of a technology created in the wake of Hurricane Harvey in Houston and how it was able to assist voluntary first responders in saving thousands of lives. The technologies and methods that have sprung from the spread of social media hold significant relevance for how we may address the subject of disaster rescue in the future.

Kaitlin Jones, Biology
Paul Fillmore, mentor

Training in EEG Neurofeedback: Predicting Successful Treatment

EEG neurofeedback treatment (NFT) has proved useful in the rehabilitation and treatment of many disorders including autism, attention disorders, epilepsy, traumatic-brain injury, and dyslexia, among others, and it is currently being explored for use in treatment of language disorders. However, multiple studies have shown the inability of some patients to respond to treatment, and there is currently no accepted explanation for this phenomenon. This highlights the importance of developing methods to assess individualized treatment response, and ways to better understand the factors that may lead to treatment inefficacy in some patients. This paper reviews the recent research on neurofeedback treatment, focusing on predictors for both successful

and unsuccessful treatment outcomes such as the current state of the patient, various traits of the patient, and varying neurofeedback methods. This literature is discussed in the context of an ongoing study at Baylor focused on developing prospective assessments which estimate the likelihood of NFT treatment success before beginning therapy. By understanding the mechanisms of successful brain regulation through neurofeedback training and adapting treatment to each patient, significant changes in a patient's quality of life can be observed. Furthermore, increasing the efficacy of neurofeedback can have lasting implications for patients with cognitive and language disorders, through reducing symptoms, and enhancing overall intellectual and social performance.

Ellie Jurden, Film and Digital Medial
James Kendrick, mentor

Where are the Wonder Women?

As Superhero movies continue to grow in popularity, they also grow in the ability to leave drastic impacts on our collective culture. Because of this influence, it is important to consider how these movies portray different minority groups. This thesis serves to examine the ways in which these movies depict their superheroic female leads. By exploring how each standalone female superhero movie frames their leading lady – within the context of their respective films – we are able to gain a better understanding about their representation and how it affects viewers.

Isabel Kazan, University Scholars
Junius Johnson, mentor

Does the Trinity Matter?: Answering the Question of a Shared Deity between Christians, Muslims, and Jews

In this thesis I attempt to provide a systematic approach to the question of a shared deity among Christians, Muslims, and Jews. Contemporary answers to the shared deity question are often reductionist in nature, focusing on shared practices and narratives at the expense of core Christian beliefs and doctrines: most importantly, trinitarian theology. If the core of God is His persons, do Muslims and Jews intend their worship to the same God, albeit incorrectly, or is their worship not accepted by God? My thesis delves into the heart of this debate by clarifying the shared deity question, offering potential responses through the trinitarian theologies of Miroslav Volf, Thomas Aquinas, and Bonaventure. In so doing, I argue that God cannot be known as anything other than trinitarian because right worship of God hinges on right understanding of the Trinity.

Heidi Keck, Theatre Performance
DeAnna Toten Beard, mentor

Construct and Character: Literary Tropes and Societal Expectations in Shakespeare's Heroines

Elizabethan drama heavily features male leads, with female characters often developmentally neglected or presented in constrictive and discriminatory stereotypes. However, William Shakespeare sets himself apart by developing heroines who display features of being whole, round, and interesting characters, significant in their accurate portrayal of elements of the feminine experience that ring true in any era. In *Much Ado About Nothing* and *Romeo and Juliet,* Beatrice and Juliet defy expectations for female literary constructs by volitionally taking control of their situations while remaining desirable and feminine. In *King Lear* and *Othello,* Cordelia and Desdemona challenge Elizabethan expectations for women, but still fail to save themselves as a result of a constrictive and gendered society. All four plays present women who are complex and interesting as well as literarily and dramatically significant. As both constructs and characters, Shakespeare's women can be seen to break stereotypes and provide a metaphor for the feminine experience that is relevant both in Elizabethan England and today.

David Khan,
Todd Buras**,** mentor

A Treatment of Hylomorphism(s)

My thesis discusses a hylomorphic theory of composition, contrasting hylomorphism with physicalism on the one hand and Cartesian substance dualism on the other. Hylomorphism can be a slippery theory or family of theories to work with, so I proceed to a treatment of the terms and concepts which hylomorphic theories employ, and attempt to address some of the most immediate questions and obscurities that arise. Examples include the nature of forms as understood by hylomorphists, or the meaning of "prime matter." Next, I elaborate the differences between several contemporary articulations of hylomorphism, with special attention to the debate between corruptionism and survivalism. After that, my thesis examines some problems for hylomorphic accounts generally, especially objections leveled by competing theories of personal composition, and concludes with an evaluation of what hylomorphism has to offer, given those criticisms.

Minwoo Kim, University Scholars
Jonathan Miles**,** mentor

Impact of Learning Assistants on Student Satisfaction and Performance in an Upper Level Biology Class

The educators at the University of Colorado, Boulder, introduced the Learning Assistant (LA) Program in 2003. Since then, many other schools have adopted the program in an effort to establish active learning in undergraduate courses. These courses mainly include freshman level, introductory courses in the STEM (Science, Technology, Engineering, and Mathematics) field and in recent years has spread to other disciplines and upper level courses. Learning assistants are upper-level students who are trained in pedagogy and teaching techniques in hopes that they could help lower-level students. At Baylor, learning assistants are a newly implemented program and they are used in upper level biology courses, which is not common in programs at other universities. Knowing this, the students' opinions and feelings towards LAs and the course in Genetics (Bio 2306) were surveyed and analyzed. Analysis were focused around answering two questions, Satisfaction with learning assistants will be positively correlated with satisfaction with the course (H1) and Satisfaction with the course will be higher, on average, in the course with learning assistants than the one without (H2).

Coleman Klein, Finance
Boris Nikolaev**,** mentor

Economic Freedom and Eudaimonic Well-Being: Exploring the Socio-Economic Paths to Psychological Functioning

It is well established that economic freedom promotes economic development and social progress (Hall & Lawson, 2014; Nikolaev, 2014; Bennett et al., 2016). But some criticize economic freedom for creating income inequality that harms citizens (Pickett and Wilkinson, 2015). While previous studies have examined the relationship between economic freedom and hedonic well-being (Nikolaev and Bennett, 2017; Rode, 2013), this paper explores how economic freedom affects people's psychological functioning. To test the relationship between economic freedom and psychological functioning, I plot the mean score for each country's economic freedom against their mean score for psychological functioning. My results indicate that economic freedom is positively correlated with both personal and social functioning. These results show that perceived problems with economic freedom do not outweigh benefits on well-being.

Chloe Knox, University Scholars

Rebecca Flavin, mentor

Probing the Inconsistencies of State Feticide and Abortion Law

This paper serves as an analysis of both intrastate and interstate statutory inconsistencies between feticide and abortion law within the thirty-eight American states with criminal feticide laws on record. By reviewing the particulars of each statute, it becomes apparent that there are severe and widespread contradictions between the implications of feticide and abortion laws within each state, as well disparities amongst the states themselves. I will argue that these inconsistencies in protection for unborn life are nothing new in American law. The United States has struggled since its inception to establish stable legislation regarding the protection of the unborn. This historic struggle translates over to the country's current problem of how to regulate the protection of unborn life. The inconsistencies pose a threat to either one of two groups: the laws treat those convicted of feticide far too harshly, thus violating their right to be free from cruel and unusual punishment, or the laws neglect the inherent value of unborn life by permitting their death in cases of abortion. In either case, it is vital that the American government thoughtfully examine these contradictions and bring about a movement to remedy this violation of fundamental rights.

Grace Kohn, University Scholars

Bill Neilson, mentor

Hormone Therapy: Histories, Use, and Controversies Associated with Lower Urinary Tract Symptoms in Men and Menopause in Women

Research on hormone therapies has been evolving rapidly with controversy close behind. The first goal of this project was to investigate a controversy regarding testosterone replacement therapy treatment when associated with lower urinary tract symptoms. It was previously thought that testosterone replacement therapy would worsen lower urinary tract symptoms; however, it was found that mild or moderate symptoms were not worsened, measured using IPSS scores. It was discovered that there was a lack of data for severe symptoms and further research was recommended. The second goal of this project was to provide a clear and concise history of estrogen therapy for women in menopause. Controversies like the correlation of cancer and estrogen therapy were evaluated extensively. It was found that short-term use of estrogen therapy for post-menopausal women is best practice, while necessitating evaluation of risks and benefits with both physician and patient before initiation of treatment.

Andrew Kuykendall, Management Information Systems and Entrepreneurship

Wayne Hampton, mentor

VigoR Healthcare Solutions

Currently, there is an ever-growing elderly population suffering from a variety of issues such as dementia, depression, anxiety, and cognitive decline. According to the U.S. Census Bureau, the elderly population is expected to double to 83.7 million by 2050 and the World Health Organization estimates the total worldwide amount of elderly with dementia to triple by 2050. VigoR Healthcare Solutions seeks to promote, create, and maintain good mental health for the elderly by increasing cognitive function, decreasing symptoms of depression, offering emotional respite for dementia patients, and allowing the elderly to experience technology firsthand. VigoR offers a subscription model for nursing homes, retirement communities, in-home care services, and assisted living facilities that provides virtual reality headsets with our own user-friendly software for resident-use to help improve mood, decrease depression symptoms, and stimulate cognitive functions.

Anna Lam, Classics

Alden Smith**,** mentor

Virgil's Anna: Unanima Soror

The present study concerns Anna, the sister of Dido in Book Four of Virgil's foundational, Roman epic poem, the *Aeneid*. I analyze the intertextual relationship Anna's character shares with the nurse figure of tragedy, and how Virgil builds a new kind of tragic figure out of the Greek material—the tragic, maternal sister. Virgil further links Anna to the nurse figure by using specific incendiary language and by utilizing her deep religious and etymological origins as a mother/nurse goddess. These connections link her to the other two sisters of the *Aeneid*, Juturna and Acca, who are also fundamentally associated with motherhood. Within Virgil's narrative, these three sisters are employed to assist in the founding of Rome, the ultimate telos of the *Aeneid*.

