Professional Innovation? An Analysis of Legislative Professionalism and Legislative Innovation

Are more professional legislatures more innovative? For decades, one common criticism is that U.S. legislatures are too slow to innovate to address new issues. Many suggest that professionalizing legislatures, that is, making legislating a full-time job and providing greater resources, leads to greater innovation. In this thesis, I use a novel 40-year panel dataset to assess whether or not professionalization improves legislative innovation overall and in specific policy areas. This topic lies at the intersection of my interests in American legislative politics and quantitative analysis. The number of American state legislatures and their diversity in professionalization provide a valuable way to obtain insight into the impact of professionalization. Additionally, the recent growth in publicly available data about state governments has enabled the use of more advanced methods and more detailed analysis.
Spotlight on South Bend

For my senior thesis, I focused on the effects of former mayor Pete Buttigieg’s U.S. presidential campaign on the city of South Bend. I created a podcast miniseries that captures this moment in South Bend’s history, looking particularly at Buttigieg’s time as mayor, how this city launched him to the national stage, and how people feel the national spotlight on the city now.

As a journalism and anthropology student, I knew I couldn’t pass up the opportunity to focus on such a historic moment happening in this very city. Mayor Pete is an interesting figure who has already made history, and who was attempting to do it again. That’s a story I wanted to help tell.

Received funding from the Glynn Family Honors Program.
Arms Race: How Arm Injuries Impact the Earning Power of MLB Pitchers (and the Relationship Between MLB and Its Players)

I studied the impact that prior arm injuries have on Major League Baseball pitchers’ career earnings when controlling for age and performance. Additionally, I looked at the broader scope of labor relations between Major League Baseball and its players association, along with how the impact of arm injuries may play a role in these relations.

I grew up playing baseball, and I suffered my own devastating arm injury at a young age, which effectively ended my playing career. Furthermore, I am going to law school after graduation and plan to focus on labor law. Thus, I thought a thesis on labor relations in baseball, which is a major problem facing the game’s pitchers, would be a fitting project.

Logan Boyle
- Majors: Neuroscience and Behavior and Economics
- Glynn Family Honors Program
- Adviser: Chris Cronin
Hesburgh Between Two Worlds: The Idea of a Catholic University at Notre Dame

In this project, I write about the purpose and mission of a Catholic university, considered in theory and practice. Using the works of authors such as St. John Henry Newman, Rev. Theodore Hesburgh, C.S.C., and Christopher Dawson, I argue that Catholic universities, and Notre Dame in particular, must offer a distinctively Catholic form of liberal education to their students — one in which the discipline of theology is granted pre-eminent status.

I chose this topic after three long years of gradual reflection on the challenges that Notre Dame faces today in strengthening its Catholic identity and its commitment to offering all students a genuine liberal education. In many ways, I sense that Notre Dame as a whole has mostly failed at these two related tasks since the mid-20th century, and I wanted to understand the historical background that explains our University’s present condition.
La Borgauchesca

My project is an investigation of the work of author Jorge Luis Borges and his connection to the gaucho literature of his native Argentina. I argue that Borges opts out of his own rewriting, instead allowing his characters — largely constructions of the gaucho canon itself — to enact the reinterpretation of the genre. In the second section of my thesis, “Réquiem para la Borgauchesca,” I explore the aftermath of this literary intervention.

After reading “El Sur” in a class in Spain my sophomore year, I was struck by how Borges, a famously cosmopolitan author, interacted with the literary traditions of his own country. Understanding the conversion from regionalism to universality in this literature is an important topic, especially in light of the rapid globalization of the 21st century.

Trevor Canty

- Major: Spanish (Honors)
- Supplementary Major: Arts and Letters Pre-Health
- Glynn Family Honors Program
- Adviser: Juan Vitulli
Robust Genetic Algorithm Hyperparameter Selection via Taguchi Experimental Design

Genetic algorithms are search algorithms that are effective in a variety of applied settings. However, they are sometimes difficult to implement due to the variety of hyperparameters that must be chosen and tuned by researchers. By using efficient experimental design methods, my thesis aims to make hyperparameter tuning easier.

I did a summer research program at UCLA that used genetic algorithms and neural networks to optimize the design of satellite constellations. During this project, I became interested in genetic algorithms and wanted to do research to help make them more accessible to other researchers and disciplines.

