

**ABSTRACTS OF
THESIS PROJECTS
SPRING 2010**

BAYLOR HONORS COLLEGE

**The Honors Program
University Scholars**



BAYLOR
UNIVERSITY

HONORS THESIS ABSTRACTS

SPRING 2010 GRADUATES

Kayla Allen, English and French
Dr. Heidi Bostic, mentor

Language of Female Empowerment in Selected Proverbs of Madame de Maintenon: A Translation and Exposition

Madame de Maintenon, the morganatic wife of Louis XIV who founded the Maison Royale de Saint-Louis at Saint-Cyr, has frequently been criticized by scholars as an anti-feminist. Her collection of Proverbs, short plays used to instruct the poor and orphaned daughters of noble families at this school, has been largely ignored and never translated into English. In this work, I translate fourteen of Madame de Maintenon's Proverbs from the French, discuss the language and themes regarding female empowerment therein, and address problems in translating seventeenth-century French into modern-day English. I argue that Madame de Maintenon's Proverbs help us understand the evolution of attitudes towards women's education in presenting a progressive view for the time of women's capacity for reason and their roles in society and marriage.

Martha Ayewah, Biology
Dr. William Hillis, mentor

*Comparing the Effects of Western Medicine and Chinese Traditional Medicine
on the Production of Aldosterone in Cultured Rat Adrenal Cells*

Hypertension remains one of the principal agents behind two of the leading causes of death in the United States: heart disease and stroke. One of the causes of hypertension is an elevated amount of the hormone aldosterone in the circulatory system, which leads to increased fluid absorption in the kidneys and increased blood volume and pressure. In this study, rat adrenal glands are harvested and cultured, and their aldosterone production levels are measured under various conditions. The purpose of this thesis is to study the effects of spironolactone - a drug commonly used in the West to treat hypertension - and compare them to the effects of some herbs commonly used in Chinese Traditional Medicine to treat hypertension.

Lauren Bailey, Psychology
Dr. Janet Crow, mentor

Effects of an Induced Abortion: A Case Study

The previous research surrounding induced abortion has revealed that the decision to abort is usually complicated, and the psychological and emotional consequences of such a decision are difficult to quantify and truly complex. The purpose of this case study is to investigate one individual's experience of an induced abortion in detail with two semi-structured interviews. These interviews gathered information regarding the participant's background information, the factors in her decision, her experience during the procedure, her initial feelings post-abortion, and her reflection over time. By considering the entire context of her abortion, this case study design allowed for a comprehensive understanding of a woman's post-abortion experience. The data gathered during the case study is discussed as it relates to relevant research and suggestions for further research are made.

Sarah Baradaran, Biochemistry

Dr. James Marcum, mentor

Telemedicine: The Past, Present, and Future

Telemedicine is the transfer of medical information for diagnosis, therapy, treatment, and education between two or more physicians or between a physician and a patient. The use of telemedicine has allowed patients in rural areas and foreign countries to have access to a doctor or a specialist that they otherwise would not be able to obtain. There are currently 209 telemedical programs across the world in areas of medicine such as Radiology, Pathology, Dermatology, Ophthalmology, and Psychiatry. Telemedicine comes in many different forms such as medical education, patient-physician transactions, electronic medical records, and robotic assisted surgery. Telemedicine is a great way to provide some form of medical treatment to patients in need all around the world.

Erik Baumann, Philosophy and Political Science

Dr. Linda Adams, mentor

US Foreign Policy in Iran from 1953-2010: What it Was, Where it Went Wrong, and What can be done to make it better. A Policy Proposal for the Obama Administration

This thesis is a study of US foreign policy towards Iran from the Truman Administration to the Obama Administration. The paper analyzes the policy differences between presidential administrations and shows that they have continually ignored history when instituting new policies. History shows that the Iranians have strong anti-American sentiment that has been caused predominantly by US policies in their country. Consequently, many of the problems that Washington has with Tehran have been created through decades of ineffective US policies. Therefore, my thesis culminates in a foreign policy proposal for the Obama Administration that takes into account the importance of history and argues for a policy that I believe will most improve US-Iranian relations. The policy is unique because it has a long term outlook rather than trying to satisfy short term interests. In summary, I propose extending diplomatic hand to Iran through working with them on issues which both countries agree such as Iraq and Afghanistan; showing goodwill to the Iranians through the lifting of sanctions; accepting the fact that Iran will most likely join the nuclear club; and working to find a solution to the Israeli-Palestinian problem that satisfies both parties in order to reduce Iran's support for international terrorism.

Cecilia Benz, Biology

Dr. Troy Abell and Dr. Robert Wordinger, mentor

Effect of TGF-B2 on BMP Antagonists in Glaucomatous and Non-Glaucomatous Trabecular Meshwork Cells

Primary Open Angle Glaucoma (POAG) is a widespread degenerative ocular disorder and a leading cause of blindness worldwide. Increased intraocular pressure is a major risk factor for glaucoma, resulting in increased outflow resistance of aqueous humor (AH) through the trabecular meshwork (TM). Studies show transforming growth factor beta-II (TGF-b2) levels increase in the AH and TM of glaucoma patients. The Clark-Wordinger lab has previously reported the inhibitory effects of bone morphogenetic proteins (BMPs) on TGF-b2 stimulation of extracellular matrix (ECM) proteins and cross-linking enzymes in cultured human TM cells, resulting in increased extracellular matrix deposition and remodeling. The Clark-Wordinger lab has also reported that TGF-b2 increases the expression of BMP antagonists such as gremlin in optic nerve head astrocytes. In the presence of elevated TGF-β2 expression, BMP antagonists block the normal BMP inhibitory effects on TGF-β2 induced ECM deposition. This study will examine the normal expression and TGF-b2 effects on the secreted BMP antagonists, follistatin, ectodin, and noggin, in cultured normal and glaucomatous human TM cells. /// Normal and transformed glaucomatous TM cells were cultured and treated with or without 5ng/mL recombinant human TGF-b2 protein for 12-72 hours. Total RNA was isolated and Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR) was used to examine the expression of BMP antagonists. Western Blotting was used to study the protein levels of follistatin and noggin. Immunocytochemistry analysis localized proteins to observe changes in control and TGFb2 treated normal TM cells. Results indicate that follistatin and noggin mRNA were expressed in normal and glaucomatous TM cells. TGF-b2 appeared to increase follistatin and noggin protein expression. Morphological changes occurred in the TGF-β2 treated TM cells where the TM cells became larger and more round or cuboidal. These data suggest that TGF-b2 effects the production and secretion of follistatin and noggin. The inhibition of BMPs in the trabecular meshwork may play a role in glaucoma pathogenesis.

Matthew Berry, University Scholar

Dr. David Corey, mentor

War and Tragedy: Insights from Homer and Aeschylus

Every age has the ability to correct past mistakes, alongside the propensity to commit errors, new and old, to which earlier ages may have answers. Modern considerations of warfare often overlook a number of key facets of conflict, particularly with regard to the disorder war imposes on the polis and on the soul, and to the great difficulty involved in achieving a just peace. In short, the modern conversation concerning war lacks an understanding of the tragedy of war. Just as the ancient Athenians needed tragedy as an integral part of their cultural and political system, we moderns would benefit from a tempering appreciation of tragedy. The Ancients, possessing a keen sense of tragedy, augment our understanding of conflict, even revealing the possibility that some conflicts are irreconcilable; that is, some conflicts require the destruction or subordination of one system to another, due to the nature of the conflicting systems.

Ami Bouassa Semalon, Biochemistry

Dr. Lisa Baker, mentor

Healthcare in Sub-Saharan Africa: A Needs Assessment for a Medical Clinic in Rural Kenya

The disastrous state of healthcare in Sub-Saharan Africa is the subject of much worldwide discussion and well-intentioned attempts at improvement. Baylor University and the Nyakach community in western rural Kenya have formed a partnership to plan and to build a permanent, much needed medical clinic in the region. During the summer of 2009, a group of Baylor students and medical professionals (including two Baylor professors) visited the Nyakach village and set up a temporary clinic as a way to provide some health care until the permanent clinic is built over the next few years. The team conducted over 800 patient visits during six days, seeing 769 individuals with a wide variety of problems. For clinical purposes, information was recorded for each patient, age, gender, vital signs, chief complaint, symptoms, diagnosis, and treatment. In this analysis, the demographic and clinical data were compiled in order to develop the beginnings of a health profile and medical needs assessment of the community. Patterns of illness and clinic usage are compared with information about Sub-Saharan Africa and about Kenya, in particular. The data will be beneficial in guiding future planning and resource allocation in the Nyakach village.

Rachel Bruce, Forensic Science and Biology

Dr. Joseph Ferraro, mentor

Cut Mark Morphologies vary by Postmortem Interval: A Study in Forensic Taphonomy

Sharp force trauma is a common feature in forensic contexts. However, little is known if the morphology and frequency of cuts on bone varies with postmortem interval. In this thesis, I explore the relationship between the postmortem interval, as the time since death, and the depth of the permanent deformation inflicted by sharp force. This research used femora from 13 rats as representative organisms. The femora were all inflicted with the same sharp force trauma at differing hours postmortem. The results demonstrate that within the first 1-2 hours postmortem the bone responds with little to no permanent deformation. At 2-10 hours the deformation averaged 0.15mm with a slight increase over time and reached maximum deformation at 12 hours. As the bone dies it loses its viscoelastic properties, making it more brittle. These results suggest that the postmortem interval should be considered when interpreting sharp force trauma and dismemberment.

Courtney Burge, University Scholar

Dr. R. Alden Smith and Professor William Baker, mentor

Islamic Terrorism: A Look into the Past to Determine the Future

The purpose of this research was to narrow the definition of terrorism, specifically at the international level by identifying major countries' laws concerning terrorism and analyzing opinions of both experts and amateurs on the subject. The second part was to create a sense of what Islamic fundamentalist terrorism looks like by writing an exposé on the Munich Olympics of 1972, and later highlighting two currently prominent Islamic terrorist groups, one Shiite and one Sunni – Hezbollah and Hamas, respectively. Finally, the aim of the research was to collaborate with experts in the field and suggest an effective way to fight terrorism resulting in a minimal amount of unintentional casualties.

Audrey Campbell, Medical Humanities

Dr. Troy Abell, mentor

The Effects of Concomitant Pelvic Organ Prolapse Repair and Anti-incontinence Procedure on Patient Quality of Life – A Decision Analysis

Many women with severe pelvic organ prolapse (POP) appear continent despite a significant loss of pelvic organ and anterior vaginal support. The prolapsed organ is believed to “kink” the urethra, preserving continence by obstructing urine flow. The urethra becomes “un-kinked” once the descended organ is positioned back into normal anatomy, producing postoperative urinary incontinence. This decision analysis aims to answer the clinical question: Should pelvic organ prolapse (POP) and anti-incontinence repairs be conducted concomitantly on all clinically continent POP surgical candidates? A decision analytic model was used to determine the most beneficial combination of POP repair and anti-incontinence procedure with respect to patient quality of life (QOL). The following consequences were considered: (1) discomfort associated with preoperative testing; (2) minor complications not requiring intervention [e.g., self-resolving retropubic hematoma]; (3) minor complications requiring intervention [e.g., self-limiting urinary retention]; (4) voiding dysfunction; (5) major complications requiring intervention [e.g., severe vascular injury]; (6) a urinary leak up to six weeks postoperative, and; (7) postoperative stress urinary incontinence.