Elizabeth Larson, University Scholars

Steven Jug**,** mentor

The Revolutionary Rhetoric and Leninist Results of Bolshevik Feminism, 1917-1921

This thesis examines Russian women's experiences during the Bolshevik Revolution and the Russian Civil War. This work identifies what women expected and what failed to happen during one of the most foundational periods of history for modern Russian women. A central figure in the work is a leading socialist women's activist, Alexandra Kollontai, who aimed to liberate women by pressing the state to provide women economic independence. Her writings demonstrated forms of self-censorship, which signify the many hopes of women workers that were never fulfilled.

Marcus Laurel, Mathematics

P. Jameson Graber**,** mentor

Asymptotics for mean field games of market competition

The goal of this thesis is to analyze the limiting behavior of solutions to a system of mean field games developed by Chan and Sircar to model Bertrand and Cournot competition. We first provide a basic introduction to control theory, game theory, and ultimately mean field game theory. With these preliminaries out of the way, we then introduce the model first proposed by Chan and Sircar, namely a coupled system of two nonlinear partial differential equations. This model contains a parameter ϵ that measures the degree of interaction between players; we are interested in the regime ϵ goes to 0. We then prove a collection of theorems which give estimates on the limiting behavior of solutions as ϵ goes to 0 and ultimately obtain recursive growth bounds of polynomial approximations to solutions. Finally, we state some open questions for further research.

Grant Linnell, University Scholars

Jeff Levin**,** mentor

Social Isolation and Depression in Elderly Populations: A Systematic Review

As the population continues to age, more older adults are living alone or in assisted living facilities. Social isolation amongst the older population is emerging as one of the major issues facing the industrialized world. This thesis reviews the published literature since the beginning of the century relating social isolation to depression in older adult populations. In this thesis, twenty-seven peer-reviewed research articles were reviewed and the results reveal that social isolation has significant negative impacts on the mental well-being of this population, specifically through increased rates of depression. Also, the review revealed that two specific components of social isolation, perceived isolation and social disconnectedness, negatively impact mental health in unique ways. It is concluded that while social interventions must take place in order to combat the issue, familial structure and support may be the most effective counter-measures.

Kiara Lowery, Medical Humanities
LesLee Funderburk**,** mentor

Where Are The Ladies?: The Social and Cultural Reasons Why Women Still Shy Away From Weights in 2018

This study sought to determine gym usage, specifically the use of weight training equipment, and if it had changed over time, sociocultural factors that have changed usage, and any specific reasons that kept women from weight training during the era of fourth wave feminism and "strong is the new sexy". Participants included female college students and female members of a private, strength-athlete focused gym. Participants were recruited via flyers posted in the private gym, in various buildings on Baylor University's campus, through Canvas notifications posted by professors of the principal investigator, and Facebook. Three hundred and sixteen surveys were included in this study and responses were interpreted with Stata 15.1 Statistical Software and Qualtrics to determine significance with the assistance of Dr. Kevin Dougherty. Responses revealed that the gym and various fitness spaces are microcosms of how traditional feminine ideals influence women's fitness practices.

Tiffany Lu, Biochemistry
Sarah-Jane Murray**,** mentor

Blind Ambition

This screenplay explores the challenges and triumphs of blind rehabilitation through the eyes of journalist Lilly Tsang. Through characters inspired by real-life veterans and VA staff, this story investigates the motivations of healthcare beyond diagnosis and disease. In an environment where kindness and sacrifice signal weakness, veteran Charles Avery challenges Lilly to rediscover the value of teamwork and respect. By elucidating the community and resilience embodied by veterans and blind rehabilitation staff, *Blind Ambition* invites readers to reconsider standards of success in a world where things are not always what they seem.

Gennie Mansi, Statistics
Amanda Hering**,** mentor

A review and analysis of fault detection and attribution metrics in MSPC literature

In multivariate statistical process monitoring, many methods have been developed for detecting faults and then attributing the cause of a fault to particular monitored variables. Consequently, a variety of metrics are used to assess the efficacy of these methods. In this paper, we summarize the most commonly used metrics for assessing the performance of such methods in fault detection and attribution, and we standardize the notation and language. We illustrate the features that each metric is designed to measure and highlight. Metrics are demonstrated in simulated data, and we discuss the benefits of establishing new metrics that (1) evaluate a method's ability to detect and attribute a fault simultaneously and (2) quantify the cost associated with different types of errors.

Hana Marsheck, Health Science Studies
Yunsuk Koh**,** mentor

The Potential for Acupuncture to Mediate Hippocampal Apoptosis as it Pertains to Chronic Stress

Among many other health complications, chronic stress has been suggested to lead to hippocampal apoptosis. While apoptosis is a regulatory process, it is maladaptive in excess. The exact mechanisms for the malfunctioning of this programmed cell death are yet to be fully developed. Furthermore, acupuncture is thought to work through neurohormonal pathways or by mediating pro-inflammatory markers, but the exact mechanisms are also still being discovered. This systematic review evaluates the potential for acupuncture to help mediate stress induced hippocampal apoptosis. As there is no current literature examining this exact concept, a systematic review is being conducted that analyzes relations between various combinations of the variables. This thesis then evaluates those results for any overlapping mechanisms to suggest acupuncture as a potentially valid treatment.

Kyle Martin,
David Whitford**,** mentor

The Politics of Persecution: Anabaptist non-conformity and persecution in the early English Reformation, 1525-1553

The focus of this thesis is to analyze the persecution of non-conforming Anabaptists in England under the reign of Henry VIII and Edward VI. The efforts of the early Reformation Tudor monarchs and their respective regimes to stamp out the religious dissent of fledgling English Anabaptist communities illuminates both the political ambitions of the various regimes and their own varied and unique attitudes towards those who dissented from the English Territorial Church. The unique and unifying theme found in the persecution of English Anabaptists is the fact that the uniform and severe persecution of continental Anabaptists was not replicated under the Tudors. While the regimes of Henry and Edward opposed Anabaptism, they differed with regard to the severity of the persecutions undertaken and the motives behind their persecution. Furthermore, given the scarcity of documents produced by the early Anabaptist communities, examining the state records of their persecution provides perhaps the best insights into the lives and culture of these religious non-conformists and the beliefs of those who sought to persecute them. Ultimately, the unique political and religious aims of each regime defined the forms of persecution that occurred between the years 1525 and 1553.

Caroline May, Theatre Performance
DeAnna Toten Beard**,** mentor

At the Crossroads of Theatre and Visual Arts: A Semiotic Approach to Directing John Logan's Red

John Logan's 2011 play, *Red*, details a two year period of interaction between noted American painter Mark Rothko and a fictional character, his young assistant named Ken. Set during the latter part of Rothko's life and career, the play explores key ideas about modern art, mortality, and legacy. Logan's text relies heavily on Rothko's real words, as documented in his writings about art, and also requires the use of real paint, brush, and canvas which are used onstage. The play thus creates a rich ground to consider semiotics and the creation of meaning in language, visual arts, and theatre performance. This thesis considers Rothko's art and the theory of semiotics as they relate to the artistic process of directing a one-hour cut of *Red* for public performance. Chapter one of the thesis offers a brief biography of Mark Rothko and consideration of his work; chapter two presents a survey of semiotic theory; chapter three details the artistic process of analyzing, preparing, and directing *Red,* and chapter four presents documentation of the production process.

Heath McCabe, Electrical and Computer Engineering
Erik Blair**,** mentor

Quantum-dot Cellular Automata as an Implementation for Random Number Generation

Quantum-dot cellular automata (QCA) provides a viable low-power alternative to conventional implementations of classical computing machines. QCA cells with no biasing voltage will yield a "1" or a "0" with a 50% chance of being "1" and 50% chance of being "0" upon measurement. Applying a bias voltage to a QCA cell allows this probability to be tuned such that the probability of measuring a "1" could range anywhere from 0 to 1. Performing a series of measurements can be used to serially create a random number of any desired size. Thus, tuning the probability of a QCA cell can be used as an implementation for random number generation.

Daniel Edwin McCarty III, University Scholars
H. Jennings Sheffield**,** mentor

A Lost Heritage: The Jewish History of Waco

The agency and industry of Jewish Wacoans have gone largely unobserved as primary subjects by academic historians. This oversight needs to be corrected to preserve the integrity of the historical record of Waco. An inaccurate historical record of early

Waco (lacking proportionate reference to Jewish contribution) cannot be allowed to usurp Jewish legacies, and the details of the city's past cannot be permanently forgotten. By juxtaposing images captured by photographs from the past, next to my own modern recapturing of the same places and subjects, I intend to provide the viewer proof of the history that has gone unrecorded. The focus of my work is on buildings, homes, and sacred places, presenting them as they exist (or do not) today. All the places captured feature sites and buildings that held an important role to the history of Waco. In many cases, the disparity is dramatic and leaves sections of the city unrecognizable.