Traveled to Denver, Colorado, with funding from the Glynn Family Honors Program.
The Role of APC in Chemotherapy Resistance in Breast Cancer

Triple negative breast cancer (TNBC) presents a significant challenge to effective treatment due to the lack of targeted therapies. For this project, I studied the mechanisms of resistance to chemotherapy in breast cancer lacking Adenomatous Polyposis Coli (APC), a tumor suppressor that is lost in up to 70 percent of sporadic breast cancers. The aim of my thesis is to explore the cellular mechanisms through which loss of APC results in chemoresistance in breast cancer cell lines.

My involvement in research has sharpened my critical thinking and shown me the value of basic science as it contributes to the field of cancer therapy. I was drawn to this project because of the analytical challenges it presented — so much is still unknown about how the loss of APC results in chemoresistance. The skills that I have developed while working on this project will be invaluable as I begin medical school in the fall.

Elizabeth Cinquegrani
- Major: Science Preprofessional Studies
- Minor: Science, Technology, and Values (STV)
- Glynn Family Honors Program
- Adviser: Jenifer Prosperi

Received funding from the Glynn Family Honors Program.
Susanna Cohen

- Major: Architecture
- Minor: Italian
- Glynn Family Honors Program
- Adviser: John Stamper

A Conference Center for Mohonk Mountain House

People respond to their surroundings, both built and natural. Architecture that responds to nature can help people to experience the feelings of calm and encouragement sparked by creation. My thesis consists of a design proposal for a conference center intended to promote humanitarian and conservation efforts, which finds its ideal location in the peaceful beauty of the gardens of Mohonk Mountain House in New Paltz, New York.

My family visited Mohonk Mountain House many times when I was young. This historic resort is built mainly in the Victorian style on a lake in the Shawangunk Mountains and surrounded by 2,000 acres of forest. The impressive hotel, which has hosted many conferences throughout its 150-year history, inspired the design of this conference center.

Travelec to New Paltz, New York, and Asheville, North Carolina, with funding from the Stamps Scholars program.
Place and Happiness in the United States: The Effect of Migration

The question of whether people are happier in cities or in rural areas has received considerable attention. Using General Social Survey (GSS) data, I examine how migration from one type of place to another changes the effect of place on happiness.

Differences in urban and rural lifestyles have always interested me, and I was surprised to learn that people in rural areas are generally happier than those in urban areas. I was inspired to see whether that remained true for people who moved from one place to another.
Understanding Malaria Through a Complex Socio-ecological Framework

In my thesis, I seek to understand persistent malaria through a complex adaptive system and posit that interventions against malaria have failed because they address malaria as a simple problem.

As a science-business student, I have particularly enjoyed examining health issues outside laboratory settings. This thesis addresses my interest in health care and medicine, while incorporating aspects of ecology, economics, and sociology that have shaped my major studies.

Jessica D’Souza
- Major: Science-Business
- Minors: Theology and Philosophy of Science and Mathematics
- Glynn Family Honors Program
- Adviser: Edwin Michael
Method Acting and American Authenticity

I investigate how method acting was aligned with a rhetoric of authenticity that became increasingly popular in early Cold War America. I argue that through its alignment with authenticity, the method, as it was represented in the popular culture, was typified through the white male actor. In my thesis, I explore this typification with particular attention to how female method actors and method actors of color were represented in popular media.

I chose this topic because I was interested in doing star studies and found that a lot of the stars I was drawn to worked within the method tradition. I began to notice, however, that all of these actors I admired were white men — from Marlon Brando to Robert De Niro. I felt it would be best, then, to explore those method actors who had been marginalized from the popular rhetoric of authenticity as it was understood in the 1950s through today.

Traveled to the New York Public Library, Billy Rose Theatre Division, with funding from the Glynn Family Honors Program.
Addison Donaher

- Major: History
- Supplementary Major: Arts and Letters Pre-Health
- Glynn Family Honors Program
- Adviser: Sarah Shortall

Women and Gender Roles in the French Resistance During WWII

I focused on women involved in three French Resistance movements during World War II — Défense de la France, Résistance, and Combat. These women's stories indicate how they used the traditionally feminine roles and behaviors of French society to avoid suspicion long enough to found, participate in, and make successful underground newspapers and operations that helped to proliferate the burgeoning resistance.

Women are largely written out of the literature and memory of the French Resistance because of the masculinist and militaristic rhetoric espoused by the men of the movements after the war. I wanted to bring these women, who faced the same risks and consequences as the men, back into the story and give them the recognition they deserve for their brave and selfless actions.