Jessica Carrothers, University Scholar

Dr. Sascha Usenko, mentor

Chemical Analyses of Mercury in Solid Matrices

Analyses of mercury in solid matrices are conducted and compared for environmental chemistry applications.

Alexa'jayne Carter, History

Dr. Jeffrey Hamilton, mentor

The Importance of Legitimacy in Shakespeare's Richard II and Richard III

Shakespeare's Richard II and Richard III are the first and last of his plays regarding the War of the Roses. Viewed together, the plays present an intriguing study of the concept of legitimate kingship. This thesis examines Shakespeare's exploration of legitimacy by investigating the texts of Richard II and Richard III and then comparing them with modern historical scholarship. This comparison finds that Shakespeare gives a more historically accurate portrayal of Richard II than he does of Richard III. The thesis then examines why there is a difference in Shakespeare's portrayal of the kings and how this is significant in regards to what he is communicating about legitimacy.

Sarah Casey, University Scholar

Dr. Richard Russell, mentor

Heaney's Sacramental Poetics

Contemporary Irish poet, critic, and translator Seamus Heaney is often praised for his ability to mediate between spatial, psychological, and political extremes. In my thesis, I will examine the way in which the sacramental understanding of poetry Heaney develops in three volumes of poetry, *Station Island* (1984), *The Haw Lantern* (1987), and *Seeing Things* (1991), allows him to mediate between past and future, presence and absence, physical and spiritual, and even Yeats and Joyce in a fruitful way. Through the sacramental understanding of poetry Heaney gains in *Station Island*, he transforms events in the past so that they allow for greater poetic possibility. Furthermore, I argue that the emphasis on absence in *The Haw Lantern* and *Seeing Things* is not a departure from Heaney's earlier poetry; in fact, this absence allows the poet to become receptive to the sacrament of poetry.

Tak-Chien Chiam, Computer Science

Dr. Greg Hamerly, Computer Science Department, mentor

Adaptive-K Nearest Neighbor Methods for Regression

K-nearest neighbors algorithms are very simple and perform well for many problems such as classification, regression, and probability density estimation. The k-NN algorithm makes predictions for a new point with an unknown value based on the neighbors around this query point. Usually, k-NN algorithms use a single, global k value as the number of neighbors used to make a prediction. However, it is easy to imagine datasets where using multiple, varying values of k according to the local region, will perform better. A trivial example of this is a dataset which is a composite of 2 smaller datasets, each with a different best global k value. Past research on adaptive-k nearest neighbor algorithms centered on classification problems, and had an improvement in performance. We analyze these algorithms and adapt the most viable method for regression tasks. Our algorithm finds a set number of neighbors around the query point, and chooses k from a list of ks that perform the best for this set of neighbors. We ran our algorithm on both constructed and real datasets, which resulted in an improvement in performance over global-k. We analyze the results and describe the datasets in which using adaptive-k for regression is desirable. The result is that we have a prediction algorithm that is on the same order of computational complexity as regular k-NN algorithms but performs significantly better for certain datasets and comparably for all others.

Jonathan Cigainero, History

Dr. Kimberly Kellison, mentor

Relationships of Sam Rayburn

The purpose of my thesis was to examine the relationships Speaker Sam Rayburn had with his most prominent Texas colleagues as well as his relationships with a couple of other non-Texan colleagues as well. The primary sources utilized are newspaper articles from the period, memoirs of contemporaries, contemporary books, and an interview with a contemporary source. My method was the same as with any other research paper; I found materials in the Baylor libraries, talked to people on the phone, and searched the internet for information. My thesis is divided into four chapters – three of which cover Lyndon Johnson, Wright Patman, and John Garner. The last chapter takes a look at Rayburn's relationship with Franklin Roosevelt as an out-of-State Democrat, and Joe Martin as a Republican. All in all, I found that Rayburn had a stronger relationship with those whose ideas he shared as well as those with backgrounds similar to his than those he simply stood alongside under the banner of Texas or the Democratic Party. I also found that Rayburn's success as a politician was built mainly on his own skill and personality, although he did have help establishing himself.

Elizabeth Conner, University Scholar

Dr. Kevin Pinney, mentor

Novel Thiosemicarbazone Derivatives and Their Inhibition of Cathepsins L, K, and B

Recent research has demonstrated that cathepsins L, K, and B, all lysosomal cysteine proteases, play an important role in tumor metastasis and invasion, immune system resistance, and drug resistance. These features make these cathepsins prime targets for inhibition as a form of cancer treatment. Using various techniques, two novel compounds (4) and (6) with thiosemicarbazone functionalities were synthesized and analyzed for inhibition of cathepsin L, B, and K. The analysis results illustrated that the ability of each of the newly synthesized compounds to inhibit cathepsin K was significant.

Rebecca Daniel, University Scholar

Dr. Julia Hejduk, mentor

The Roman Concept of Pietas in Ovid's Metamorphoses

The purpose of this thesis is to explore, in-depth, the Roman concept of *pietas* as it is treated by Ovid in his *Metamorphoses*. When researching *pietas*, there are countless articles discussing it in the context of Virgil, but almost nothing that really looks at what Ovid does with the concept in his own major epic poem. For this thesis I found every instance of *pietas* in the *Metamorphoses*, categorized them, and looked closely at how Ovid treats the concept. From this I conclude that Ovid was rather more subversive than many of the Augustan poets, that he uses this mainstream concept subversively many times either to make a particular point or just for the sake of being subversive.

Randi Dube, English

Dr. Lynne Hinojosa, mentor

*Moments of Being: Virginia Woolf and the Modernist Concerns of
Consciousness and the Self, Reality, and Experience*

Virginia Woolf is often stereotyped as either "that feminist" or as "crazy." In my thesis, I look at Virginia Woolf not only as a feminist or as a writer interested in portraying the experience of "madness," but also as a writer experimenting with other modernist concerns. I argue that to look at Woolf through the lens of one critical perspective is to miss her comprehensive modernist concerns and literary aims. I investigate in Woolf's fiction the idea of the consciousness, subjective and objective reality, the definition of the self, and the validity of personal impressions in life and in art. I first give a brief contextual background of Woolf's time period, and then provide a survey of two major influences that shaped Woolf's investigation of modernist concerns: Walter Pater's aestheticism as depicted in *The Renaissance* and psychologists of the late 1800s, such as William James, who considered consciousness and the self. In two chapters, I analyze *Mrs. Dalloway* and *To the Lighthouse*, two of Woolf's major novels. In the final chapter, I conclude and briefly consider the implications of Woolf's fiction on the way we should read her works and consider art in general.

Avery Erratt, University Scholar

Dr. D. Thomas Hanks, mentor

Challenging Change: On the Novels of Margaret Mahy

My thesis concerns several novels by Margaret Mahy, an award-winning author of children's books from New Zealand. Three of the novels included, *The Changeover*, *The Tricksters*, and *The Haunting*, might be deemed magical realism, combining the supernatural with everyday life. Mahy uses the supernatural to highlight key themes in each novel, focusing especially on the developing identity of the main character. In each case the central character is a young girl on the cusp of womanhood, dealing with the confusion of the changes in herself and in the world around her. In the two purely realistic works discussed, *Memory* and *The Catalogue of the Universe*, Mahy uses the stories in the mind of each central character to emphasize his or her developing self-knowledge. She is concerned with how well these stories match up with the reality that characters experience and the impact this has on their personal identities. Whether focusing on the supernatural or the idea of story, Mahy consistently points out the positive value of change in her main characters and in the world around them. She shows her young readers that the transformation in each of their individual lives has its counterpart in the world. Mahy focuses on the mysterious patterns that occur in the interior life of the individual, in the physical world, and in the stories that capture the human mind.

Nicole Evans, Psychology

Dr. Sara Dolan, mentor

Religiosity and Behavior under the Influence

Religiosity appears to have a dampening effect on alcohol use, as well as some of the alcohol-related behaviors associated with abuse and dependence. In emerging adults, the age range of most college undergraduate students, risky behaviors associated with alcohol use are most prevalent, as alcohol usage peaks for most people during this developmental period. This study will explore the correlation between religious behaviors and alcohol use and expectancies of college undergraduates at Baylor University. 313 Baylor undergraduates were polled by online survey to determine alcohol expectancies, perceived risks of alcohol use, daily and weekly usage, and frequency of religious behavior. The frequency of religious behavior over the past year appears to have an effect not on the amount a student will drink in a day, but on the number of drinking days per week.

Kaitlin Fogelsong, University Scholar
Dr. Cristian Bratu, mentor

An Introduction to Marc Boulet's Oeuvre

The contemporary French author Marc Boulet's many works concerning China are of increasing relevance to today's readers. However, none of his books have been translated into English, and there is little commentary on his works. My thesis serves as an introduction to and brief analysis of his works. Given Boulet's unique and extensive experience with China and Chinese culture as a Frenchman – he is married to a Chinese woman and has lived several years in China with her family – this thesis examines the development of his thought on China throughout his writings. Each chapter focuses on a different genre of his works (e.g. fiction) and provides insight into the relevance of Boulet's observations of Chinese life. Additional articles in prominent journals on Chinese studies will allow me to further comment on the social changes Boulet observes in China. In order to research this topic, I have read and analyzed Boulet's writings. I provide the necessary translations of Boulet's French texts. Furthermore, my method included the careful reading of any authors' writings on Boulet's body of work. Thus, my thesis investigates the evolution of a modern French perspective of China through Boulet's texts

Jessica Foster, Biology
Dr. James Marcum, mentor

The Social, Political, and Public Health Implications Surrounding Gardasil

In 2006, The Food and Drug Administration approved the first ever vaccine against the Human Papillomavirus (HPV). Since then, Gardasil has been at the center of media mayhem and political strife on all sides of the spectrum. In this thesis, I will trace the path that Gardasil has tracked through various news stories and media reports. I will then educate the reader about the prescribing information and dosing regimen for the vaccine itself. Finally, I will examine Gardasil's place amongst other required vaccines, bring Merck Pharmaceutical's motivation into questions, and impart my humble opinion and recommendations on the whole situation, as a young, adult female in college, and one of the main targets of Gardasil's advertising campaigns.

Stephanie Frazon, Neuroscience
Dr. Charles Weaver, mentor

Exploring the Connection Between Working Memory and Creativity

Working memory combines new stimuli and old information so they can remain in the mind and be manipulated. Creativity makes associations between new and old information in the mind to make something new. The definition of creativity and the function of working memory are essentially the same, yet little research has been done into the link between the two. This paper provides an overview of working memory and creativity research and highlights the commonalities between the two. It then reviews studies on the relationship between creativity and working memory. I propose a direct relationship between working memory capacity and creative abilities. The most compelling evidence is found through attentional control, mental synthesis, and the circuitry and arrangement of the prefrontal cortex.

Alicia Fuhrman, University Scholar
Dr. Tamara J. Rowatt, mentor

Prettiness as Protection: Does Attractiveness Influence Responses to Unrequited Love?