Gordon McCormack, University Scholars
Greg Garrett, mentor

Legacy and Loyalty: An Application of Machiavellian Politics to George R.R. Martin's A Song of Ice and Fire

This thesis analyzes George R.R. Martin's fantasy series *A Song of Ice and Fire* through the lens of Niccolo Machiavelli's *The Prince*, relating the treatise's amoral political philosophy to the kings and queens of fictional Westeros. I particularly argue that, while Martin's cynical series advocates many of *The Prince*'s practical and pragmatic tenets, the author disagrees with the famous assertion that a ruler is safer feared rather than loved. Martin applies the politics espoused within *The Prince* to a multigenerational view and reveals the instability of rulership built upon fear, showcasing conversely the strength of a subordinate's loyalty when garnered by love. I provide a brief historical background of both *The Prince* and *A Song of Ice and Fire* and exhibit the similar contexts in which the works were written, before analyzing in-depth the politics and ideologies of two of Martin's fictional rulers and exploring his theme of political legacy.

Ashlyn McCowan Perez, University Scholars
Brian Elliott, mentor

The Monday Girls

Downtown Chicago, 1985: a young girl from a broken home loses her identity and falls in love with rock 'n' roll. This thesis uses the medium of screenwriting to explore how coming-of-age stories grapple with identity, purpose and fear. In the places where our narratives, both written and unwritten, intertwine, we as humans must seek to comprehend, empathize, and understand. Anne Lamott, in her memoir *Bird by Bird,* says of writing, "…this business of becoming conscious…is ultimately about asking yourself, how alive am I willing to be?" Part music homage, part coming-of-age farewell, this thesis has evolved over multiple drafts into an exploration of how we honor the things we deeply love. As poet Tracy K. Smith says, in her poem "The Largeness We Can't See, *"All we live blind to grows into the ground. And all we live blind to leans its deathless heft to our ears and sings."* This intersection of the seen and the unseen form our roots, our backbone -- the richest place, I believe, where stories grow.

Elizabeth McElroy, University Scholars
Matt Bradshaw, mentor

Examining the Ethics of Prenatal Genetic Testing

With new methods emerging in the field of prenatal genetic testing, it is essential to evaluate the ethical significance and consequence of these discoveries. This thesis explores such topics as the extent to which genetic screening is utilized; what constitutes "disease" in cultural context; termination as a healthcare intervention; and newborn organ donation, amongst others. For each of these ethical questions, the issue will be evaluated in its current status, as well as the historical and predicted future utilization. Whenever possible, public opinion polls are integrated to gauge how aware the public is of these new methods, and how our governments could best protect patients and our larger society in this new era of genetic testing capabilities.

Christine McIntire, Baylor Business Fellows and Great Texts

Daniel Nodes**,** mentor

Following the Good Shepherd: The Patristic and Medieval Exegesis of John 10 and Luke 15

This thesis presents an analysis of the exegetical tradition surrounding the Biblical image of sheep and shepherds. It focuses specifically on two parables given by Christ: The Parable of the Good Shepherd as recorded in John 10 and the Parable of the Lost Sheep as recorded in Luke 15. First, the Patristic and Medieval interpretations of each parable are addressed individually, identifying the ontological focus of the John 10 interpretations and the economical focus of the Luke 15 interpretations, noting a consistency of interpretations between the time periods. Finally, the thesis turns to Patristic and Medieval poetry, discovering them to blend the interpretations of each parable. This blend therefore provides an occasion for expressing the unified tradition of the sheep and shepherd image as a message of salvation.

Kenzie McKay, University Scholars

James Huggins**,** mentor

Phylogenetics of HIV used as Forensic Evidence in Court

Forensic Phylogenetics is a scientific technique used to compare different disease strands in order to discern which of the strands is the parents strand. This technique is used in forensic science when a malicious transfer of diseases has occurred between two individuals. This type of evidence has increasingly been used within the last decade in court to help convict people for the transmission of HIV. This technique is still considered very new in the field of forensic science, and many question whether or not it should be allowed as evidence. The goal of this thesis is to determine if this piece of forensic evidence should be admissible in court. This thesis will specifically look and the positives and the negatives of forensic phylogenetics in relation to cases involving HIV transmission.

Richard Medina, University Scholars

Kevin Dougherty**,** mentor

In the Shadow of the Ideal: An Ancient Perspective in the Modern Conversation About Body Image

In ancient Greece, what was considered beautiful was also thought to be indicative of what was fundamentally good. The aim of this thesis is twofold: to explore which patterns of thought we've inherited from the ancient Greeks, and how those beliefs play out in or society today. Through the psychological mechanisms of internalization and social comparison, current visual media has made our society more vulnerable to body image disorders now more than ever. This thesis explains how our societal tendency to internalize and compare is rooted in Greek antiquity and the implications of pursuing aesthetics to the neglect of inner virtue. Lastly, I discuss how the philosophies proposed by Plato and Aristotle can be seen as preventative care to psychological disorders related to body image such as body dysmorphia and eating disorders.

Elyse Meyer, Secondary Mathematics

Lakia Scott**,** mentor

In Advocacy of Equity Pedagogy: The Rise and Fall of the Raza Studies Program

Equity pedagogy is a framework earlier referenced in Bank and Banks' (1995) tenets of multicultural education. In the contemporary sense, it is explored through the implementation and removal of an ethnic studies program known as Raza Studies. As a district response to low attendance, participation, and graduation of Latino/a students, this program was established in the Tucson Unified School District and then eliminated because of its perceived anti-American views and explicit discussions of race and social class. This thesis utilizes a descriptive case study approach using archival analysis to answer the research question: How was equity pedagogy implemented in the rise and fall of the Raza Studies program? Findings reveal evidence of equity pedagogy in each phase of the case study. The final section provides recommendations for students, teachers, and policy to advocate for the use of equity pedagogy in today's public schools.

Kristen Miller, Film and Digital Media
Sarah Jane Miller, mentor

Xiaofan and the Horseman

AInspired by classic horror genre tropes that turn benign objects like dolls and clowns into monsters that terrorize children, this thesis seeks to invert that process. The screenplay explores the possibilities of using storytelling to demystify and humanize figures from childhood stories and tall tales that are historically portrayed as monstrous villains. In Xiaofan and The Horseman, fourteen year-old Xiaofan meets The Headless Horseman and embarks on a journey to find the missing magic amulet that her father died to protect. In order to save her town from the evil spirits that threaten it, she must come to terms with her father's death, work through her anger, and learn to love and accept love from the community around her.

Jordan Millhollin, Biochemistry
Jason Whitt, mentor

Welcoming Without Grumbling: Worshipful Hospitality and the Christian Life

In the Netherlands, an influx Muslim refugees has caused incredible strain as Christians struggle to respond to their new neighbors. This a familiar feeling around the world as many people often come face-to-face with strangers who hold religious and cultural beliefs that are far different than their own. However, even in the midst of these frightening and opposing realities, followers of Christ are still called to be hospitable. This thesis highlights the origins and evolution of hospitality in the political and theological life of the Church as well as the emphasis of hospitality in Jesus' ministry. Using the Netherlands as a case study, it also examines several modern responses to hospitality and offers a case for the legitimacy of hospitality to mediate cultural and religious tension. Finally, it will conclude by upholding hospitality to the stranger as central to Christian worship.

Katelyn Moody, Public Health
Emily Smith, mentor

Geospatial Analysis of Pediatric Surgical Need in Somaliland

Global pediatric surgery has remained a neglected area of concern, despite the disproportionate health care burden surgical conditions cause on the already vulnerable pediatric populations living in low and middle-income countries (LMICs). Children living with surgical conditions in LMICs often experience delays in seeking, reaching, and receiving timely and safe surgical care. The objective of this thesis is to use geospatial analysis techniques to examine the delay in reaching care by analyzing the relationship between pediatric surgical conditions and distance to surgical care in Somaliland. This study will examine the ability of children living with surgical conditions in Somaliland to reach timely and safe surgical care, which is defined by the Lancet Commission on Global Surgery as the ability to reach a hospital with surgical capacity within two hours. Finally, the geospatial analysis results will be used to recommend how pediatric surgical infrastructure can be improved to meet the demands of pediatric surgical need in Somaliland and similar LMICs.

Mary Moon, Nursing
Lori Spies, mentor

Culturally Targeted Group Education on Hypertension Among Hispanic Women

Hypertension is a growing concern among the Hispanic female populations, which is the second largest ethnic group in Texas. Not only are Hispanics less likely to seek care for their chronic illness but they are also at higher risk of aggravating it with a diet consumption high in sodium and fat content. An important aspect of treating hypertension is lifestyle modification, which includes diet, exercise, and medication adherence. A prevalent barrier to self-management of hypertension is the gap in provider - patient communication and a lack of mutual understanding of cultural values and practices. The project implemented three workshops for a total of 13 participants in a Federal Qualified Health Center clinic with a predominantly Hispanic population. Culturally-targeted education workshops for hypertensive patients were designed to enhance achievement of peer support,

utilization of SMART goals, and appropriate follow-up care through M-Health text messaging. Based on the low response of 1 out of 11 participants reply to weekly text messages, no statistically significant conclusion can be reached for follow-up care. Nevertheless, anecdotally, the observed peer support during workshop, written feedback by participants after the session, and verbal expression of increased interest in self-management of hypertension, altogether bolster the importance of culturally targeted group education model for Hispanic women.

Emilee Morris, Psychology
Matt Bradshaw**,** mentor

Breaking the Cycle: Characteristics that Lead to the Termination of Cyclical Poverty

Poverty is a complex global issue that continues to lack an adequate solution. The current study investigated the recurring characteristics that appear in individuals who grew up in poverty but now lead successful adult lives. A combination of previously gathered quantitative data and qualitative interview data gathered specifically for the current study was utilized for analysis. Higher education was determined to be the key component of adulthood success. The quantitative data participants were obtained from Wave II, Wave III, and Wave IV of the National Longitudinal Study of Adolescent to Adult Health (Add Health). The qualitative data participants were obtained through a convenience sample, were determined to be successful adults who had grown up in poverty, were interviewed for the study. Common characteristics identified included: self-efficacy, close relationships that were encouraging and consistent, and early academic success. The findings in the current study provide directions for future research concerning cyclical poverty.