Traveled to Paris with funding from the Glynn Family Honors Program.
Perovskite Solar Cells: Potential Power for a Bright Future

In this project, I investigated the influence of the halide composition on the temperature-dependent light-absorbing properties of methylammonium lead halide perovskites for the full range of halide ratios. Additionally, I tested solar cells utilizing these compositions to investigate the impact of temperature-dependent light absorption on the real-world parameters that affect field performance. This project elucidates the extent to which halide composition influences perovskites, allowing for better prediction of solar cell efficiencies operating under real-world conditions.

My generation faces the great technological and moral challenge of providing a sustainable home for a world on its way to 8 billion people. Global electricity demand is expected to double in the next 30 years. Burning fossil fuels to power our world emits greenhouse gases that exacerbate climate change, risking increasingly catastrophic human impacts. Perovskite solar cells offer hope as a cheap and efficient renewable energy solution.

Received funding from Notre Dame Energy.
Facial Expression Processing in Social Anxiety Disorder

Social anxiety disorder (SAD) is characterized by fear of negative judgment or scrutiny. Individuals with SAD tend to interpret ambiguous cues as representative of potentially threatening social scenarios and display a tendency to exaggerate or misinterpret facial cues as more negative than the same cues would be judged by healthy controls. My paper reviews current research in this field. I chose this topic because I have been working in the Cognition, Emotion, and Emotional Disorders Lab for the last few years and was interested particularly in SAD because of its high prevalence rate in society. Misinterpretation of facial expressions is an extremely common symptom of SAD of which many people are not aware.
‘Towards the Historical Gethsemane’: The Twin Mysteries of Art and History in the Thought of Konrad Weiß

German Catholic poet and critic Konrad Weiß remains largely obscure despite his significant influence on figures such as philosopher Josef Pieper, jurist Carl Schmitt, and translator Friedhelm Kemp, who wrote that Weiß’s literature comprises “the most meaningful birth from the womb of the German language since Hölderlin.” My thesis acts as an exposition of Weiß’s thought on the meaning and relation of art and history and traces how his contributions have influenced the aforementioned thinkers.

I was introduced to Weiß’s poetry through a number of philosophical works by Josef Pieper. Whenever Pieper referenced Weiß, I encountered a rare depth of thought. Having since learned that Weiß maintains a unique position in 20th-century intellectual history, both known and unknown in academic and popular discourse, I decided it would be a worthwhile endeavor to present him to a new audience through my senior thesis.
Screening for Social Determinants of Health: Inside the Physician’s Office

I spent a week interviewing doctors and nurse practitioners who volunteer at a free health clinic about their roles in collecting information about patients’ social needs and how those needs play into medical care. The providers offered insight on standardizing the collection of information about social determinants of health and on how that information improves health outcomes.

The social circumstances in which a person lives and works are so crucial to their physical health that learning about them is essential to the practice of medicine. I wanted to explore the ways that health care providers glean information on the social determinants of health, in the hope that further research might improve that process and encourage providers to care for the social needs of patients in addition to their physical needs.

Worked with the Volunteers in Medicine Clinic of Hilton Head Island, South Carolina.
Climate Change and a Just Transition: Worker Cooperatives as a Pathway to Economic Empowerment

To avoid climate catastrophe and reach IPCC-recommended net-zero emissions by 2050, 1.1 million fossil fuel workers in the U.S. must lose their jobs. My thesis explores whether worker cooperatives might be a source of sustainable, stable employment for displaced workers, especially those in rural communities with economic dependence on the fossil fuel industry. For my research, I visited Opportunity Threads, a textile manufacturing cooperative, and interviewed worker-owners to construct a case study.

In my economics courses, I only learned about neoclassical capitalist theory, and I wanted to correct some of the bias in my education by studying cooperative economics. I am also deeply concerned by the climate crisis. For my thesis, I connected these interests to explore how climate justice and economic justice are intertwined.
Student Sleep Health

The NetHealth study at Notre Dame collected fitbit data from more than 600 students over the course of four years. I used this wealth of data to get an idea of student sleep habits at Notre Dame and analyzed potential influences on sleep.

I am passionate about data science. With all the data that is collected now, and the increasing capabilities of technology, we can get answers to questions that couldn’t be answered before. Sleep is something that we know is important, and we know many things can affect our sleep, but being able to see exactly how much certain activities influence the sleep of students on campus is a unique opportunity.
Quantification of Cadmium Selenide Nanocrystal Surface Charging Under Photoexcitation

Semiconductor nanocrystals have various potential uses in bio-imaging and catalyzing chemical reactions important in renewable energy production. However, surface charge trapping inhibits their ability to function at maximum capacity. Surface charge trapping is not well understood, so in my research, I used a molecular probe to monitor the accumulation of charges at the surface of nanocrystals over time during photoexcitation.