This study investigated the effect of attractive appearance on unrequited love situations from the perspective of the rejector. Participants were 212 college students who were asked to read a hypothetical scenario in which the appearance of the would-be lover (Attractive versus Unattractive) was manipulated in a between-subjects design. Gender was also considered as an independent variable. Participants were asked to report affective and behavioral reactions to either an Attractive or Unattractive acquaintance asking for a date. Although main effects for gender and attractiveness were found, we did not find any interactions between gender and attractiveness as expected in accordance with evolutionary theory, which was contrary to expectations in the hypothesis. In line with the hypothesis, however, high Sociosexuality Index (SOI) scores were correlated with greater likelihoods to respond in a flirting manner and to keep future sexual encounters a possibility.

Kevin Georgas, Great Texts

Dr. Barry Harvey, mentor

*Different but Not Divided: Bringing the Doctrine of the Trinity to Bear
on N.T. Wright and John Piper's Quarrel Over Justification*

Well-known evangelical pastors N.T. Wright and John Piper have recently traded monographs in which they disagree over the meaning of "justification" in Paul's letters. Wright argues that when Paul is read with an ear to first-century Jewish theology it becomes clear that the traditional Protestant understanding of justification is in need of revision. Piper means to defend the doctrine of justification in its traditional Protestant, particularly Lutheran, form. This thesis appeals to recent Trinitarian theology, particularly the work of Karl Rahner, to help clarify the underlying issues of Wright and Piper's debate.

Luke Gerrard, Economics

Dr. David Hendon, mentor

Germany's Social Market Economy: Concept and Implementation

The Federal Republic of Germany's postwar development has been radically shaped by its unique economic system, known to most as "the Social Market Economy." Conceived by ordoliberal theory and implemented largely by Ludwig Erhard, the Social Market Economy has been held up as a model that balances economic development with social justice. This thesis shall examine the origins of the Social Market Economy in the early years of the Federal Republic and the impact of German history on its creation. Attention will be given to regional development in Germany, comparing historical development with postwar development. The thesis will also examine the German labor market and Germany's place in international trade. The thesis concludes with a discussion of the viability of the Social Market Economy in the modern world.

Erica Gibbs, International Studies and French

Dr. Jerold Waltman, mentor

Executive-Legislative Relations in France and Great Britain

Relations between the executive and legislative branches in both Fifth Republic France and Great Britain have proven to be interesting and the executive has proven to be the stronger of the two branches, with politicians such as Tony Blair, Winston Churchill, Charles de Gaulle, and Margaret Thatcher coming to mind as these strong executives. France and Britain also have radically different histories, France with its past of revolutions and upheavals and Britain with its history of longstanding precedents and relative stability. Institutionally, both of their executive branches are stronger than their legislative branches, but for very different reasons. This thesis explores the history, political background, and current situation of both France and Britain and explains why two such different states are both moving in the same direction, with strong executives leading both states.

Rebecca Gottstein, History and German

Dr. Jennifer Good, mentor

Do These Rebels Have a Cause? Blaming America in 1950s German Culture

In the wake of World War II, East and West Germany were both faced with the daunting task of building a new national identity, distinct from one another. These newly minted states were dependent on the aid of the Soviet Union and the United States respectively, a fact that reached even into the realm of popular culture. As the influence of the United States reached new heights through its consumer culture, many youths in both German nations adopted the dress, swagger and dance styles associated with American film stars such as James Dean and Marlon Brando. This cultural influence was seen by East and West Germany to be undesirable, if not dangerous. In my thesis, I have analyzed and compared two films--one from East Germany, one from West---which discuss this youth culture, its implications for German identity in the context of the 1950s, and attempts to deal with this strong American presence in each of the two different nations.

Julie Hamilton, Great Texts

Dr. David L. Jeffrey, mentor

"Everything beautiful in its time": The theological aesthetics of form, color and harmony in the oeuvres of Georges Rouault (1871-1958)

This thesis explores the theological aesthetics of beauty in the works of the French artist Georges Rouault (1871-1958). I argue that Rouault's aesthetic vision of "Form, Color and Harmony" visually depicts his inward spiritual journey, and is figured outwardly through his works in three periods: Dissonance (1871-1910), Consonance (1910-1930) and Harmony (1930-1958). Consequently, I argue that this 'tuning' of Rouault's vision concurrently follows in linear progression St. Thomas Aquinas' three definitive properties of Beauty: 'truth,' 'unity,' and 'radiance,' leading to the 'splendor forme.' In my first chapter, I provide a taxonomy of theological aesthetics that will contextualize this study within the greater Christian Tradition. My following three chapters seek biographically and theoretically to show the 'time' and 'season' of Rouault's 'form,' 'color' and 'harmony,' leading us from a 'Dissonant' season of Winter through the faces of Prostitutes and Clowns, to a 'Consonant' Spring within the Miserere et Guerre cycle, and finally to a 'Harmonic' season of Summer and Autumn illuminated within his iconic paintings of Christ and his sublime biblical landscapes. Apropos my contention that three musical tonalities of his soul correspond to four tonal seasons of his color, I conclude with Ecclesiastes 3:11 that "everything is beautiful in its time."

Michelle Harp, Biology

Dr. James Marcum, mentor

Breast Cancer: The Human Experience

In the United States, breast cancer is the most common type of cancer among women, other than skin cancer, with one in eight women being diagnosed during their lifetime. In the late twentieth century, the breast cancer awareness movement evolved from the relationship between the disease, medicine, and society. Though the pathology of breast cancer can be well defined, the human element of breast cancer is less well known and has recently emerged with women sharing their breast cancer disease narratives. What does it mean for a woman to be diagnosed with breast cancer? A woman with breast cancer must navigate through the medical world for treatment, and then reflect on her experience so that she can find understanding and meaning from her trauma. By understanding what it means for women to deal with breast cancer, people can gain a better understanding of what it means to be human.

Nathan Hays, Religion

Dr. Kenneth Jones, mentor

The Beginning and the End: Reconfiguration of the Adam Legend in 4 Ezra and 2 Baruch

My thesis will examine how the story of Adam from Genesis 1-5 was reinterpreted and expanded by apocalyptic writers in the wake of the Roman destruction of the Temple of Jerusalem in AD 70. The thesis will focus on 2 Baruch and 4 Ezra. I will use secondary sources when necessary. After the introduction, chapter one will provide a background to the history of the Adam legend, as it appears in the Hebrew Bible and Septuagint. Then, I will examine 4 Ezra and 2 Baruch. The last chapter will cover the Book of Jubilees and Antiquities of the Jews, both of which provide insight into the unique portrait of Adam developed in 4 Ezra and 2 Baruch. Finally, the last chapter will present a conclusion. I argue that the writers of 4 Ezra and 2 Baruch describe Adam in a new way, as one who explains the problem of theodicy that was brought to the forefront by the Jewish defeat. The Adam legend makes sense of the past and present state of the world, as well as anticipates the future restoration of paradise.

Lawson Hopkins, University Scholar

Dr. James Nogalski, mentor

Deutero-Zechariah and its Use in the Matthean Tradition

Zechariah chapters 9-14 stand as a commentator's nightmare, containing no direct or easily deciphered references either to its authorship or date of composition. While scholarship almost unanimously agrees that the text was not written by the prophet Zechariah, but added at a later date, much debate remains concerning the idea of single or multiple authorship as well as the idea of an editorial restructuring of the chapters prior to addition. To intensify the matter, Matthew directly quotes deutero-Zechariah three times in his recounting of the passion week of Christ, while Mark is the only other gospel writer to include even one direct reference to the text. Why does Matthew quote deutero-Zechariah so extensively, and how can a deeper understanding of the passages in which these quotes lie enhance the meaning of Matthew's gospel?

Cameron Howard, Medical Humanities

Dr. Scott Garner, mentor

Corporation Plan: A Medical Management Company - Business / Conceptual Plan

I propose the creation of a medical management company that oversees the business affairs of ten private physician practices in Frisco, Texas. The management company will also contract with optometrists and physical therapists. As a key strategy for success, the management company will work with these clinics out of a joint owned medical tower. The medical management company will also build and own the controlling stock interest in an in-house Ambulatory Surgery Center (ASC). Since the management company contracts with physicians to handle their business practices, physicians will be able to see more patients. They will also be able to spend more time on each case. Moreover, the management company has a unique competitive advantage in that consulting services are available on-site. This environment and nature of the venture should lead to high rate of return for investors. As the business grows, this business model and strategy can be replicated in other cities.

Rachel Huntsman, University Scholar

Dr. Victor Hinojosa, mentor

Memory, Isolation, and Apathy: Political Themes in One Hundred Years of Solitude

Gabriel García Márquez's best-selling novel *One Hundred Years of Solitude*, winner of the Nobel Prize, defies easy categorization. The novel is set in the fictional town of Macondo, which allows García Márquez to create a world that spans epic proportions to include such themes as love, war, death, and solitude. While the focus of the novel is on the several generations of the Buendía family, the citizens of Macondo encourage a political reading of the novel through their failures in collective memory, isolation, and political apathy. This thesis argues that Macondo's destruction comes about as a result of the combination of these themes. While García Márquez does not outline a particular political agenda in the novel, each of these themes resonates both with political principles in general and Colombia's political experience in particular, which reveals the novel's political insight.

Noelle Jacot, Classics

Dr. Greg Garrett, mentor

The Aeneid: Dawn of the Empire: a Screenplay Adaptation of Virgil's Aeneid

The Aeneid: Dawn of the Empire is a modern, full-length screenplay adaptation of Virgil's Aeneid, a Latin poem from 1st century AD Rome. The screenplay is an epic war movie expected to last approximately two and a half hours in film format. The Aeneid tells the story of the remnant of Troy, led by Aeneas, in their prolonged journey to Italy. Once they reach Italy, Aeneas must fight for his prophesied right to the throne of Latium and Princess Lavinia's hand in marriage. If Aeneas succeeds, he will be the founder of Rome, an empire Jupiter, the king of the gods, predicts will be an empire without end.

Jacob Jantzi, Physics

Dr. Jeffrey Olafsen, mentor

Rotational Granular Kinetics in a Rotating Tumbler

Both translational and rotational kinetics of granular media have been examined within a rotating tumbler. The tumbler is a rotating disk that holds steel cylinders about 1 cm in diameter such that the cylinders are restricted to two dimensions. Despite the wide use of such tumblers in experiments, there have been relatively few experiments in which the rotational mode is analyzed. Due to the nature of the rotating tumbler, in which the motion is induced by a rotational shear at the wall, the experiment is quite ideal for this purpose. The effect of the boundary on the particles is the focus of the experiment. By placing only a few layers of media in the tumbler, differing biases were observed in each layer. The bottom layer displays strong rotational and translational motion of the particles due to the boundary. In comparison, the top layer in the system shows a similar bias, only in the opposite direction. This allows us to characterize two main flows: the "driven flow," whose motion is directly induced by the wall, and the "return flow," whose motion is a result of gravity as the particles fall back down to the bottom of the cell. Of note is a "lubrication layer" which separates the two flows and is characterized by a relative lack of translational and rotational motion.

Gideon Jeffrey, University Scholar
Dr. Todd Buras, mentor

The Centrality of the Cosmological Argument

In the past few decades, numerous philosophical and scientific developments have prompted a resurgence of interest in the three traditional arguments for the existence of God - ontological, teleological, and cosmological. In this thesis, I provide a detailed examination of modern versions of each of these arguments built upon these developments, namely the modal ontological argument, fine-tuning argument, and a recent version of the argument from contingency. I argue that of these three, the argument from contingency is the most difficult for the non-theist to refute. Furthermore, I make the case that the argument from contingency is central in the sense that, if accepted as sound, it provides strong support for both the modal ontological argument and the fine-tuning argument.