Kaitlyn Morris, University Scholars
Junius Johnson**,** mentor

On Fairy Stories: A Prologue to Theological Poetics

Stories mark everyday human life profoundly, in a way that seems odd for an effort of little obvious practicality. Similarly, the Bible is riddled with stories and conveys most of its information in the form of stories. These constitute a huge portion of human identity, and the propensity of narrative in scripture would seem to corroborate the notion that these are somehow fundamental to human nature at the very least, and likely have a theological bent. In this thesis I will propose the idea that stories, by nature, demonstrate a fundamental aspect of humanity and all of creation: that these were made good by God in the beginning, that humans were made in the image of a creative God, and that all creation will reach its telos in God. Stories are the natural way to tie these thoughts together, and exist not only because of but also as a reflection of the history of creation by God. To understand storytelling in a theological light, I will examine the thought of C. S. Lewis, George MacDonald, and J. R. R. Tolkien, before putting forward my own theory, and then examining the implications of a theological understanding of storytelling.

Olivia Moses, Elementary Education
Lakia Scott**,** mentor

Teaching Upper Elementary Students Media Literacy Skills Using Animated Films

Parents and family members alike have always shown concern for their children's television and movie watching habits. Commonly, media literacy curriculum and lessons are focused, well-needed and intended, on discerning the validity of a source however, younger students, for example, elementary ages, aren't being equipped to critically view media directly targeted for them. Questions arise about the appropriateness and influence of content regarding these types of media. Animated movies shape children's culture and the ways they view the world. This study examined the experiences of elementary youth when learning about media literacy, and attempted to understand their process regarding the construction of media. Another goal of this study was to prepare students to question things seen in the media as well as learn about influences media has on their societal perspectives.

Eleni Nasiotis, Neuroscience
Greg Lewallen, mentor

Dr. Chandra, Will I Dream? Surreal Art and Artificial Intelligence

Surrealism's roots in early psychology, which emphasized dreams and the subconscious, made me wonder – what if the mind being portrayed in a surreal artwork were an artificial mind? This thesis is a series of three digital artworks that depict artificial intelligence in a surreal way. What makes us human? Could a machine possess the same qualities that make us human? Could a computer be creative, emotional, or even illogical? Such themes, often explored in science fiction, are what I attempt to convey through my art.

Janie Nichols, History
Andrea Turpin, mentor

The New Advocate: A History of Early Female Lawyers in the United States from 1860 to 1920

This thesis will explore the history of the "first-generation" of female lawyers in the United States; I will detail the struggles and successes of the women who first entered the legal field in America from 1860 to 1920, from the end of the Civil War (which allowed more opportunities for women's education) up until the passage of the Nineteenth Amendment (which granted American women the vote). Specifically, the thesis will explain the factors that enabled these women to pioneer in a field originally hostile to them. These lawyers were able to overcome the various obstacles which prevented many women from entering law because of two main influences: (1) the support of their families (and especially the husbands), and (2) the women's unabashed and unremitting commitment to their personal convictions about the practice of law. These elements contributed to the success of these early female lawyers and allowed for them to open the way for other women to enter the legal field.

Emily Nieson, University Scholars
Jason Whitt, mentor

The Great Physician: Jesus' Healing Ministry as Model for Encountering Suffering in Modern Medicine

The goals of modern medicine are often described as the elimination of suffering and cure of disease, rather than the healing of the individual. As such, technology, scientific research, and cultural norms have been directed towards eliminating physical suffering. However, this shift in the goals of medicine has come at the cost of the ability and resources to attend to non-physical suffering. In an attempt to recover some of these resources, I will analyze Jesus Christ's healing ministry in the Gospel of Luke through selected narratives, recognizing distinct ways in which Jesus encounters and heals the suffering individual. I will then discuss the role of these traits in the healing ministry of the Early Church, as well as the modern healthcare system. Finally, I will attempt to describe ways in which modern healers can recover some of these traits to faithfully encounter and heal suffering individuals.

Patrick Kerry Ormsby,
David A. Smith, mentor

Learning Lackluster Lessons: Counterinsurgency in the Algerian Revolution and the Iraq Surge

The Algerian Revolution provided two distinct avenues for approaching irregular, population centric conflicts typical of the post-World War II world. Captain David Galula's counterinsurgency campaign (1956-58) provided the blueprint for a hearts-and-minds counterinsurgency, while the Battle of Algiers (1956-57) displayed a more brutal approach that garnered short-term results at great strategic costs. Writers of modern American counterinsurgency doctrine purposefully drew from the former and inadvertently from the latter but removing the tactics making it "effective." False historical narratives unfortunately clouded Galula's campaign which had fundamental shortcomings undiscussed in his memoirs. Additionally, several noteworthy hearts-

and-minds counterinsurgencies proved to bear more similarity with the brutal approach. The Iraq Surge (2007), the first practical application of modern American counterinsurgency doctrine and an example of progression in that it did not feature torture, owned fundamental flaws not only unique to it but also others eerily similar to those within French counterinsurgency campaigns in Algeria.

Julia Pantleo, English
Ginger Hanchey, mentor

The Journey Home

The idea of home is one that is central to a sense of identity. However, what makes someplace a home? The Journey Home is a creative thesis in which I explore the idea of home through short stories and poetry. In my thesis, I break down the concept of home into one's national identity, physical house, family unit, and Heavenly Home. Within each of these categories, I play with the strengths and shortcomings of each classification of home on one's sense of self. For example, I explore the detriments to personal identity that may be caused by an international or nomadic upbringing, strained family relationships, and lack of religious faith. However, I also illustrate the benefits that come from seeing the world, building one's own house, choosing one's own family, and exploring one's own beliefs. Within The Journey Home, I integrate research I have done from the works of Mary Oliver, Anita R. Reidinger, Gregory Orr, Simone Weil, and Theano S. Terkeni, among others. I also draw inspiration from other authors' ideas of home, such as those from Sandra Cisneros, Margaret Atwood, Ernest Hemingway, Katherine Porter, Tillie Olson, and many others that I have been exposed to during my studies of English Literature.

Logan Parmeter, Computer Science
Matthew Fendt, mentor

Influencing the Behavioral Responses of Players in an Interactive Narrative Game through Music and Arousal Congruency

Music has been shown to influence the behavioral responses of individuals in real-world scenarios, but little research exists on the effects that music has on the in-game behaviors of video game players. A song can be rated in terms of the level of arousal, or emotional intensity, it incites, and this study explores how music of various arousal ratings can be used to influence players' choices in an interactive narrative role-playing game. We hypothesized that high-arousal music would influence players to exhibit avoidance behaviors in-game, and that low-arousal music would influence players to exhibit social behaviors. Experimentation showed that players were statistically significantly more likely to make avoidance behavior choices when high-arousal music was played. These findings are the first step into understanding how music can be used by game developers to influence player behaviors while maintaining a high sense of player agency.

Paul Paternoster, University Scholars
Steven Bradley, mentor

Do Groups matter? An Analysis of the Impact of Microcredit groups on Entrepreneurial Outcomes

Microcredit has the potential to transform individuals and communities by providing capital for business start-ups that could provide a source of income to the entrepreneur and others in the community. By design, microcredit is provided to recipients in groups, and these groups are formed and maintained in various ways. However, there has been very little study of what effect the characteristics of these groups have on the outcomes of the businesses started by their participants. Using data collected from microcredit groups in Kenya, Burundi, and Indonesia, we explore the relationship between the composition and interactions of individual microcredit groups and the success of the businesses within those groups.

Andrew Patterson, Political Science and Economics
Victor Hinojosa**,** mentor

Telling Our Story: A Literary Analysis of Disability Narratives

This thesis seeks to answer the question: what are the best practices when creating a narrative about disability? To answer this question, I analyze the development of disability narratives throughout four novels written over the last century; *The Sound and the Fury* by William Faulkner, *The Curious Incident of the Dog at Night-time* by Mark Haddon, *To Kill a Mockingbird* by Harper Lee, and *Of Mice and Men* by John Steinbeck. The first two novels feature a first person narration of disability, a character with a disability serves as the narrator of at least part of the novel. The second two novels feature a third person narration of disability, a non-disabled narrator telling the story of someone with a disability. I find that the best narrative practices utilize first person narrations, avoid counterproductive narrative tropes such as the kill or cure trope and techniques such as disability as a narrative prosthesis, and otherwise provide as realistic an image of disability as possible in a work of fiction.

Luke Pederson, University Scholars
Ginger Hanchey**,** mentor

"Medill erd" in the Towneley Cycle: the contrast between "carnal" and spiritual vision and the prayer as the movement toward providential sight and heavenly worship

Two themes that scholars have drawn attention to within the Towneley Cycle of the English mystery plays are the abuse of language and memory, a proponent of the latter arguing that the successful Towneley character is the one who "remembers what is significant" and acts accordingly. I explore how these two themes come together through Augustine's understanding of "carnal" vision, a flawed way of seeing or reading which interprets something literally which is meant to be understood spiritually or figuratively. The Towneley cycle contrasts those who have carnal vision and thus debased, carnal language, with those who have spiritual vision and thus spiritual language, which often takes the form of prayer. The one who sees with the carnal eye cannot see past the present moment, whereas the one who sees with the spiritual eye of faith keeps an eternal perspective and trusts in divine providence, remembering God's past goodness and interpreting the present time as a mere instance in the grand salvation story. This contrast sheds light on what exactly it means to "act accordingly" to one's memory. By seeing with the spiritual eye of faith rather than the carnal eye, the successful character directs his language to continual prayer rather than the fleshly things of this world, and thus participates in the heavenly worship rather than the cacophony of hell. Ultimately, the plays, in contrasting right and wrong language and prayer, serve both to teach the audience how to pray and encourage and give them opportunity to direct their language toward participation in the heavenly worship.