I joined the Tsui research group during my sophomore year because of my interest in inorganic and nanomaterials chemistry, especially in the way it is used to produce renewable fuels. During my time in the lab, I worked on a few different projects before deciding to focus on this work for my thesis. After graduation, I plan to attend graduate school to continue my study of inorganic and materials chemistry.

Received funding from the Glynn Family Honors Program and the College of Science.
Constantine, the Church, and Constantine’s Church: Studying the Lateran Basilica to Understand the People Who Made It

This project is a detailed study of the Lateran Basilica as it was built by the Roman emperor Constantine I. It uses the church’s appearance, as well as what it would have signified to a 4th-century audience, as evidence to understand the early relationship of Constantine to the Christian community in the city of Rome.

I am fascinated by the relationship between Constantine and the Church. I want to understand what Constantine did for the Church, how the Church responded, how the Church changed (or did not change) as a result of Constantine’s actions, and what it all means for understanding God’s actions in history.
Whiteness in *Orange is the New Black*

The series *Orange is the New Black* tells the story of a white, middle-class woman who is sentenced to a year in prison. Although the show is hailed for its feminist, reformist message, the racial messaging is ambiguous. I investigate this using the throughline of white character representations.

In an era of mass incarceration, it is essential to pay critical attention to how imprisoned people are represented. It’s impossible to understand the representational politics without analyzing race and the ideology of whiteness. I thought *OITNB* was the perfect site to dig into this important topic.
Achieving Virtu — Freedom and Necessity in Machiavelli’s *The Prince* and *Discourses on Livy*

My senior thesis focuses on Machiavelli’s conception of freedom in society. Largely based on a close reading analysis of *The Prince* and *Discourses on Livy*, my paper argues that the “virtu” needed to maintain a stable society is only possible with the freedom that comes from republican government. I chose this topic because I find Machiavelli fascinating to read, not least because he has in many ways shaped our modern conception of politics. His works are funny, intriguing, and more complex and nuanced the more one reads them.

**Ciara Hopkinson**
- Major: Program of Liberal Studies (PLS)
- Minor: Italian
- Glynn Family Honors Program
- Adviser: Emma Planinc
Novel Regulatory Functions of ESX-1 Associated Proteins in Pathogenic Mycobacteria

My project involved investigating the roles that genes in the WhiB6 feedback loops play in virulence of tuberculosis. I used transcriptional and protein analysis to characterize genes coding for proteins in the ESX-1 system. I was able to determine which proteins act as negative and positive regulators in the feedback loop.

I have been working with Professor Champion since my first year and enjoyed discovering more about microbiology research. I chose to work in her lab as I am interested in public health and will be pursuing a career in medicine. This project combined my career goals and interest in genetics.
Gas-phase Enrichment of Protein Termini by Differential-suppression Labeling Proteomics

We investigated how to enrich protein N-termini using various methods to negatively impact the performance of non-terminal protein fragments on a mass spectrometer.

I appreciate the usefulness of this project for future studies and the field as a whole.

William Huffman
- Major: Biochemistry
- Glynn Family Honors Program
- Adviser: Matthew Champion
Designing Collaborative Spaces

For this project, I partnered with the Hesburgh Library renovations team to investigate why students maintain a strict silence in spaces designed for collaboration. I conducted a literature review on collaborative college library spaces, studying how culture, furniture, and room layout affect people psychologically. I then examined the first and second floors of the library, using behavioral mapping, questionnaires, and interviews. Together, my literature review and site analysis provide the library with recommendations moving forward.

The chair of the Hesburgh Library Renovations Steering Committee, Jessica Kayongo, noticed that recent renovations may not have had the intended effect. I decided to help her gather user data, as well as psychological research, to understand why this happened.