Mary Jensen, Communication Sciences and Disorders, Speech Pathology
Dr. Kathy Whipple, mentor

Effectiveness of the Lidcombe Program in a Long Distance Learning Environment

A 6 year, 10 month old American male, living in a remote part of China, served as the subject for this case study. The child was a beginning stutterer, producing 10 to 12% disfluencies that included hard glottal attacks, an occasional glottal fry and lengthy repetitions. Due to the remoteness of the region, a speech pathologist was not available. /// The Lidcombe Program was begun through the use of the Internet and audiotapes between a speech pathologist in Texas and the family in China. The question being asked was could a long distance intervention with no face-to-face contact utilizing the Lidcombe Program be effective in reducing or eliminating the child's stuttering behaviors. Following a 20-week intervention with the mother providing the 10-minute sessions daily and the parents rating the stuttering of the child daily, the child stuttered less than 1% of the time and had consistent ratings of 1 with an occasional 2. The study concluded that the Lidcombe Program was an effective treatment program in a distance-learning environment. The use of this program resulted in the child reducing his percentage of stuttered syllables from 10% to less than 1%. The child is presently being followed in the stage II part of this program.

Katherine Johns, Neuroscience
Dr. N. Bradley Keele, mentor

*Intra-Amygdala Phenytoin Improves Behavioral Performance Under DRL-72
Schedule of Reinforcement in Rats with 5,7-DHT Lesions of the Amygdala*

Global serotonin (5-hydroxytryptamine or 5-HT) depletion has been associated with psychiatric disorders that involve impulsive behavior. Serotonin is also known to have an inhibitory role on amygdala excitability through projections to the lateral amygdala (LA). Thus, low 5-HT levels could reduce the inhibition of neurons in the amygdala and lead to hyperexcited neural activity. Sub-seizure levels of hyperexcitability may be involved in impulsivity since antiepileptic drugs like phenytoin (PHN) have been successful in reducing neural excitability in the amygdala to treat seizures, and PHN is effective in controlling human impulsivity. The present study used a differential reinforcement of low rate response 72-s (DRL-72) operant schedule to assess motor impulsivity in rats. We explored the effects of 5,7-dihydroxytryptamine (5,7-DHT) serotonergic lesions of the LA and subsequent PHN administration. This study showed that 5,7-DHT lesions of the LA did not alter DRL-72 performance. However, intra-LA PHN administration (5 pmol/side) reduced the number of lever presses in sham-operated control rats but not in 5,7-DHT-lesioned rats.

Rachel Kressin, Neuroscience

Dr. N. Bradley Keele, mentor

The Role of Prenatal Stress in Rat Social and Emotional Behavior

Autism is a highly diverse neurodevelopmental disorder that lacks a known etiology. Many studies implicate prenatal stress in the development of autism in humans and autism-like behaviors in rats. The purpose of this study is to test the hypothesis that chronic, unpredictable prenatal stress in rats results in the expression of behaviors that resemble the three core symptoms of autism: (1) social interaction deficits, (2) communication impairments, and (3) restricted, repetitive stereotyped movements. To test this hypothesis, the offspring of stressed and unstressed control dams were compared in several behavioral models, including elevated plus maze, operant conditioning, social interaction tests, and an olfactory communication test. In this study no significant differences were found between the stressed rats and the controls in the behaviors tested. These results contrast with other published studies; thus, further research is necessary to discern the role of prenatal stress in the neural underpinnings of autism.

Jessie Kuykendall, International Studies

Dr. Bradley Thayer, mentor

Winning Quiet Support in the Middle East, Soft Power Style: An examination of how the United States can use specific soft power methods to lessen the effectiveness of Islamic fundamentalist terrorism in the Middle East

Soft power methods have a definite role to play in the struggle against Islamic fundamentalist terrorism in the Middle East, especially in the area of winning over the opinions of the majority. This research examines specific soft power methods aimed at reaching those called "quiet supporters," who sympathize in some ways with terrorist organizations but are not fully dedicated members. The study breaks down into three main categories: United States Government methods, new media sources, and techniques originating in the Middle East. In order to examine the potential of these methods more fully, the case studies of Saudi Arabia, Egypt and the United States are examined. The results show these soft power methods have the possibility for making great strides among quiet supporters. However, changes at the structural level and further research are needed to create an integration of hard power already in use and newly evolving soft power methods.

Anne Langhorne, University Scholar

Dr. Thomas Hibbs, mentor

The Problem of Paralysis: A Critique of the 'Unconditioned Value of Humanity' in Christine Korsgaard's Theory of Normative Ethics

In the mid-twentieth century, Elizabeth Anscombe wrote a pivotal paper, "Modern Moral Philosophy," in which she explored whether the modern world could conceive of any grounds for a moral "ought" in its current fragmented state. To recover any notion of how we "should" live, we would need a moral psychology to bridge the gap between the worlds of fact and normativity. Contemporary ethicist Christine Korsgaard has attempted this project in her neo-Kantian project. My thesis shows how she improves traditional Kantian ethics and gives a clear-cut account of moral psychology. However, Korsgaard's theory depends on the assumptions that our rational faculty defines humanity and creates our intrinsic value. I construct three major arguments to show that practical reason can't realistically hold up as the source of our value and that without a sturdy concept of value, we have no substantive obligations. This failure in Korsgaard's theory gives us reason to think that moral psychology is not all we need to revive normative ethics. My project highlights the importance of having a sturdy notion of human value for a moral theory.

Christa Leotti, Medical Humanities

Dr. Troy Abell, mentor

Mesh-augmented anterior colporrhaphy vs. standard of care: a decision analysis evaluating quality of life

Pelvic organ prolapse (POP) affects 41.1% of all U.S. women 50 years and older; the rate of women seeking POP treatment is projected to double in the next thirty years. The rapid development of novel vaginal mesh delivery systems for the treatment of this condition has elicited safety and efficacy concerns among gynecological surgeons and regulatory agencies. The goal of this study was to infer the optimal surgical strategy for the treatment of anterior POP with regard to patient quality of life. A decision analytic model was designed to compare the standard of care to a mesh-augmented POP repair. The following clinical consequences were considered: death, POP recurrence, mesh erosion through the vaginal epithelium, infection, lower urinary tract symptoms, bleeding requiring transfusion, bladder perforation, and de novo chronic pelvic pain. The expected quality of life associated with mesh-augmented anterior colporrhaphy was compared with (non-mesh) standard of care. Sensitivity analyses were performed on all probability and utility estimates to determine the robustness of the comparative model.

Jessie Liang, University Scholar

Dr. Tamarah Adair, mentor

Expression of a 165 amino acid derivative of phage K lysin, lysK, in Nicotiana benthamiana as a novel treatment of MRSA

Methicillin-resistant Staphylococcus aureus (MRSA) has generated concern as strains resistant to other antibiotics have arisen, lessening treatment options. Although S. aureus thrives commensally in human noses, it can cause harm in compromised patients. One research area has focused on bacteriophage therapy. Bacteriophages, or bacterial viruses, use holin and lysin proteins to escape cells after replication, and studies have shown that a 165 amino acid derivative of the CHAP domain of phage K lysin is sufficient for lysing MRSA. We proposed cloning and expressing the truncated lysK in a plant, because plants are easily scalable and transient expression is confined to inoculated leaves. Modifying the sequence for apoplast expression and splicing it into a FECT plasmid, the resulting pLys/FECT was then introduced into Agrobacterium tumefaciens for agroinoculating Nicotiana benthamiana. Although preliminary analyses were inconclusive, if proven effective, this method would be greatly beneficial for eliminating S. aureus while avoiding antibiotic-resistance.

Katie Linman, University Scholar

Dr. Susan Colon, mentor

George Eliot's Daniel Deronda and the Role of the Arts in Shaping Morality

Throughout her career, George Eliot used fiction to focus attention on the process by which the arts shape morality. My reading of her last novel, *Daniel Deronda*, shows the author moving beyond the conception of art expressed in early works, such as *Adam Bede*, and becoming more deeply invested in showing how the arts benefit human morality. In *Daniel Deronda*, almost every character engages in responding to some kind of art form while the major characters' moral and ethical quandaries are irreducibly linked to aesthetic questions. With the aid of the arts, Gwendolen Harleth learns to sympathize with others while Daniel Deronda learns to understand himself as an individual. Characters less central to the plot also demonstrate how Eliot's commentary on artistic themes contains nuances undeveloped in earlier works.

Kym MacNeal, University Scholar

Dr. Adams, PSC, mentor

Chemical and Biological Weapons and Their Affect On the Stability of the Middle East

This work is dedicated to the study of how chemical and biological weapons have affected the stability of the Middle East. First, the work investigates the history of both chemical and biological weapons and describes how multiple subcategories of these substances and organisms work on a chemical and biological level. Additionally, attention is given to how the various antidotes work on a chemical level. Next, the paper utilizing open sources describes the history of the chemical and biological weapons programs of the countries Syria, Egypt, Iran, and Iraq from inception to latest published information. Finally, this paper investigates the relationship between destabilizing factors in the Middle East and the instances of chemical weapons usage and uptake in chemical and biological weapons research. This comparison finds that although there is some correlation between destabilizing factors, such as war, and an increase in research activity, this is not always the case nor does it hold true in every country.

Hana Manal, Psychology and Spanish

Dr. Wade Rowatt, mentor

The Effect of Communion and Agency on the Selection of Male and Female Leaders

This study examines the extent to which the Extended PAQ and a gender based IAT correspond to participants' selection of male/female, agentic/communal presidential candidates for a university. Participants (n=86) rated 48 personality traits, read descriptions of two differing presidential candidates, and took a gender based IAT. Results showed that participants rated communal qualities higher and preferred the communal candidate, regardless of candidate gender. Participants also more quickly associated communal qualities with women than masculine qualities with men on the IAT.

Patricia Martinez, Biology

Dr. Rizalia Klausmeyer, mentor

Furanocembranoids and Their Related Compounds: A Literature Review

Furanocembranoids are marine natural products which occur and are synthesized by octocorals. They are characterized by a cembrane skeleton and a 14-membered carboxylic ring with a furan heterocycle encompassing C₆ and C₇. Furanocembranoids have been found to possess biological activity such as anti-carcinogenic, anti-inflammatory, anti-malarial, and anti-parasitic, among others; some have also led to pharmacological discoveries, suggesting the importance of their research and this study. This review focuses on the furanocembranoids isolated from gorgonian octocorals found in the tropical and sub-tropical geographical regions. Although the furanocembranoid family is extensive, very little synthetic work and research has been carried out. The thesis includes (1) the structural chemistry of furanocembranoids and related compounds, such as pseudopteranes and gersolanes; (2) analytical techniques used for their isolation, purification and structure elucidation; (3) syntheses and biosyntheses of furanocembranoids; (4) a survey of gorgonian octocoral species, and (5) biological activity assays of furanocembranoids.