Frank Pelosi, University Scholars
Steven Jug**,** mentor

The Soviet Digital Frontier: An examination of digital policy in former Soviet States

In wake of rapid modernization and globalism, the digital realm has expanded into previously untouched regions of the world. Now, nations must address complicated questions regarding digitization and digital policy. Naturally, these questions are answered with mixed responses. While, some countries adopt the digital world with open arms, others remain more cautious. A controversial past and an uncertain future makes the digitization of former Soviet states even more complex. In this thesis, I conduct a qualitative study on Ukraine, Kazakhstan, and Estonia's respective digital policies, in order to determine what necessitates successful digitization. Within each case, I examine various economic, political, and cultural incentives that play a role in national digital policy, as well as their important relationships with Russia. While each factor plays an important role in shaping a country's digital policy, I ultimately conclude that successful digitization in former Soviet states is primarily driven by a country's prevailing culture, as opposed to economic or political incentives.

Emily Pendleton, Psychology
Karenna Malavanti**,** mentor

An Analysis of the Relational Experiences of Those with Visual Disabilities

Friendship is universally recognized as necessary to a fulfilling life, as can be seen since the time of Aristotle. The idea of obtaining and maintaining meaningful relationships is so engrained in our society that it is challenging to find a song or book that does not focus on the value of human companionship in some way. While every poet, songwriter, philosopher, and scientist have different opinions on what friendship is, it is still recognized as universally necessary. Friendship manifests itself in innumerable ways in every person's life, making it difficult to quantify, but a field is emerging that studies the physical, mental, and emotional benefits of friendship. This thesis evaluates social support for people who have visual impairments, looking at their social networks and how their lives daily lives are affected by stigma, ultimately analyzing the humanness of friendship and its ideal forms in societies across the world, as well as how people with visual and other disabilities thrive in a world structured and restricted by social norms.

Olivia Perez, Great Texts and Political Science
Richard Jordan**,** mentor

Theodore Roosevelt's Legacy in Foreign Policy

At the turn of the 20th century, Americans witnessed the rise of the United States as a great power. From an isolated nation to one that amassed the capability to fight destructive wars overseas, the presidential administration of Theodore Roosevelt served as the hinge that enabled this transition. My thesis examines Theodore Roosevelt's influence on international relations and his impact on American leaders following his time in the White House. I discuss the four foreign policy schools offered by Walter Russell Mead: *Hamiltonians*, *Wilsonians*, *Jeffersonians*, and *Jacksonians*; and I compare similarities and differences between each school while speculating the nature of Roosevelt's foreign policy. Focusing on Roosevelt's presidential successors who were in office during the Cold War, I identify tenets of Roosevelt's foreign policy echoed throughout the second half of the 20th century.

Sarah Powers, University Scholars
Emily Smith**,** mentor

The Intersections of Neglected Tropical Diseases and Surgical Care Access in Pediatric Populations

The intersection of healthcare specialties have brought into light ways that can strengthen a health system with long term solutions. Two areas of particular interest are Neglected Tropical Diseases (NTDs) and surgical care access. NTDs burden approximately 1 billion people majority of which are concentrated in low and middle income countries (LMICs). These conditions disproportionally effect those in poverty and particularly impact pediatric populations. NTDs such as soil-transmitted helminthiases, Buruli Ulcer, and Trachoma can result in long term effects that can require surgical intervention when treatment was delayed for the initial infection. Currently 5 billion individuals lack access to affordable surgical care, of which LMICs bear the largest burden. A strong surgical system is vital to the success of an overall healthcare system and is a necessary part of treating NTDs. Surgical system strengthening intersect with NTDs in such a way that it is impossible to addresses the burden of neglected tropical diseases without also placing focus on surgical system strengthening.

Jennifer Reimber, Nursing
Kathryn Osteen**,** mentor

Emergency Trauma Nursing in Sub-Saharan Africa

Trauma is a major cause of death and disability across the globe and there is a disparity in trauma care, made evident by comparing trauma care systems worldwide. Trauma is overwhelming in low and middle-income countries due to the lack of resources, pre-hospital care and nurse training. Sub-Saharan African countries experience the highest rates of every kind of traumatic injury and bear the brunt of the global burden. The disparity demonstrates the need to evaluate and create changes in

trauma care worldwide. Changes need to be implemented concerning resources, organization of prehospital care, and personnel training. Global effort is needed to facilitate the requisite changes. The purpose of this article is to examine emergency trauma nursing in Sub-Saharan Africa and explore ways to increase nurse competency and proficiency in Sub-Saharan Africa emergency trauma care.

Elaine Renberg, English
Lynne Hinojosa, mentor

The Evolution of Environmentalism in British Victorian Society

The Industrial Revolution remains ingrained as one of the most transformational periods in Great Britain's history. As industry continued to grow through the later half of the 1860s, however, a quieter revolution began in the wake of the Industrial Revolution's destruction, springing up in the corners of society and gaining traction through the turn of the century. My thesis examines the changing in Victorian society's perception of the natural environment and its relationship to urban life, as reflected in the environmental conversation between novels, periodicals, and other texts. Through explorations of the depiction of the Victorian environment, I identify a growing sense of environmentalism in the Victorian age as reflected in negative framings of the deteriorating city, attention to positive effects of the environment on human life, and action taken to preserve and implement natural spaces in cities. These explorations elucidate the true interdisciplinary nature of environmentalism and its formation as well as illuminate a clean city environment as a social justice issue.

Joshua Rhodes, Finance
James West, mentor

Market Responses to LIBOR Misrepresentation of Credit Risk

The London Inter Bank Offered Rate, or LIBOR, is used to reflect the cost of unsecured, overnight debt for large financial institutions and is used to price over $300 Trillion in financial contracts, worldwide. Although banks were penalized for defrauding the process of fixing LIBOR during the 2007-2009 Financial Crisis, no papers have studied the influence that LIBOR submissions had on other credit-risk indicators. This paper will use a Granger Causality Test to determine whether LIBOR submissions Granger Caused movements in these indicators to determine the extent of the influence banks had over their own risk metrics.

Rachel Risk, University Scholars
Deirdre Fulton, mentor

Kathleen Kenyon, John Allegro, and the Dead Sea Scrolls: The Challenges of Politics and Preservation in 1960s Jerusalem

The Dead Sea Scrolls have been a source of fascination since their initial discovery in 1947. They have also been a source of controversy among scholars who debate their origin and significance. This thesis highlights a little-known conflict between two British scholars, Kathleen Kenyon and John Allegro, in the quest to conserve, publish, and exhibit the Dead Sea Scrolls. A thorough examination of correspondence written between 1960-1969, housed in the Kathleen Kenyon Archaeology Collection at Baylor University, reveals two opposing sides in the debate concerning how the scrolls should be handled. While Allegro was of the opinion that the text and translation of the scrolls found in Cave 11 should immediately be published and placed on exhibition in England and the US, Kenyon and her colleagues disagreed, preferring a more careful approach since the delicate scrolls were desperately in need of conservation work to keep them from disintegrating entirely. Kenyon and Allegro's correspondence and their disagreements about the Dead Sea Scrolls highlight many of the struggles that still plague archaeologists today: the difficulties of political or bureaucratic involvement in research, the fight to gain academic recognition through publication, the ethical distribution of information, and the proper ownership and care of valuable artifacts.

Priscilla Rosario, Medical Humanities

Jay Yoo**,** mentor

Understanding Body Image Experiences and Coping Mechanisms in Adolescents with Physical Disability

This narrative-based approach explored questions about how body image developed over time and how physical disability impacted perceptions and attitudes about the individual's body, in particular among adolescents who use wheelchairs due to congenital physical disability. Data was collected using semi-structured interviews. Throughout the school years, peer pressure and messages about ideal beauty had negative effects on body image and satisfaction with the self for the individuals interviewed. Physical disability played a significant role in mediating messages about body image; in the context of social relationships, permanent functional limitations of the body meant the individual could not meet perceived expectations associated with a cultural ideal for appearance. Individuals described the coping mechanisms developed as they transitioned into young adulthood. Social support and positive self-talk enhanced their self-image. This included reframing negative perceptions with faith-based attitudes that affirmed a positive body image, one with the self as valuable in God's view. Body image attitudes and perceptions experienced change from mostly negative in middle and high school to more positive as individuals built more social support and an optimistic outlook towards their abilities.

Caitlyn Rush, English

Maura Jortner**,** mentor

The Book of Us

The Book of Us is a full-length Young Adult novel. Seventeen-year-old Charlotte Barnes makes a habit of escaping into books. Her life, unfortunately, does not live up to the ideals of fiction, but she cannot find the person behind the constant cruelty targeting her at school. When a traumatic accident forces her to question everyone around her, her favorite characters from classic novels come to life to help her learn the truth about the day everything went wrong. She must learn that the identity of heroes and villains all depends on who is telling the story. *The Book of Us* examines the lines between imagination, memory, and reality. It also explores the relationship between classic and Young Adult literature.

Rachel Sabadell, Medical Humanities

Lauren Barron**,** mentor

The Impact of Centering Pregnancy on the Rate of Preterm Birth at the Waco Family Health Center

Centering Pregnancy is a non-traditional model of prenatal care that aims to provide comprehensive care and education to patients in a discussion-based group setting. The goal of this research is to determine whether patient participation in Centering Pregnancy plays a role in reducing the rate of premature birth among patients at the Waco Family Health Center (FHC). In order to study this, the charts of FHC patients who participated in Centering Pregnancy classes from 2014-2017 were analyzed and screened for eighteen individual risk factors. Patient charts were also screened for a "high risk" diagnosis. Then, the rate of premature birth was calculated and analyzed for correlations to the risk factors as well as other demographics. While the rates of preterm birth among FHC Centering Pregnancy patients were lower than the average Texas and McLennan County rates, there was no statistically significant difference between them. Though no conclusions about causation can be drawn, this research shows that Centering Pregnancy is a viable form of prenatal care for patients at the Waco Family Health Center. These results will aid the Family Health Center in assessing the efficacy of the Centering Pregnancy model of prenatal care as well as provide a baseline for future studies.