Traveled to Rimini, Italy, with funding from the Glynn Family Honors Program.
The Spirit of the Lord God is Upon Me: Methods in Interpretation of Luke 4’s Reception of Isaiah 61

My thesis analyzes the commentary of three figures in the history of Scriptural interpretation on Isaiah 61, the chapter Jesus reads and declares fulfilled in the synagogue in Nazareth in Luke 4. The development of commentary on these passages through history illustrates the impact of Enlightenment-era philosophy on Scriptural interpretation and the unique character of sacred Scripture which accounts for the inextricable relationship between the Old and New Testaments. My studies in theology and physics piqued my interest not just in the contemporary relationship of the two disciplines, but also in the history of their development and the principles which underlie the natural and human sciences in general. Sacred Scripture is key for understanding the proper relationship between human reason and divine revelation, as we approach its study with both scientific methods and deference to God’s Word.

Received funding from the Suzanne and Walter Scott Scholars Program.
The High Efficiency Total Absorption Spectrometer (HECTOR) and Correcting for Inconsistencies in Al-27(p,\gamma)Si-28

The High Efficiency Total Absorption Spectrometer (HECTOR) is a tool for measuring small nuclear reaction cross sections. In order to study the efficiency of HECTOR, resonance strengths of the Aluminum-27(proton,gamma)Silicon-28 reaction measured with HECTOR were compared to previous literature. I chose this topic because I find it incredibly engaging to study the processes that happen in stars and supernovae. It is fascinating that it is possible to study these interactions in our nuclear laboratory here at Notre Dame. HECTOR is an incredible tool for understanding important nuclear capture reaction cross sections, and I continue to be amazed at what we can discover in the realm of nuclear astrophysics.

Received funding from the Glynn Family Honors Program and the College of Science.
'Polish Pride': Exploring Polish National Identity as Communicated Through Sport During the Cold War Years

My thesis explores the role of sports in defining and communicating Polish national identity, especially during the Cold War years (1944-1989). I focused on the role of nationhood, tradition, and sports in showing that Polish national identity was distinct from that of the larger Soviet framework in Eastern Europe.

I chose this topic because I have always been interested in exploring my Polish heritage. Additionally, I have found the Olympics, the World Cup, and other international sporting events to be fascinating examples of the influential role sports has in communicating ideology, supposed cultural superiority, and other larger ideas.

Traveled to Warsaw and Krakow, Poland, with funding from the Stamps Scholars program.
Co-targeting PI3K and MAPK Signaling Enhances Nab-paclitaxel/Gemcitabine Chemotherapy Response in Preclinical Models of Pancreatic Cancer

Pancreatic Ductal Adenocarcinoma (PDAC) is currently the third leading cause of cancer-related deaths in the United States. The current standard of care for PDAC has been able to give an average prognosis of 8.5 months, with a five-year survival rate of 8 percent after detection. My project looked at combining standard chemotherapy with novel drugs targeting downstream effectors of the frequently mutated KRAS oncogene (the MAPK and PI3K axes).

Due to my family history of cancer, I felt drawn to the field of oncological research. Pancreatic cancer stood out to me as a subfield in which more research is needed as prognoses tend to remain extremely poor versus other cancer types. After reaching out to a few labs, I found one in which I fit and could contribute significant, novel research to the field.
McCarley Maddock
- Major: History
- Minor: Constitutional Studies
- Glynn Family Honors Program
- Adviser: John McGreevy

‘America’s Response to the Call of Humanity’: American Refugee Policy and Isolationism Pre-World War II

My project focuses on the failure of a child refugee bill in the U.S. Congress in the summer of 1939. The bill would have allowed 20,000 German children into the United States as the Nazis created a global refugee crisis. I place the failure of the bill into the broader context of American isolationism. After interning on Capitol Hill in summer 2018 and witnessing debates over immigration policy, I became very interested in historic refugee trends. After learning that America failed to open its doors during a time of global need, I wanted to know why. I believe history should be a cautionary tale, and as modifications are made to immigration policy today, the last great failure should be recognized and remembered.

Traveled to the National Archives in Washington, D.C., and the Franklin D. Roosevelt Presidential Library and Museum Archives in New York, with funding from the Glynn Family Honors Program.
The Separation of Corporate Ownership and Control and the Proxy Voting System

My thesis examines how corporate structure separates the interests of ownership and control and how many of the resulting problems manifest themselves in the corporate proxy voting system. I will be working in the financial markets after graduation, and the implications of this topic for the average retail investor make it interesting to me in serving the cause of protecting the rights of all investors.

Natale Mancuso
- Major: Program of Liberal Studies (PLS)
- Minor: Business Economics
- Glynn Family Honors Program
- Adviser: Tom Stapleford
How the Anti-vax Movement Got Out of Control and What We Should Do About It

For my thesis, I completed a literature review to assess the causes behind the increase in measles outbreaks in the European Union. I looked for patterns in the cases in five countries with the worst outbreaks. I then assessed mitigation attempts that countries have implemented and determined which were the most effective so that I could make a policy recommendation.