Meaghan McNeill, Mathematics and Biology

Dr. Brian Garner, mentor

Evaluating the Equine Treadmill for Use in Hippotherapy Research

Hippotherapy uses the three-dimensional motion of a horse to treat individuals with various disabilities and disorders, including cerebral palsy, brain and spinal cord injuries, autism, and others. Patients report improved postural control, balance, flexibility, and gait, in addition to social and psychological benefits. Despite observations of the physical improvements resulting from hippotherapy, little research has been done to quantify these benefits. Using 3-D motion capture on an equine treadmill, rather than in an arena, would facilitate such quantification by simplifying data collection and improving repeatability, while also allowing novel studies of patients during therapy. This study aims to determine if and how the motion of a horse and rider varies on a treadmill and in an arena by analyzing motion capture data of a rider's pelvis during treadmill and arena locomotion.

Matthew McPheeters, Health Science Studies

DR. Darryn Willoughby, mentor

The Effects of Creatine Supplementation and Resistance Training on Serum Testosterone and IGF-1 Levels in Older Males

The excessive muscle loss due to aging is known as sarcopenia. Sarcopenia is a leading cause of injury and loss of independence in the elderly. Research on the nutritional supplement creatine as an athletic ergogenic aide has led many researchers to conduct studies on creatine supplementation as a treatment for sarcopenia. No long-term creatine supplementation study has looked at the supplement's effect on serum levels of free testosterone and free IGF-1; this is the purpose of the present study. METHOD: The study is a double-blind randomized control study (n = 20). The independent variable is creatine supplementation. The dependent variables are serum levels of free testosterone and free IGF-1, muscle strength, and body composition measures. RESULTS: Group effect for free testosterone, p = 0.769; IGF-1, p = 0.638. Time effect for free testosterone, p = 0.531; IGF-1, P = 0.261.

Sergio Montano, Biology

Dr. Darryn Willoughby, mentor

Analysis of the Relationship between Body Fat Percentage and Insulin Sensitivity in Young Obese Women

The recent increase in the number of U.S. population with Type II diabetes has led to a great interest in research pertaining to the mechanisms which lead to the development of diabetes. Within this particular study, we chose to observe the effects body fat composition have on the insulin sensitivity of that particular tissue. Furthermore, the correlation between insulin uptake and body fat percentage will be analyzed to determine whether or not body fat composition has an effect on the insulin sensitivity within that particular site of the body. This study was conducted within a sample population of young obese women who lead a sedentary lifestyle. The Statistical analysis will performed utilized a correlation between the two values gathered from the placebo group: body fat percentage values using the DEXA scan and insulin sensitivity values using OGTT. The Matsuda OGTT insulin sensitivity index will then be used to establish the levels of insulin resistance within the subject by comparing the Matsuda Index to the values gathered through the study. The five blood glucose levels taken from the five separate blood draws (obtained at: 1) baseline/pre-supplementation, 2) ½ hour after carbohydrate; 3) 1 hour after carbohydrate 4) 1 ½ hours after carbohydrate; and, 5) 2 hours following carbohydrate ingestion) will be used as the insulin sensitivity values. All statistical procedures were performed using SPSS 14.0 software and (a probability level of < 0.05 will be adopted throughout).

Joe Muller, University Scholar

Dr. David D. Corey, mentor

The Jus in Bello of Homer's Iliad

In this thesis I examine the idea of *jus in bello* (rights and wrongs in the conduct of war) put forth in Homer's Iliad. I argue that the heroic ideal which informs much of the warfare in the Iliad poses a problem for any substantive *jus in bello*, but that a warrior nevertheless experiences certain moral pressures both in his relationship with his allies and in his relationship with his enemies that potentially limit his action. Ultimately I argue that the poem as a whole can be read as a movement away from the heroic ideal and its inhuman extremes and toward a more relenting and universal morality of war that is particularly suited to humanity.

Holly Murphy, University Scholar

Dr. R. Alden Smith, mentor

A Man of Letters: A Comparison of Cicero's Gubernatorial with his Exilic Epistles

In this thesis, I analyze the letters Cicero wrote during his exile (57 B.C.) and during his governorship in Cilicia (51/0 B.C.). These letters provide an insider's window into Cicero's life when he is separated from Rome; though the circumstances for his absence vary in each case, letters from both periods show that he longs for home. His persona as an orator and influential statesman requires him to be in Rome. He eagerly seeks political advice from his friends, shaping his plans and political strategy on what he hears. The political world Cicero had known, however, undergoes such changes during the 50s that Cicero must finally make the excruciating decision to support Pompey in civil war. Having lost the power of his voice, Cicero must follow the party he has chosen into an unknown future. The letters reveal the inner struggles of one of Rome's most smooth-talking lawyers.

Kathryn Musick, University Scholar

Dr. Patricia A. Sharp, mentor

Chiaroscuro: Shedding Light on Shadows in Children's Literature

The study of young people's literature is a recently growing, though still often neglected, field in scholarship. However, it is often through the simplest of stories that symbols and metaphors are most affective. My thesis traces the use of shadows throughout children's literature history, specifically when the protagonist somehow loses or is separated from his shadow. The works included in this study are *Peter Schlemiel*, *The Shadow*, *The Fisherman and His Soul*, *The Charwoman's Shadow*, *A Wizard of Earthsea*, and *Between*, from such noted authors as Hans Christian Andersen, Oscar Wilde, and Ursula Le Guin. Though today's modern, post-Jungian world tends to think of shadows as dark and ominous beings, an analysis of these works reveals that shadows symbolize just the opposite: as an extension of a person's physical self, they serve as both a symbol for social acceptance and as a metaphor for the soul.

Diane Nelson, University Scholar

Dr. David L. Jeffrey, mentor

Caspar David Friedrich's Landscapes: Icons for Contemplation

Caspar David Friedrich, the Lutheran German Romantic painter, was influenced by theological and artistic sources and precedents within his hometown and church. Some of these sources are directly related to the landscape work that Friedrich produced, and reveal how Friedrich's landscapes act as icons for contemplation without traditional accompanying text or an explicit symbolic program. Friedrich's works, however, are not left devoid of meaning or religious significance, as he was familiar with the Christian artistic tradition and the Romantic and theological philosophies of his day. Friedrich points towards contemplation of the Divine in his works as he reflects the order of the created universe in his paintings. Under appreciated in his own time, his work and its spiritual components have influenced many generations of later artists who admired the asceticism and spirituality of his canvases.

Laura Oliver, History

Dr. Beth Barr, mentor

Eleanor of Aquitaine and Anne Boleyn: Female Political Power in England

Eleanor of Aquitaine and Anne Boleyn were two of the most controversial queen consorts in medieval and early modern England. The political power and public influence they were believed to wield ignited rumors and legends about them that have flourished until the present day. This thesis examines the extent of their actual power and what influence they were able to exert on the world around them, concluding that-while both women did exercise political power and influence-it was to varying degree and always limited by the men in their lives. The thesis then examines contemporary and modern literature about these two women, assessing how the power and influence exercised by Eleanor of Aquitaine and Anne Boleyn impacted their reputations in both positive and negative ways.

Heather Outland, University Scholar

Dr. Kenneth Jones, mentor

Constantine: Convert or Opportunist?

The Emperor Constantine is often lauded as the "first Christian Emperor" of Rome, in part because of the emperor's own claim of Christianity and the profound effect his support of it had on later Christianity. There has been a recent trend to reduce the significance of Constantine's involvement in Christianity, but this move is a misguided attempt to shift the focus away from a crucial aspect of his reign. Chapter 2 shows that despite the seeming preponderance of reasons for an emperor never to patronize Christianity, in fact, Christianity was the only viable option to garner real power. Chapter 3 develops the argument that Constantine found it particularly beneficial to convert to the Arian confession of Christianity gaining popularity at the time. Chapter 4 counters the accusation, popularized by the historian Edward Gibbon, leveled at Constantine that he and the spread of his Christianity was what led directly to the fall of the Roman Empire, and shows that Christianity was the only stabilizing force that Constantine could adopt.

Heather Owen, Baylor Business Fellows

Dr. Charles North, mentor

The Role of Economic Theory in Poverty Alleviation Organizations

This paper examines the use of economic theory in the development of the microfinance and HIV/AIDS support programs of City Harvest Church in Nairobi, Kenya, and predicts the success of these programs based on the application of economic principles. Many poverty reduction methods used historically and today have failed to create sustainable improvements in the lives of the poor. Economists have criticized these programs for failing to create proper incentives and follow basic economic principles. This paper studies two programs operated by a church in Nairobi that have the goal of making lasting improvements in the lives of Kenya's poor. After analysis of the formation and administration of these programs, I conclude they should experience significant success in creating long-term improvements in the lives of the participants of their programs. Currently these programs are showing evidence of success, but more evaluation and statistical analysis would be needed to prove their long-term effects. The study of these programs can demonstrate to individuals and organizations wanting to help the poor that if they follow economic principles in creating poverty alleviation programs, they can experience much more success than using traditional methods.

Laura Parker, University Scholar

Dr. Wade Rowatt, mentor

The effects of religious priming on implicit racial prejudice

High levels of religious participation and religiousness have been associated with racially prejudicial attitudes. In previous research, priming methodologies have been used to experimentally manipulate the salience of religion. In this study, we sought to determine if subliminally priming individuals with religious terms would increase their self-reported protestant work ethic (Katz and Hass, 1988) and implicit racial prejudice. Religious priming did not affect self-reported scores of protestant work ethic. A multiple regression analysis revealed that priming religiousness resulted in higher implicit racial prejudice when gender, religiousness, and possible interactions were controlled. This analysis revealed significant main effects for condition and gender, and significant two-way interactions between religion and condition and gender and condition. Due to the low number of men in our study, more participants are needed before any firm conclusions can be drawn about gender differences in implicit racial prejudice.

Robert Pechacek, University Scholar

Dr. Jeannette M. Denton, mentor

Violent Words: A Pragmatic Analysis of the Conflict Between Agamemnon and Achilles in the Iliad

The argument between Agamemnon and Achilles in the *Iliad* is a well-known and much-written-about topic. This paper brings modern linguistic pragmatic theory, particularly Brown and Levinson's Politeness Theory, to bear on this subject in an effort to determine who is most at fault for beginning the conflict and why the conflict deteriorated to irreconcilable differences. Through conversation analysis of the competing speeches in Book I and the embassy to Achilles in Book IX, I will show how a break-down in politeness strategies results in an escalating power struggle that renders any attempts at diplomacy useless and perhaps highlights a critique of the Indo-European heroic social system implicit in the epic.

William Peery, Philosophy and Chemistry

Dr. Paul Primrose, mentor

Groundwork for introducing ATRP in undergraduate lab: synthesis of ligand TPMA

Atom Transfer Radical Polymerization (ATRP) is a rapidly blooming field of polymer chemistry. Its advantages of allowing the chemist the ability to control the structure, end functionalization groups and the molecular weight of polymers offer many applications in industry. This paper lays the groundwork for introducing undergraduate students to ATRP. After a brief discussion of the mechanism of ATRP, I will detail the synthesis of the ligand TPMA, an important catalyst in ATRP and will conclude by discussing how this experiment lays the foundation for conducting ATRP in undergraduate laboratories.

Cynthia Perez International Studies

Dr. Jerold Waltman, mentor

The Development of Dual Citizenship in an Increasingly Globalized Society

The increase in technological capabilities and the movement of peoples has led to increased instances of overlapping citizenship. This overlap creates the need for States to develop policies and procedures relating to jurisdiction, military obligations, etc. should an issue need to be resolved. This thesis investigates the development of dual citizenship within two States, the Federal Republic of Germany and the United States of America, by analyzing nationality laws, court cases, and international treaties as well as articles within the popular press. It answers the question of how modern states have developed their laws and international relation policies in relation to dual citizenship.