Andrew Sabonis-Chafee, Theatre Performance

John-Michael Marrs**,** mentor

A Reconcilable Difference: A Director's Approach to Geoffrey Nauffts' Next Fall

Despite its significance in contemporary society, the topic of homosexuality is rarely examined in Christian circles. It is typically definitively addressed or simply ignored. Considering that the person of Jesus taught primarily through stories, why is it so rare for art to consider both faith and the LGBTQ community? This thesis examines eight plays that emphasize both of these topics, as well as their purposes, similarities, and effects. One of the eight plays, *Next Fall* by Geoffrey Nauffts, is more comprehensively

explored with the intent of production. Next, production documentation brings to life the creative process, rehearsal period, and final production of *Next Fall.* Finally, the closing chapter provides insight into reflection, critique, and reception of the performance.

Amber Schulze, University Scholars
Jonathan Rylander**,** mentor

Validating Creativity: Use of the HTC Vive in Post-Stroke Upper-Limb Rehabilitation

Physical therapists often creatively use virtual reality (VR) gaming systems in rehabilitation for patients with neurological deficits. However, therapists need to be aware of what games are applicable to their patient population, as well as how the virtual environment affects patients' perception of their motion. This study investigated how the game Google Tiltbrush, a 3D painting environment offered on the HTC Vive, could be applied in post-stroke upper limb rehabilitation, and explored limitations of the system through measuring reach distance of healthy subjects. Nine healthy subjects were recruited and asked to perform various reaching and drawing tasks while data on their movement was gathered using a Vicon motion capture system. The data showed that while in simple reaching tasks individual subjects may alter their reach distance by up to 3 cm in the virtual environment, across all subjects there is not a statistically significant change. Moreover, in more complicated drawing tasks, participants could reliably reach to particular points, but most participants missed the exact target by several centimeters. Overall, it seems that the HTC Vive and Google Tiltbrush can be utilized in post-stroke upper limb rehabilitation if therapists monitor patients' to ensure they are accomplishing the desired movement.

Aimee Seale, University Scholars
Sarah Walden**,** mentor

The Effects of Medical Technology on Person-Centered Care in Modern Medical Practice

Providing person-centered care has been a longstanding mission of medicine. Since Hippocrates' writing of the Hippocratic Oath, considering the patient and their wishes first and foremost has been the common goal of practicing physicians as they distribute medical diagnoses and treatment based on the guiding documents of the profession. However, with the rapid introduction of technology in medicine in the past two decades, this mission has been overwhelmed by computer screens and impersonal models of care. This thesis involves evaluating the ways information online and electronic medical records have changed person-centered medical practice and the patient experience. In doing this research, I will be examining the ways medicine has been changed to adapt to the ever-changing healthcare world to ensure the practice is filled with caring physicians focused on person-centered practice. The return to person-centered care requires an understanding of the original practice, the existing barriers, and the future opportunities technology provides to facilitate proper communication to improve patient experience, autonomy, transparency, education, and relationship alongside their physician.

Arham Siddiqui, University Scholars
James Fulton**,** mentor

A Comparative Analysis of Fecal Sterol Distribution to Investigate the Disappearance of Mastodon at the Page-Ladson Sinkhole

The Page-Ladson sinkhole in Florida is a historic site which provides rich stratified deposits of late Pleistocene specimens and artifacts. Evidence from the site indicates coexistence of the prehistoric species of mastodon *M. americanum* and pre-Clovis humans. However, the relationship between the two species is not yet clear, and the disappearance of mastodons in the early Holocene is still being studied. A way to understand the relationship between species over time is to analyze their fecal sterol/steroid-derived compound distributions and comparatively analyze these distributions to determine conclusions such as that of the extirpation of mastodons over time. In this study, we retrieved samples from different mammals and from the Page-Ladson sinkhole and isolated lipid extractions for GC/MS analysis. The lipid extract analysis revealed a number of sterol and steroid derived compounds, many of which successfully matched with the Page-Ladson compounds. Further interpretation can reveal methods for detecting past ranges of different mammalian species.

Lauren Sides, University Scholars

Davide Zori, mentor

Archaeology and the Palimpsest of Landscape: Developing Theoretical Frameworks and Geographic Information Systems Applications toward Diachronic Landscape Analysis at San Giuliano, Italy

Landscape archaeology studies past people and their relationship to space by regarding observable modifications of the natural environment as a palimpsest of culture across time. This study aims to assess the San Giuliano landscape as such a palimpsest through a variety of Geographic Information Systems (GIS) applications. To address criticisms of disjointed landscape archaeological theory, this paper suggests a multi-faceted theoretical framework that draws upon the ideas of Human Behavioral Ecology, Phenomenology, and Spatial Syntax. The utility of this framework is demonstrated using spatial data collected by the San Giuliano Archaeological Research Project. Site suitability models of Southern Etruria are used to evaluate specific environmental variables and their respective weights toward regional site location patterns. Generated experiential models showing intervisibility between the San Giuliano plateau and necropolis demonstrate Etruscan inhabitants' cognition of space. Finally, network analyses of caves comment on social structure during the Medieval period. Overall, these applications highlight the strengths of combining processual and post-processual theories and GIS technology for nuanced interpretations of archaeological landscapes.

Clayton Smith, Biology

Joseph Taube, mentor

Relating copper homeostasis to breast cancer drug sensitivity and invasiveness

Metastasis of epithelia-derived tumors, including breast cancer, requires tightly attached cells to move away from their neighbors, enter circulation, survive, exit circulation and re-initiate tumor growth in a new environment. One of the mechanisms by which epithelial cells can accomplish this is by using the epithelial- mesenchymal transition (EMT), a developmentally conserved biological process. Many signaling pathways and molecules play essential roles in EMT. Copper, required for numerous biological functions, may play an essential role as disulfiram (DSF), a known copper chelator, inhibits TGFβ-induced EMT. [3,4] Based on this, we inquired what role if any is played by CTR1, a major copper transporter in the plasma membrane for EMT. To accomplish this, we manipulated expression of CTR1 in MCF7 and MDA-MB-231 breast cancer cell lines, which have epithelial and mesenchymal phenotypes, and high and low expression of CTR1, respectively. We established a stable CTR1 knockdown in the MCF7 cells and upregulation of wild type or mutant CTR1 in MDA-MB-231 cells. The knockdown and upregulation were verified via western blot and q-PCR. MCF7 cells with decreased CTR1 expression showed a moderate decrease in susceptibility to DSF, yet we did not observe any differences in EMT status. Based on these data, we conclude that CTR1 expression is not essential for maintaining the epithelial phenotype in MCF7 cells and not sufficient for reverting the mesenchymal phenotype in MDA-MB-231. Next, we plan to determine whether manipulation of CTR1 expression alters the inducibility of EMT in epithelial cells.

Chanse Sonsalla, Baylor Business Fellows, Economics, and Russian

Adrienne Harris, mentor

Memory Wars and Metanarratives: The Historical Context of Linguistic Discrimination in Estonia

In the 20th century, the country of Estonia was decimated, terrorized, and subjugated by the USSR. Estonia is still trying to rediscover its national identity, but the process is complicated by the continued presence of ethnic Russians in Estonia. When 30% of a country's population speaks differently, thinks differently, and was once an enemy that instigated an era of terror, how do they rebuild? Language has been a polarizing issue between the ethnic Estonian and ethnic Russian populations as long as both have been present in Estonia. By investigating trends in language policy, this thesis explores the roots of tension between the two groups. The ultimate goal of the thesis is to provide insight into the pitfalls of post-conflict reintegration and the potential of language policy as a discriminatory instrument.

Darby Sorrels, Communication
Jane Damron**,** mentor

A Qualitative Exploration of College Students' Experience Seeking and Receiving Support From Their Parents During Times of Stress

The transition from college to career has been established as a stressful period of time for emerging adults, in addition to a critical turning point for the parent-child relationship. Effective support from parents helps emerging adults cope with different stressful events, but expectations during stressful times can present communication challenges. The current research will examine and investigate parent-child communication during an emerging adult's life, particularly in college, as they experience stress. This study will use qualitative data to form face-to-face, semi-structured, in-depth interviews with 15 emerging adults, both male and female, who are currently enrolled as undergraduate students. These interviews will determine their evaluations of supportive and effective messages from their parents during this time period. Through interpretive and thorough analysis of the interviews, a typology will be used to help determine the communication that is perceived as effective between emerging adults and their parents. These findings will contribute to a better understanding of the stressors of the transition into emerging adulthood for college students, as well as what types of social support and communication emerging adults find more or less helpful from their parents.

Courtney Sosnowski, University Scholars
David Corey**,** mentor

Political Theology: Canonical and Contemporary Approaches

How can Christians understand their relationship to secular politics? This is the basic question of "political theology" as I use this term. I approach this question by examining St. Augustine, Thomas Aquinas, Martin Luther, and John Calvin. Using the framework of these theologians, I then examine Americans today and attempt to discern the degree to which they are even cognizant of various approaches to political theology and what views they actually hold. My argument is that many Christian Americans can be categorized in a manner that shows their connection to these canonical approaches. First there are those who hold an "integrated" view, believing that the state is supposed to instantiate and maintain basic Christian values. Second there exists a "disembedded" view that places less emphasis on the overlap between the two spheres. Specifically, I flesh out these two views by examining the Liberal Revanchist and the Catholic Integralist in America today.