Gabrielle Pina, Biology

Dr. James Marcum, mentor

Past, Present, and Future: Health Care in America and Canada

The state of Health care in the United States has taken many twists and turns in order to become the system that it is today. In this thesis, I focused on the past, present, and future of this nation in terms of its health care. I started my overview of the past of American health care with the Presidency of Truman while mentioning FDR. I traveled through the years of Lyndon B Johnson, Richard Nixon, and Bill Clinton. I then surveyed the health care of a province and a territory in Canada, the province of British Columbia and the territory of Nunavut. I ended my thesis with a chapter summarizing the future of health care. I detailed aspects of the Obama Plan that passed on March 21, 2010 and allowed the reader to make their own assumptions about the bill.

Andrej Pogribny, Biochemistry

Dr. Michael Foley, mentor

An Examination of Pope Benedict's Writings as a Challenge to Contemporary Secularism

Pope Benedict XVI has written three encyclical letters to date: *Deus Caritas Est*, *Spe Salvi*, and *Caritas in Veritate*. Though each encyclical letter is unique, one can derive theological and social interconnections among the three. In one way, Pope Benedict's encyclical letters challenge contemporary culture and the pervading secularism in the West. First in examining *Deus Caritas Est* in detail, Pope Benedict claims *eros* as a unique form of Christian love that is directly connected to *caritas*. In claiming this "worldly" form of love for itself and connecting it to the Christian call for charitable activity, Pope Benedict challenges contemporary presuppositions particularly in relation to the nature of Christianity within the secular world. By having this framework in mind and now examining elements from Pope Benedict's other writings and encyclicals, one can further examine the problems that the Pope sees in contemporary secular culture. Ultimately, Pope Benedict considers how to reconcile both Christian elements and the secular world. For Pope Benedict, open, multi-party dialogue is the first step necessary to build a just society that accepts a healthy secularism with a place for religious ideas.

Megan Presley, Economics

Dr. Joan Supplee, mentor

Neoliberalism and its Impact on Chilean Women under Dictatorship and Democracy

Thirty-four years have passed since the Chilean dictator Augusto Pinochet Ugarte began his controversial free market reforms under the civilian economic advisors known as the "Chicago Boys." The free market reforms which included privatization of companies nationalized under the Allende government, reduction of tariffs and other trade barriers, modernization of the financial sector, and many other changes have forever affected each stratus of Chilean society. This thesis uses economic indicators spanning fifty years to show how modern Chilean women have benefited from the initiation and continuation of these globally focused economic policies supported by Chilean leadership from 1975 to the current President Michelle Bachelet. It provides a long-run analysis, a main tenet of neoliberal reforms, by bridging the gap between the plethora of academic literature published on Chilean women during and immediately after the Pinochet Regime and the Chilean economy as it runs in the beginning of the 21st century.

Joanna Price, Psychology

Dr. Tamara J. Rowatt, mentor

Anatomy of a Film Collection: What Movie Ownership Says About Personality

With movies as popular as they are today, the fields of psychology and media have convened surprisingly little to investigate links between movies and personality. While this past literature makes some links between personality and genre preferences, this thesis expands that research to consider a tangible reflection of personality: home movie libraries. In this study, participants completed several personality inventories, reported their movie preferences and habits, and listed their home movie libraries. Movie library content was first correlated with specific personality factors. After regression analyses, the links between genre ownership and personality were revealed to have a strong gender-driven component. This research provides a new perspective for media research that also opens many opportunities for future study.

Manasa Reddy, University Scholar
Dr. Gary Elkins, mentor

Is Concordance Between Objective and Subjective Hot Flash Measures Associated with Atmospheric Temperature?

Hot flashes are the most common complaint of women during the menopausal transition, and frequency and intensity can be so severe as to significantly diminish quality of life. Current research is primarily directed at finding alternative treatments to estrogen therapy, and accurate measurement of hot flashes is central to determining the efficacy of possible interventions. The use of sternal skin conductance (SSC) has been previously validated as an objective measure of hot flash occurrence in laboratories with controlled temperature, but several studies using ambulatory SSC monitors find low concordance with subjective report of hot flashes. This study seeks to explore the postulation that atmospheric temperature may play a role in causing this lower level of concordance. The data of seven women wearing the Biolog ambulatory SSC monitor (UFI, Model 7-day 3991 SCL, Morro Bay, CA) during warm (79-90°F) weather were compared with that of seven women monitored during cool (32-57°F) weather. Using a chi-square test of independence to compare the rates of false negatives, false positives, and true positives between the two groups, the test found a small but significant negative association ($p = 0.006$) between concordance and atmospheric temperature. The results of this exploratory study suggest that higher temperatures may play a small role in decreasing concordance between SSC and electronic event marking; further investigation of this relationship on a larger scale would better confirm this finding. The great variation in concordance among individuals, however, is most likely attributable to numerous other factors.

Zach Reece, Mathematics
Dr. James Garven, mentor

The Use of Catastrophe Bonds to Finance Large Scale Disasters

The past decade has been arguably the most disaster prone decade in U.S. history. Catastrophic risks pose a major threat to insurers who underwrite in disaster prone areas. The inability to diversify their portfolio, keep rates down, and mitigate inherent risks all present problems to the insurer. Traditional approaches to cover losses cannot be used since regulation drives prices down below a fair rate that an insurer would like to charge in order to cover these risks, forcing insurers to find alternate means of financing these losses. A more cost effective way of financing these exposures is the use of Insurance-Linked Securities (ILS) which emerged in the past decade and a half. This paper focuses on one of these ILSs, Catastrophe Bonds (cat bonds), and their role in financing losses from catastrophes. This paper provides a general overview of the different methods for financing catastrophes as a background to the discussion about cat bonds. It then analyzes the overall effectiveness of cat bonds since their inception in the late 1990s. Through the use of data on returns, this paper should indicate if cat bonds need to be used more or less as a means for financing insurance losses.

Jessica Reynolds, Journalism: News Editorial
Professor Carol Perry, mentor

"My Life": An inspirational magazine for teenage girls

The media is often accused of biased reporting, sensationalizing stories and creating false ideals. The media plays an important role in today's society and needs to be responsible for its content. This study focuses on magazine production and the effects magazines have on their targeted audiences. It also focuses on how magazines influence young females during a crucial time of their lives. Adolescence is one such crucial time, particularly for females' faith development as well as moral growth. The magazines they read can play an important role in their development of self worth. I created an uplifting magazine for teenage girls with a Christian undertone. "My Life" is meant to be a positive outlook for girls and an attempt to correct the corrupting influence of certain media.

Peter Robinson, University Scholar

Dr. Kevin Pinney, mentor

Synthesis of Bioreductively Activated Prodrugs of Nitrogen-Substituted Combretastatins

Vascular Disrupting Agents (VDAs) are a promising new class of anti-cancer pharmaceuticals. Compounds such as the combretastatins, isolated from *Combretum Caffrum*, function by binding to tubulin subunits within the cell and preventing polymerization into microtubules. Microtubules are essential structural components of many cells, and their disruption inflicts damaging morphological changes to the epithelial cells that line the capillaries supplying a new tumor with blood. Administration of VDAs occludes blood supply to the tumor, causing necrosis with 24h. In the absence of additional therapies, a thin layer of viable cancer cells remains unaffected, called the viable rim. Bioreductive prodrugs are compounds whose active sites are masked by a chemical moiety that is cleaved only in the presence of nitroreductases. These enzymes are upregulated in hypoxic physiological conditions such as the tumor microenvironment. It is hypothesized that the addition of a nitrothienyl group to a previously synthesized combretastatin VDA will impart new selectivity for drug delivery. (Z)-2-methoxy-N-((5-nitrothiophen-2-yl)methyl)-5-(3,4,5-trimethoxystyryl)aniline was synthesized via a Wittig reaction of 5-(bromomethyl)-1,2,3-trimethoxybenzene with 4-methoxy-3-nitrobenzaldehyde. This yielded the Z-stillbene portion which when reduced to its corresponding amine was joined via reductive amination with 5-nitrothiophene-2-carbaldehyde to achieve the target molecule.

Natalie Rodgers, Studio Art

Dr. Julia Hitchcock, mentor

An Investigation

I am conducting research on oil painting through creation of a series of large oil paintings on stretched canvas. The canvases range from large rectangles of 4' x 3' to an arrangement of smaller square and rectangular canvases which together comprise a size slightly smaller than 4' x 3'. Throughout my paintings I am starting out with a source material of objects of trash floating in Waco Creek and then abstracting them through my use of color, shape, line, value, and paint texture. Through different readings as well as through my painting process, I am learning about perception, color properties, different paint applications, and the importance that art come from the spirit. Overall, I am learning about the numerous variables that are present in creating a painting. I have found that painting is a very complicated and intellectual process. Despite doubts, I have also found that creating abstract paintings can be a meaningful pursuit if the artist uses intellect and works from the spirit.

Andrew Rose, Management and International Business

Dr. Christopher Marsh, mentor

*Does Weber's Thesis Hold True for Chinese Economic Development:
An Analysis of Christianization and the Rise of Capitalism in China*

China is a country that has seen rapid economic growth in the last four decades. From 1978-2005 China's GDP saw an average increase of 9.6%. Max Weber states that, throughout its history, China has not been a country that is conducive to capitalistic institutions such as of the West. He maintains that, "compared to the Occident, the varied conditions which externally favored the origin of capitalism in China did not suffice to create it" (Weber 248). Weber's most well-known theory is that capitalism exists because of a "Protestant ethic" to work to glorify the Christian God rather than use work as an expedient to gain wealth for its own sake. Although many of Weber's theories are outdated, there is still validity in his primary assumption that the Protestant "calling" to worship God through work simply as a means to glorify God is the root cause for the existence of capitalism. Weber presents a convincing argument for why capitalism prevailed in the West, but China's economy is growing now, as well as its Christian population; does Weber's argument that Protestantism influenced capitalism hold true in China? The purpose of my thesis is to test this hypothesis and determine if there is a direct relationship between the Christianization of China and its subsequent economic development through the expansion in capitalism.

Rachel Rotondi (with Anica Debelica), Biology

Dr. Kenneth T. Wilkins, mentor

Insect Size as a Determining Factor in Prey Selection by Insectivorous Bats

The procurement of food is an important aspect of an organism's survival. In insectivorous bats, prey selection is well studied, with research focusing on taxonomic identification of prey species. However, there may be other factors that affect the type of prey that a particular bat species will hunt such as bat bite force, insect hardness and insect size. The purpose of this study is to determine if there is a relationship between size and relative hardness of prey and the size (forearm length) of bats. The study was conducted at Sam Houston National Forest, Texas. Bats were caught using a triple-high net, while light traps were used to collect insects hourly. We expected that smaller bat species as well as subadults of larger species would feed on smaller and softer insects than the adults of larger bat species. We found a strong positive correlation between bat forearm length and beetle size, but no significant trends with the softer insect orders.

Rachel Sherhart, Biology

Dr. James Marcum, mentor

Deadly Mistakes: Understanding Medical Error and Possible Solutions

In the medical world, doctors and patients are plagued daily by the potentially deadly and costly effects of medical error with as many as 98,000 people dying each year as a consequence. This thesis explains the types of medical error encountered, dividing them into process errors and knowledge and skills errors, and gives real world examples of error drawn from personal observation and the observations of other medical professionals. Additionally, this paper focuses on some of the root causes of medical error and, most importantly, the possible solutions that can be implemented to prevent error from occurring. Through the understanding of medical error and its manifestations, efforts can be made toward protecting patients more effectively.

Samantha Sirignano, Mathematics

Dr. Manfred Dugas, mentor

The Spirals of a Sunflower

Sunflower florets spiral in a beautiful, bidirectional curved pattern based on the golden angle. This angle is often found in other plants with spiral phyllotaxis and seems to space their primordia (or the initial growth of the organs studied) extremely well. The golden angle may be so common in nature because of how efficiently it spaces plants' primordia and the evolutionary advantage this confers. The purpose of this paper is to produce and analyze a growth model of the spirals a plant's primordia would produce based on a divergence angle, or the angle between consecutive primordia. The study tests these models in a novel way, using a graph and value determined by a divergence angle's spiraling model to evaluate the spacing produced by each angle. Finally, this paper concludes with findings on maximal angles for spacing in spiral phyllotaxis and a suggestion on what remains to be studied.

Anna Marie Sitz, University Scholar

Dr. R. Alden Smith, mentor

The Image of Aeneas in Ancient and Late Antique Art

Though Aeneas is best known from Virgil's epic, other literary and visual sources from the ancient world depict the Trojan warrior in extremely varied guises and roles. Both the literary accounts and artistic representations comprise positive, negative, and ambiguous portrayals of the Roman "hero." Nevertheless, most representations of Aeneas from the ancient world fall within a tradition of pictorial imagery. The aim of this thesis is to chart the evolution of the Aeneas tradition in Italy beginning with Greek and Etruscan art and stretching through Roman art to the late-antique era. Greek and Etruscan pottery reveals certain characteristics of Aeneas: military might, duty to his father, levelheadedness, and a special fate. After the Romans had adopted the Trojan as their founder, specific Romans, such as Caesar and Augustus, appropriated images of Aeneas for their own political purposes. The images of Aeneas in two late-antique illustrated manuscripts demonstrate the Trojan's shift from his role primarily as a national founding figure to the role of a dramatic literary figure.

Sarah Skipper, Psychology

Dr. Helen Benedict, mentor

Effects of Personality Traits on Parents' Treatment Decisions for Autistic Children

The prevalence of autism in the United States has now reached 1 in 150. Due to the spectrum of disorders that fall under the broad title of autism, individualized treatment plans must be developed for each child diagnosed. With all the treatments that are being advertised and the lack of sufficient and consistent information, how do parents make proper treatment decisions? This study aimed to help understand the psychological and emotional processes that factor into making treatment decisions for autistic children by examining parent personality traits, the number and type of treatments used, and the perceptions of autism and treatment. To assess the relationships between these variables 13 parents belonging to the Heart of Texas Autism Network and the Baylor Autism Resource Center completed an online survey and personality questionnaire. The results of several correlations show that the factors contributing to the number and type of treatment used include personality traits, perceptions of autism, and perceptions of treatment. The findings of this study can be used to help parents and health care professionals more thoroughly understand the psychological processes that contribute to treatment decisions and help them make more informed future decisions.

Christina Skrovanek, Biology

Dr. Kenneth T. Wilkins, mentor

Effect of Prescribed Burns on the Bat Community in Southeastern Piney Woods

Prescribed burns are a common form of management in forests. These controlled burns improve habitat conditions for certain species, like the red-cockaded woodpecker. The purpose of our study was to determine how another group of flying vertebrates, forest-dwelling bats, might be affected by burns. We netted bats during summer 2009 in a portion of Sam Houston National Forest (SHNF) managed by prescribed burns to determine the community structure of bats. Our results served as experimental data. For control and comparative experimental data we searched the scientific literature for information on bat communities of other managed and unmanaged pine forests in the southeastern United States. While we predicted that the bat community would consist of the same species as expected in this range historically, we expected the open mid-story created by burns to favor open-adapted bat species. We netted 119 bats of eight species over six nights, most of which were open-adapted species. The species diversity in SHNF was similar to that found in other studies conducted in comparable forest types in the southeastern United States. Open-adapted species made up a large portion of our captures, suggesting that the prescribed burns benefit these bat species as well as the red-cockaded woodpecker.

Harry Smith, University Scholar

Dr. Dan Hanchey, mentor

Taking a Look Back: Cicero's Dramatic Influence on the Augustinian Idea of Providence

Augustine's conversion to Christianity is often misinterpreted as a momentary event in the garden, in which he receives the divine "Tolle et Lege" command and then suddenly is able to abandon the lust that has hindered him for his entire life. Rather, Augustine's immersion into Ciceronian skepticism opened his eyes to the possibility of faith: just as Cicero finds faith necessary in life (though Cicero himself was not a Christian), Augustine is captivated and transformed by Cicero's religious stance. Augustine's definition of providence lies not in chance but in divine intervention: there must be a God, since man is capable of practicing faith. Though Cicero did not place his faith in the same God as Augustine, he introduces this integral concept through his transmittal of Hellenistic philosophy, and shows Augustine and all of his readers that faith is essential.

Sara Sommers, Speech Communication

Dr. Beth Lanning, mentor

Battle of the Bulge: Why childhood obesity is one of the most challenging issues facing our next generation and what must be done to prevent its spread

For the past decade, childhood obesity has been increasing at epidemic proportions. Childhood obesity increases the risk of diabetes, hypertension, and heart disease. The increase in preventable illness leads to increased health care costs across the nation. However, not only physical health issues plague our nation of obese youth. Childhood obesity increases the risk of psychological illness due to decreased self-esteem and increased depression. These psychological and physical impacts of obesity lead to decreased productivity for our nation and decreased quality of life for obese individuals and their families. A number of dietary factors influence the risk for obesity in children including fat, sugar, and dietary fiber intake. In addition, there are many sociological and environmental factors that affect childhood obesity including socio-economic status, home environment, and the amount of time spent watching television. In order to reverse this detrimental epidemic, it will take a large amount of effort on the part of the children themselves, their parents, and support from the government.

Raymond Stewart, University Scholar

Dr. Alexander Pruss, mentor

The Probabilistic Argument from Evil

The probabilistic argument from evil moves from the premises that (1) probably, there is pointless evil and (2) a morally perfect being would prevent pointless evil if he could and knew of it to the conclusion that (3) probably, there is no omniscient, omnipotent morally perfect being, i.e. no God. Both of these premises can be challenged and I will do so. First I argue that attempts to establish (1) fail. Moreover, even if they succeeded, there might be subjective factors which justify withholding assent from (1). Second, I argue that it is difficult to see how (2) can be known, true and significant in any world significantly like ours. Further, it is not clear that there can even be such a thing as "evil" or a "moral defect" without the existence of God. This done, I will present a number of theodicies in the final chapter.

Tyler Talbert, International Studies

Dr. Joan Supplee, mentor

Juan Domingo Perón and Hugo Chávez Frías: The Evolution of the Latin American Authoritarian and the Longevity of the Populist

This thesis contends that these two leaders, Argentina's Perón and Venezuela's Hugo Chávez, embody the ideals of populism and are manifestations of the recurring trend of Latin American authoritarianism. This project demonstrates that populism emerged from the leadership style prevalent in the period after independence known as caudillismo. The research then examines how populist leaders and the political style of populism has persisted for nearly a century. Using Perón and Chávez as examples, this thesis contends that populism appears in societies with similar social, political, and economic voids. The two leaders filled those voids by carefully constructing "patron-client sets." They became legitimate benefactors, utilizing nationalist rhetoric, and demonstrating their revolutionary and independent stances. This study finds that the populist's patron-client set transcends the exchange of goods for votes. The crux of the populist's longevity is social programs; by providing an improved quality of life, the populist inspires long-lasting fidelity. As a result of this analysis, populism's salient features can be isolated and examined, a cogent study of present populist leaders can be conducted, and more reasoned inferences can be made about the future of Latin American populist regimes.

Steven Kyle Throneberry, Biochemistry

Dr. Bryan Gibbon, mentor

Characterization of Starch Synthase Activities in Quality Protein Maize

Zea mays (maize) is a thoroughly studied model organism of genetics and an important source of protein and carbohydrates worldwide. The *o2* mutation in maize results in higher lysine and tryptophan contents, which are essential for human and animal health, but unfortunately also has a soft starchy endosperm and lower yield. To ameliorate these disadvantages, scientists developed quality protein maize lines (QPM) which carry *o2* modifier genes (*mo2*) that lead to a vitreous, hard kernel. Little is known about the physiological mechanisms of *mo2* genes, but studies of modified *o2* lines implicate changes in starch structure that help restore the vitreous phenotype. Accordingly, the *sugary2* (*su2*) mutation affects a change related to the action of Starch Synthase IIa (SSIa). On a molecular level, the Starch IIa mutant amylopectin (a form of starch) most closely resembles the modified *o2* phenotype. Using a zymogram procedure, which includes SDS-PAGE gel, in-gel enzyme activity incubation, and iodine staining, the activities of Starch Synthases (particularly IIa) can be characterized. Initial data shows that starch synthase activity is different in QPM and wild type maize and also that while some starch synthases seem to be upregulated as the endosperm matures, other starch synthases are down-regulated. Further research must be done to show the complete characterization of the activity of these enzymes with consideration that they form multi-subunit complexes.

Jordan Tracy, Economics

Dr. Charles North, mentor

Circuit City Unplugged: An Economic Analysis of the Rise and Fall of Circuit City

This thesis examines Circuit City's history and analyzes the causes of the company's ascension to the top of the consumer electronics retail industry as well as its subsequent demise and bankruptcy. Financial data, business theories, expert opinions, and news articles are used to understand Circuit City's strengths and weaknesses and where the company erred in its business practices.

Melissa Tsiu, Medical Humanities

Dr. Jonathan Tran, mentor

Conscientious Objection: Who has the right to refuse and when?

There has been a longstanding debate within the medical field about whether or not healthcare professionals have the right to refuse to perform certain medical duties. Recently, pharmacists have entered the spotlight with the question of whether or not they have the right to refuse to dispense contraception. This thesis examines the concept of conscientious objection starting with a discussion on the conscience and its formation. It then transitions to applying conscientious objection specifically to the field of pharmacy to see how it affects the profession.

Faith Wardlaw, University Scholar

Dr. David L. Jeffrey, mentor

The Pearl as a Mirror for the Soul

The 14th century poem Pearl is a deliberate means of confessional catechesis which, by situating itself firmly in Augustinian tradition and drawing from contemporary Church documents and handbooks, shows the necessity and utility of confession for salvation. This thesis shows, after giving an overview of the text and history of the Pearl in the first chapter, the influence of Augustinian and Thomist theology and the Fourth Lateran Council of 1215 on the Pearl-poet's theology. The third chapter explores the numerical and structural basis of the poem, especially looking at the use of imperfections within the poem in order to offer a commentary on the sacrament of confession. In the final chapter, the mirror of the Pearl is discussed, that mirror into which the narrator of the poem, and ultimately his reader, can look at himself in conjunction with the Lamb and thereby be changed into the image of the living God.