Janani Srikanth, University Scholars
Candi Cann**,** mentor

Draupadi's Dharma

To say that rape culture is and has been an integral part of Indian patriarchy is an understatement. But one of the pieces of the machinery that fuels this rape culture is the continual backwards interpretation of Hindu great texts and their female characters. In this work, we will be re-examining and re-evaluating some of the ethical postulates put forth by one of the most well-known epics in Hindu faith, The Mahabharata. The Mahabharata is often cited as a referential source for the meanings, objectives, and nuances of dharma - a concept that can be very loosely translated as Duty, the Good, or the righteous path. With that being said, there are several moments in the Mahabharata where the dharma of certain supposedly righteous characters is called into question by way of examination through a feminist lens. One such moment is the pivotal dice game between the Pandavas and the Kauravas, and the subsequent disrobing of Queen Draupadi. Draupadi's assault requires a contemporary, feminist interpretation to glean its true meaning and purpose with regards to informing the definition of dharma put forth by Mahabharata. By examining Draupadi's character and actions, we will develop a fresh nuance to dharma that maintains its age-old core qualities, but also allows for the condemning of passive behavior during violations, and by finding a feminist side to the famous Mahabharata dharma and its allowances, we can promote similar values to combat the prevalence of rape culture in predominantly Hindu Indian society. Change can be brought about if Hindu philosophy begins to teach people to not only refrain from participating in sexual assault and rape culture, but also to stand up and protect others from the effects of a imposterous sanatana dharma. This re-education can be facilitated through the rich Hindu tradition of oral storytelling, and as a result, help to traverse caste, sex, and class in its provision of dharmical access, a most powerful tool of transmission of ethical principle and morality to future generations.

Michelle Sutanto, University Scholars

Matthew Anderson**,** mentor

Socioeconomic Inequalities in Mothers' Health: Current and Future Directions in Sociological Science

In sociological research, numerous studies document strong associations between socioeconomic status and mental or physical health. At the same time, mothers represent a vulnerable and distinct population group, and research into how socioeconomic status is related to health among mothers is far more limited. Given this important knowledge gap, the current thesis aims to uncover and organize current research into socioeconomic health inequalities among mothers by conducting a systematic, query-driven review of the literature regarding socioeconomic status and mother's mental health. Drawing on articles from leading sociological journals, common frameworks, methodologies, and findings are identified and organized. Particular attention is given to the relationship between work-family conflict and health. After examining the quantity and nature of the existing research into socioeconomic disparities in health among mothers, the thesis considers key strengths and weaknesses of the most common sociological approaches. It concludes by drawing on selected examples of non-sociological research into mothers' mental health, specifically depression during and immediately following pregnancy, to help inspire some potential next steps for sociological science.

Will Tarnasky, Great Texts

Thomas Kidd**,** mentor

Love, Beauty, Holiness, and Happiness: The Narrative of Union in Jonathan Edwards's Theology

Recent Edwards scholarship, particularly the work of Amy Plantinga Pauw and Ross W. Hastings, has firmly established Trinitarian union to be the consistent, driving theme of Edwards's theology. In this thesis, I aim to contribute to this conversation by organizing Jonathan Edwards's theology into the narrative of God bringing the saints into an eternally perfecting union and thereby making them supremely happy. I derive this narrative of union from Edwards's dissertation, The End for Which God Created the World. My thesis evaluates the extent to which Edwards's major theological, philosophical, and pastoral texts fit into and contribute to this narrative. The discussion follows a redemptive historical trajectory, driven by Edwards's major works. I begin with Edwards's theology proper. I then treat Edwards's understanding of the fall and original sin, salvation by union with Christ, and the doctrine of the Christian life. I conclude by considering Edwards's vision of heaven and hell. Throughout the paper, I use the centrality of union in Edwards's thought to explore the relationship between love, beauty, holiness, and happiness.

Bethany Tavenner, Neuroscience

Heidi Hornik-Parsons**,** mentor

The Beauty of Nothing: A Psychoanalysis on Wassily Kandinsky's Color Theory and Search Toward Pure Abstraction

The work of Russian painter Wassily Kandinsky produced at the start of the 20th century has long been regarded as the turning point in the history of artistic abstraction. He took known principles and dissected them into purity, in the process giving rise to spiritual doctrines that still guide perception today. Through synesthetic experiences in nature and music, Kandinsky took color theory to new levels and symbolism, raising him to prominence despite the cultural notions of rationality that ruled the time. He regarded the artistic elements of all disciplines as representations of an inner resonance, and carried the community into greater depths of abstraction. His paintings continue to capture the viewer's attention, sparking wonder and conviction of a deeper intimacy.

Joel W. Teal, Gret Texts
Sarah-Jane Murray**,** mentor

The Sword of Creation: Into the Dragon's Maw

The Sword of Creation: Into the Dragon's Maw is a short novel that tells the story of Beorn, a young man who unleashes a Dragon upon the world while in search of a cure for his mother. Overcoming deep-seated fear, Beorn must come to terms with his own shattered courage in order to protect the magical Wellspring and slay the Dragon that threatens the future of humanity. Presented in three-act structure, the novel explores mankind's response to evil. Walk alongside Beorn as he wrestles with his desire to save his family and the childhood voice that whispers doubts of cowardice and shame. The most common motivator may be fear, but the most powerful is love. Ultimately, resolution affirms the power of friendship, confession, and forgiveness in the formation of true strength.

Samuel Todd, University Scholars
William Weaver**,** mentor

Melody, Morality, and the Medieval Cosmos: Musical Analogy in the Works of C.S. Lewis

In many of his works, whether fiction or non-fiction, C.S. Lewis infuses passages with music. Despite the ubiquity of music throughout Lewis' writings, it remains a relatively unexamined topic in recent scholarship. In this thesis, I compile and analyze representative instances of music in Lewis' corpus, and contend that musical analogy performs an integral role throughout his works. Specifically, Lewis incorporates music into his own view of ethics, aesthetics, and cosmology. A thorough understanding of this musical analogy adds greater coherence to many of his works, because the relations of the analogy persist across diverse genres. Furthermore, it provides an underlying musical cadence and inertia to The Chronicles of Narnia and The Cosmic Trilogy, his two major fictional series. By studying first his works of non-fiction and then those of fiction, I hope to show the dynamic and important role that music played for the venerated British scholar.

Augusta Tostrud, Political Science
Julie King**,** mentor

The Evolving Legal Landscape of Greenhouse Gas Emissions from Coal-Fired Power Plants

The Obama Administration's Clean Power Plan, promulgated in 2015 for the purpose of reducing greenhouse gas emissions from stationary sources, was challenged by multiple states and industry groups on the grounds that, in enforcing the rule, the EPA would be exceeding its regulatory authority under the Clean Air Act. The litigation surrounding the Clean Power Plan reached the Supreme Court in 2016, where the court issued a stay on the rule pending judicial review. The election of Present Trump marked a significant turning point in greenhouse gas emission regulation policy, particularly considering President Trump's outspoken opposition to the Obama Administration's "war on coal" and his aim to implement policy that will increase economic growth and attain energy independence. In order to achieve these goals, the Trump Administration issued a proposed repeal of the Clean Power Plan in late 2017 and subsequent replacement rule, titled the proposed Affordable Clean Energy Rule, in 2018. The Final Rule, set to be issued in the second quarter of 2019, is expected to face litigation similar to that of its predecessor, signifying uncertainty for the implementation of the rule and the future of greenhouse gas emission regulations in the United States.

Dorothy Tran, Biology
Michael Foley**,** mentor

The Role of Womanhood in St. Hildegard's Medical Practices

Hildegard of Bingen, a twelfth-century German abbess (1098-1179), was not only a woman of great influence and power during her time, but she was also a female figure who wrote extensively about women – particularly about gender differences, reproductive health, and sexual nature. Gifted with visions of the Divine Feminine since childhood, she produced written work

ranging from theology, naturalism, philosophy, and medicine, to music, poetry, and cosmology on the basis of these extraordinary dreams. Not surprisingly, then, her idea of womanhood shaped much of her work; she also gave particular attention to holistic care. Holistic care places more emphasis on home life and on emotions, both of which are historically considered part of the feminine sphere. This thesis focuses on the way in which traditional femininity influenced St. Hildegard's practice of holistic medicine.

Emily Volk, Political Science and Economics
Steve Block, mentor

The Slippery Slope of Suicide: A New Approach to the Adjudication of Physician Assisted Suicide Through the Philosophy of John Locke

In 1997, the topic of physician assisted suicide entered into the spotlight with the Supreme Court case of *Washington v. Glucksberg*. Analyzing the constitutionality of a Washington state prohibition of the act, the Court ultimately decided that the law was admissible and did not violate the Constitution. However, future opinions have since ignored this decision. Additionally, *Glucksberg* was largely based on the principle of substantive due process, a form of judicial balancing with a controversial history of judicial activism. Because of these problems with the Court's previous approach, I propose that the Court instead look to the guidance of the philosophy of John Locke. This approach provides two distinct benefits – it provides an explanation of why the Court's decision in *Glucksberg* has not become acknowledged precedent and removes the potential for judicial activism in suicide cases by presenting the Court instead with a firm binary decision between political ends and morality as well as a strict ban on assistance in the act.