Laura E. Weseman, Neuroscience

Dr. Charles Weaver, mentor

Gesture as thought: How spontaneous, non-symbolic gesticulations facilitate language production

Language and gesture are inextricably linked. Gesture develops concurrently with language acquisition in children, and most gesture occurs exclusively in the context of speech. An easily observable function of gesture is facilitation of listener comprehension. When pointing or indicating the physical properties of an object or pictorially mimicking the semantic contents of speech, gesture presents auxiliary information to a listener. But speakers gesture in the absence of a visible listener and, in some experiments, congenitally blind people gesture at the same rate as normal participants even when speaking with other blind people, suggesting that gesture is more than accessory. Focusing on the spontaneous, non-symbolic gestures that accompany speech and drawing evidence from the neural mechanisms that underlie the connection between language and motor action, this thesis considers how gesticulation facilitates language production. I argue that gesture is a form of embodied cognition that reciprocally interacts with speech in real-time to produce a final utterance. I then consider the implications these findings have for the treatment of language-loss disorders.

Anam Whyne, Neuroscience

Dr. Joseph Ferraro, mentor

*Undergraduate mate choice preferences at Baylor University:
does 'similar religious background' matter?*

In most contemporary societies, people freely choose their long-term mates. When making these choices, their preferences are influenced by both evolved biological and psychological predispositions, as well as by local cultural practices. A substantial literature details undergraduate mate choice preferences in a wide diversity of settings, both within the United States and abroad. The literature shows that when selecting a prospective mate, US undergraduates consistently rank the traits of 'similar religious background' low in importance.

In this study, we examine undergraduate mate choice preferences at Baylor University. In contrast to studies from predominantly larger secular institutions (University of Michigan, etc.), Baylor students consistently rank 'similar religious background' as a relatively important criteria when selecting a long-term mate. This result is explored from biological, psychological, and cultural perspectives.

Abby Worland, History

Dr. Robert Miner, mentor

"The prize is glorious and the hope great;" A Study of the Interrelationship between Myth, Death, and the Afterlife

Rodney Stenning Edgecombe coins the term *mors viva* to refer to the literary possibility "of tracking the experience of death with the conscious mind." This thesis synthesizes three classical examples of *mors viva*: "The Myth of Er" by Plato, "The Dream of Scipio" by Cicero, and Book VI of Virgil's Aeneid. The sojourns into the afterlife of Er, Scipio, and Aeneas provide insight into the nature of the soul as immortal and consequently, the nature of death as a journey not destruction. Since the afterlife is placed on a continuum of existence with this life, the authors promote the cultivation of virtue as the only means by which to succeed here on earth and garner rewards, not punishment, after death. Finally, the role of myth as a vehicle for understanding divine truth will be examined.

James Yarbrough, English

Dr. Robert Darden, mentor

Into the Darkling Day: A Novel

Exploring the role of technology in our modern lives and the moral issues of terrorism, *Into the Darkling Day* follows Gabriel as he joins the Collective, a terrorist organization hoping to show the world how dependent they have become on modern technology. Drawn in by his own observations of the world and the way people choose to live their lives, Gabriel soon finds himself juxtaposed between farming and small acts of terrorism, designed to disrupt the power grid and technological "crutch" of the world. As Gabriel learns more about the Collective and their ultimate goals, however, he is forced to choose between his morality and his own disgust at the modern technological world. This thesis project focuses on the actual writing of a long work of fiction, balancing characterization, plotting, writing style, narrative voice, and pacing in the construction of a novel.

OTHER SPRING 2010 GRADUATES

DaNae Couch, English

Dr. Luke Ferretter, mentor

Oscar Wilde's Romantic Portrayals of Art in an Aesthetic World

Barrett Doran, Philosophy

Dr. Todd Buras, mentor

John Driver, Classics

Dr. Kenneth Jones, mentor

Dustin Fowler, Biochemistry**Johnathan Kim, Biology and Medical Humanities**

Dr. Matthew Cooke, mentor

Elizabeth Lawrence, Psychology

Dr. Tamara Rowatt, mentor

Stephen Li, University Scholar
Dr. William Hillis, mentor

Alyssa Munkres, Neuroscience
Dr. Jaime Diaz-Granados, mentor

Nathan Patterson, Biology
Dr. James Marcum, mentor

William Priest, University Scholar
Dr. R. Alden Smith, mentor

Jason Scovell, Baylor Business Fellows
Dr. Bryan Gibbon, mentor

Collin Talhelm, University Scholar
Dr. Richard Duhrkopf, mentor

SUMMER AND FALL 2010 AND SPRING 2011 GRADUATES

Emily Ivy, History
Dr. Jerold Waltman, mentor

The Fairness of Workfare in Regards to Mothers

In the current policy of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), there is a large influence placed on "workfare" versus an unrestricted dole. The policy of workfare usually requires that welfare recipients be actively searching for work or employed in order to receive government funds. The goal of this thesis is to explore the idea of whether the policy of workfare is fair to its participants, examining in particular mothers who may have received governmental funds in the past in order to provide at home care. I will examine different writings on theories of economic, social and political fairness. I will also examine studies that question the different qualities between at home care and out of home care, paying particular attention to whether one is more beneficial than another for children of welfare recipients.

Christina Jeffrey, Psychology

Dr. Helen Benedict, mentor

Using Narratives to Assess Resiliency in High-Risk Children

Many high-risk children have difficulty obtaining the resiliency needed to overcome the adversities of a penurious lifestyle. A sample of 15 extremely high-risk children between the ages of 5 and 10 who were graduates of the Talitha Koum Institute, a program designed to foster resiliency, were tested on two psychological assessment scales. Experimenters administered 13 story beginnings from the Story Stem Assessment Profile (SSAP) to the children. Narratives were recorded, transcribed, and coded to assess various factors of the children's stories including familial representations, positive adaptation, and aggression. The children's school teachers were given the Behavior Assessment System for Children-Teacher Rating Scale (BASC-TRS) to assess the children's functioning in a classroom setting. Coded results from the SSAP were correlated with the responses on the BASC-TRS. Results are pending as the experiments are ongoing.

Chelsea Mitcham, Secondary Education Mathematics

Dr. Trena Wilkerson, mentor

Effects of Relevant Verbalizations on Symbolic Understanding

My classroom experience as student and teacher along with research in the field led me to wonder how having students provide relevant verbalization of an algebraic equation impacts comprehension of the meaning of variable-symbolic combinations. I believe exercising students' abilities to move in this direction by having them generate a relevant verbal representation from a given symbolic/variable equation could enhance their understanding of the symbols and variables within equations. This should in turn increase their mathematics performance scores and set them up for future success. To test this hypothesis, I implemented an action research study in two distinctly different high school mathematics classrooms. My results demonstrated that my hypothesis was correct—having students provide relevant verbalizations from symbolic equations improves their understanding of the mathematics concepts under consideration.

Tara Molina, Biochemistry

Dr. Thomas McGrath, mentor

Synthesis and Characterization of 13-Vertex Metallocarborane compounds

Boron hydride clusters and their derivatives form three-dimensional polyhedral structures that typically have between five and twelve vertexes. The highly stable and highly symmetrical 12-vertex, icosahedral geometry has long been seen as a thermodynamic barrier that has inhibited the practical development of "supraicosahedral" boron cluster chemistry of species with 13 or more vertexes. Traditional approaches to supraicosahedral compounds have required a two-step synthetic process involving reductive opening of a 12-vertex precursor, followed by addition of a suitable transition metal fragment that will provide the thirteenth vertex capping the newly opened 12-vertex cluster ligand. The aim of this project will be to exploit an alternative methodology whereby the cluster-opening metal reagent itself also provides the necessary capping vertex, so that the overall process occurs in a single step, where the transition-metal synthon effectively binds into the boron cluster.

Andrew Pottkotter, Philosophy and Studio Art

Dr. Stuart Rosenbaum, mentor

*Museum Anesthetic: The Incompatibility of John Dewey's
Philosophy of Art with Museum Theory and Practice*

The artworld—a term encompassing not only the interactions of artists, collectors, archeologists, philosophers, and art historians, but the whole collective aesthetic consciousness of our society—is nowadays thoroughly dominated by a single institution: the museum. The museum (perhaps not so subtly) conditions how we view artworks, and significantly determines what art means in our lives. The mentality toward art we accordingly adopt we might term the museum conception of art. In 1936, the Pragmatist philosopher John Dewey published his major work on aesthetics called *Art as Experience*. In this book, Dewey provides us a very different vision of what art is: Art, Dewey maintains, is not a class of mere objects to be collected and fetishized; rather, art is a way of living. Art is experience, experience at its most cultivated, its most enriched, but ordinary experience all the same. For, all experience is continuous, and the full realization of this continuity is the essence of the aesthetic in experience. I argue that if art is to enrich our lives in the way Dewey describes, then the idea of the museum contravenes its very purpose.

Kate Purdom, Studio Art
Professor Karl Umlauf, mentor

The Journey of the Soul

Through a series of paintings, I am exploring the soul's journey to discover the True, the Beautiful, and the Good. I use the classic triad as a means to approach the metaphysical realm of the soul. That which is external to our physical reality, is better understood by abstractions and experiences. The technique I use to create the abstract quality of my pieces reflects the contemplative life of the soul, the inner reflection that occurs in the subconscious.

Sheevam Shah, Biology and Biochemistry
Dr. Bryan Brooks, mentor

Predicting mammalian drug-drug interaction results using fish models in the laboratory

Drug-drug interaction is an important field of study considering the heavy use of pharmaceuticals today. Pharmaceuticals are vital to this field to determine safety assessments, aid in new product development, and to test existing products. Interactions were tested between the two compounds diphenhydramine and dextromethorphan. *Pimephales promelas* (Fathead minnows) were used to test the potential interactions. They were used due to their high number of conserved human drug targets. The main receptor in question is the CYP450 2D6. Dextromethorphan is oxidized by CYP 2D6, while diphenhydramine acts as a CYP 2D6 inhibitor. This study hopes to predict mammalian drug-drug interaction results using fish models in the laboratory. Acute and chronic toxicity tests were performed using standard EPA methods.

Katharina Wyns, Biochemistry
Dr. Sung-Kun Kim, mentor

Cloning, Expression, Purification and Characterization of Scm3, Cse4 Δ 1-102 and Cse4 Δ 1-128

Within the centromeric region of DNA, canonical H3 histones are replaced by histone variants, commonly referred to as CenH3 proteins. In *Saccharomyces cerevisiae*, the histone H3 variant Cse4 localizes to a point centromere region defined by ~125 bp DNA sequence. Presently, the mechanistic assembly and deposition of the Cse4 histone is unknown. However, nonhistone protein Scm3 (suppressor of chromosomal missegregation) specifically colocalizes with Cse4 and is thought to be responsible for Cse4 nucleosome assembly, disassembly and centromeric association. In order to elucidate the role of Scm3 and better understand the structure of the Cse4 nucleosome, Scm3 and two N-terminus truncated Cse4 copies (Cse4 Δ 1-102 and Cse4 Δ 1-128) were cloned, expressed, purified and reconstituted into nucleosomes for characterization.

Laura Glathar, Entrepreneurship
Dr. Kathryn Mueller, mentor

Danielle Grootemaat, Baylor Business Fellows

Ben Nguyen, Biology

Nicholas Saltarelli, University Scholar
Dr. Troy Abell, mentor

Marianna Stell, Great Texts
Dr. Phillip Donnelly, mentor