Tammy Voor, University Scholars
Jason Whitt, mentor

A Study of the Incarnation and How an Understanding of It Affects the Patient Physician Relationship

From man's very creation, he was made in the image and likeness of God (Genesis 1:27). With the fall of man, sin entered the world, but God maintains the goodness of creation by the Incarnation. The Incarnation, by perfecting materiality, underscores the importance of humans as embodied beings. This concept is contradicted in the scientific view of the body as a machine. With the mind/body split, the body becomes simply a possession and the consciousness becomes the person. An understanding of the Incarnation, however, negates the view of a person as *having a body* and instead supports the view of a person as *being embodied*. This, in turn, helps teach man how to properly interact with and care for other human beings—tasks central to the healthcare field.

Shail Vyas, Medical Humanities
Candi Cann, mentor

End-of-Life Care Among Hindus, Muslims, and Christians in Central Texas

In this study, I attempted to examine how religion, as well as other various social factors, affect end of life care decisions among Central Texas Christians, Hindus, and Muslims. First, interviews were conducted with religious leaders at places of worship in each religious tradition. Next, respondents from each congregation were given religiosity surveys and answered questions in group interviews. Outside of religion, it became clear that family input and age of the patient play a large role in decisions individuals make. Muslims in this study put the most focus on predestination of human decisions, as well as the hope family members have in medical professionals. Hindus felt that no decision could be made without understanding the suffering and pain of the dying person. Both Hindus and Christians believed the agent behind physician-assisted suicide or euthanasia changed the morality of the action. Going forward, more research on the practical aspects of religious morality in the field of medicine should be aspired towards.

Matthew Walker, University Scholars
Richard Jordan**,** mentor

The Liberal International Order: A Dual Policy Crisis

America emerged from World War II an economic and military superpower. Decision makers in Washington used this unique moment in world history to construct the liberal international order: a system of institutions and norms conducive to democratic governance. Today, this international system faces a dual threat. China, an authoritarian state, is challenging American supremacy and shifting the global balance of power. In Western capitals, right-wing populists are assuming positions of influence and undermining centrist governing coalitions—the typical defenders of the liberal order. To preserve the international system, Washington must contend with this dual policy crisis. The following thesis explores both threats and offers two arguments: (1) populism has a distinct international origin and (2) America is in a state of relative decline amidst the world's shifting balance of power. The final chapter of this thesis offers domestic and foreign policy recommendations designed to bolster the liberal order in light of these two arguments.

Jesse Watters, University Scholars
Michael Foley**,** mentor

Christ In Me: A Contribution to the Definition of Actual Participation

The twentieth century saw a great deal of upheaval in the liturgical practices of the Catholic Church. Many of the changes that were made to the liturgy were on account of what liturgical theologians called "active/actual participation." Despite this term's centrality to many of the Church's liturgical reforms, the term was never explicitly defined. Consequently, participation in the liturgy fell under much confusion and quickly was swept up in many post-modern ideas of participation. Therefore, I wish to contribute to a definition of active participation in light of a broader historical and theological context so that it can be resituated in the tradition of the Church. Following the theological thought of St. Maximus the Confessor, with particular attention to his theological anthropology and theology of participation, active participation in the liturgy can be seen as fundamentally Christo-form. In being Christo-form, participation ends up being most truly human, for Christ most fully affirms man's created identity and final end.

Emma Weatherford, University Scholars
Jason Whitt**,** mentor

A Good Doctor is Hard to Find: A Grounded Theory Study of the Health Care of People with Intellectual Disabilities in the United States

One of the greatest triumphs of modern medicine was the extension of life expectancy for people with intellectual disabilities. People with conditions like Down syndrome, who would once have died in childhood, now live to old age. However, this achievement has not been matched by similar improvements in this population's health. People with intellectual disabilities have notably worse health than the general population, and they often receive worse medical care. While these disparities are well-established, their causes are not fully understood. The lack of data regarding these patients' experiences in the United States health care system hampers attempts to improve their health care. In this thesis, I use grounded theory to explore the lived experiences of the major stakeholders in the health care of people with intellectual disabilities: patients, caregivers, and medical professionals. Conversations with twenty-five stakeholders provided insight into the experiences of people with intellectual disabilities in the United States health care system. Participants shared stories of contemptuous malpractice, deep friendship, and structural barriers to better health care. Based on their accounts, I describe what physicians must be, know, and do in order to appropriately treat these patients.

Jamie Wheeler, University Scholars
Julia Hejduk**,** mentor

Parodies of Hope: Resurrection, Redemption, and Jewish Religious Thought in Lucan's Bellum Civile

This thesis presents the case for the influence of Jewish religious thought, especially as transmitted through the Septuagint, on Lucan's epic *Bellum Civile*. Certain textual and conceptual parallels demonstrate both that Lucan artfully alludes to specific passages from the Septuagint and that his thought is influenced by Jewish religious concepts such as messianism and apocalypse. Given this literary and cultural context, new insights into Lucan's characterization of two of his most memorable figures—Erictho and Cato—becomes evident. The witch Erictho, who brings a dead man back to temporary, miserable life as part of her nefarious rites, represents a grim parody of the concept of resurrection. The noble Cato, leader of the republican troops, is a Mosaic and messianic figure whose passionate desire to sacrifice himself for the welfare of his people ultimately does them no good. Lucan alludes to these potential sources of redemptive hope as he does to others, only to snatch them away, whether through Erictho's twistedness or Cato's gallant failure. Lucan's interaction with Jewish religion only goes to confirm his own outlook: that ultimately, there is no philosophy or system of values that can provide hope for the universe, plunging to its own doom.

Garrett Williams, Chemistry and Physics
Zhenrong Zhang**,** mentor

Cadmium Disruption of Neural Cadherin Dimerization

Cadherins are calcium-dependent cell-adhesion proteins that are vital to the formation and maintenance of solid tissues. Neural (N-) Cadherin plays an essential role in early development processes such as angiogenesis and development of the neural plate. Cell-cell adhesion and hence, the integrity of tissue and organ systems is entirely dependent on the ability of two adjacent calcium-bound cadherins to form dimer. The prerequisite of calcium (Ca^{2+}) binding for adhesion begs the question of whether other divalent cations could promote or inhibit dimer formation. Due to its ionic radius and chelation geometry, cadmium (Cd^{2+}) has been shown to substitute for Ca^{2+} in select physiological processes. The studies described here evaluate whether Cd^{2+} binds to N-Cadherin as a heteroligand, thereby disrupting calcium-induced dimerization. Studies were also conducted to predict the effects of Cd^2 at relatively low Ca^{2+} concentration, as typical for excitatory neural synapses. This study features both experimental and numerical analysis of ligand binding and ligand-induced dimerization. Based on the model for ligand-induced dimerization, computational studies of linked equilibria were conducted. These algorithms resolve binding affinity constants for ligand binding to N-Cadherin, and dimerization constants for the self-association of ligand-bound monomers. Experimentally, N-Cadherin was titrated with Ca^{2+} in the absence and presence of Cd^{2+} as monitored by fluorimetry. Monomer-dimer equilibrium experiments were conducted, and then the fraction of dimer was assessed using size exclusion chromatography to determine Cd^{2+} effects on calcium-induced dimerization. Studies were also designed and conducted in vitro at physiologically relevant levels of Ca^{2+}. The ligand binding constants resolved for calcium and cadmium indicated that cadmium binds to N-cadherin with ~4x higher affinity than that of calcium. Further, low levels of Cd^{2+} decrease dimer formation at calcium concentrations found at neurological synapses. Analysis shows that Cd^{2+} disrupts dimerization of N-Cadherin, consistent with its competition for the Ca^{2+}-binding sites. Our observations of dimer disassembly in the presence of Cd^{2+} support the hypothesis that at very low levels, Cd^{2+} will have minimal effect on N-Cadherin mediated cell-adhesion in the body; however, Cd^{2+} at these same levels at excitatory synapses can disrupt cell adhesion and compromise normal neurological processes including the formation of memory and reflex stimulation.

Denton Wood, Computer Science
Jeff Donahoo**,** mentor

Revamping the Privacy Policy: A Study on Informed Consent and User Interactions

Privacy is an abstract concept that has very real repercussions for users of technology in the twenty-first century. Recent large-scale controversies such as the Facebook and Cambridge Analytica scandal bring into question users' understandings of what companies are allowed to do with their data. The primary method of communicating privacy rights to users is the privacy policy; however, these policies are not always effective at gaining users' informed consent regarding their rights. This thesis will attempt

to show the effectiveness of privacy policies at gaining informed consent through an experiment showing the impact of different display factors on users' understanding.

James Worsham, Mathematics
Ian Gravagne**,** mentor

Exploration of Stability-Almost-Surely of Dynamics Between Power Grids On Time Scales of Different Variability

Differential equations are useful tools for evaluating the theoretical long-term behavior of systems, particularly control systems. But in real world applications, unlike continuous differential equations, controllers are often unable to react continuously or immediately. For example, the dynamics of power flow between local power grids in Southern California and Texas are maintained by controllers located midway between these areas that use the internet to relay information. The feedback of these controllers is subject to both nonuniform spacing and time delay. Using the theory of Time Scale calculus, as well as the Stability-Almost-Surely Criteria, I will evaluate the stability of power dynamics on different time scales.

Vivian Young, Mechanical Engineering
Jonathan Rylander**,** mentor

Accuracy and Precision in Marker-based Motion Capture

One of the biggest challenges in marker-based motion capture is maintaining accuracy and precision. The prominence of this issue is due to the common method of placing markers by hand, the reliance on anatomical landmarks, and soft tissue artifacts. The resulting error in the data translates kinematically, which may lead to faulty results and conclusions. However, accuracy and precision can be improved by determining an appropriate motion capture model to use, using marker placement devices, or by utilizing medical imaging. By compiling information from studies and literature in the motion capture field, this thesis provides an overview of sources of error and how to combat error in marker-based motion capture and may act as an introductory resource to these topics.