Despite the fact that vaccines drastically reduce both incidence and fatality rates, outbreaks of vaccine-preventable diseases are becoming more and more common. Access is no longer the leading barrier to adequate vaccine coverage. Instead, it is vaccine hesitancy. It is necessary for countries to address increasing anti-vaccine sentiment and put a halt to it before more people die due to completely preventable diseases.
Positive Psychological Capital in Camp Counselors

Positive psychological capital (PsyCap) has been shown to be a valid indicator of job satisfaction and performance outcomes in various populations. The goal of my research was to analyze whether working as a summer camp counselor at YMCA Camp Kanata was correlated with any measurable changes in psychological capital.

The field of positive psychology, or what it means to be a happy, healthy individual, has grown significantly in the last 30 years. The mental state of working individuals is critical to both performance and how one interacts with others. While literature existed for the study of PsyCap in business and with college students, the millions of interactions that occur annually in the United States between camp staff members and campers had not previously been studied.

Traveled to Wake Forest, North Carolina, with funding from the Glynn Family Honors Program.
The Formation of the National Basketball Association and Its Predecessor Leagues

The National Basketball Association was founded in 1949 as the merger of two existing leagues, the National Basketball League and the Basketball Association of America. I studied how those two leagues operated and how their different philosophies influenced the course the NBA took after its foundation.

I have loved sports for most of my life, and I wanted to study them from an academic perspective. Basketball, in particular, is my favorite sport, and the foundation of the NBA is an important moment in professional basketball, which eventually pushed the sport to national status.
Lymphatics Generate Microglia in Development and Disease

As the resident macrophages of the central nervous system, microglia have critical roles in development, disease, and injury. Microglia are thus far believed to derive solely from embryonic yolk sac hematopoiesis. The potential of progenitors of other origins to contribute to the microglial population remains unexplored. Using immunohistochemistry, in situ hybridization, and timelapse imaging in zebrafish, I demonstrate that lymphatics generate microglia during development and that these microglia preferentially expand following injury.

Microglia are the primary immune cells of the central nervous system and perform a diverse set of functions in development and disease. Understanding these cells is crucial to our ability to understand and treat neurological disorders, which is why I chose this topic. Through the discovery of lymphatic-generated microglia, I thus present a new therapeutic target for a multitude of neurological disorders and introduce a previously overlooked component of neural development and immunity.

Received funding from the Glynn Family Honors Program and the College of Science.
The Role of VHL in Cell Invasion

My project focused on investigating whether a mutation in the von Hippel Lindau (VHL) gene can alter the ability of tumor cells to invade and to engage in other processes associated with tumor formation. I chose this topic because the biology lab that I work in focuses on tumor cell invasion. My post-doctoral mentor had been investigating VHL before I joined the lab, so I started assisting her in her research.

Received funding from the College of Science.
Considering Sanctuary: Religion’s Role in Evaluating Oregon’s Sanctuary Status

In 2018, Oregon voted down the repeal of its longstanding state sanctuary law. In my thesis, I explored how people used religion, both intentionally and subconsciously, as they generated ideas and made voting decisions about the sanctuary law question and how that fits into their general views of immigrant rights.

As a Catholic, I am personally interested in studying how political and religious beliefs interact and inform each other. As someone who plans to study law, I am particularly fascinated by how that belief structure reacts to specific policies, especially with policy around undocumented immigration and legal sanctuary.

Received funding from the Templeton Religious Trust.
An Exploration of Institutional Gaslighting

My thesis explores the question of whether non-agential gaslighting can exist. The concept is depicted through two key scenarios which tell the story of a paradigm case of gaslighting and a less clear case from which the idea of non-agential gaslighting is formed. I explore the idea of institutionally caused gaslighting and the consequences of expanding the idea of gaslighting to include this phenomenon.

I took various feminist philosophy classes at Notre Dame with my adviser, Michael Rea, and after doing quite a bit of reading on different topics I was introduced to the concept of gaslighting. The concept piqued my interest, and as there has not been much philosophical work done on it, I decided it would be a good topic to pursue for my thesis.
The Effects of the Bank of Japan’s Exchange-Traded Fund Purchasing Program

My project explores the economic effects of the Bank of Japan’s Exchange-Traded Fund (ETF) purchasing program. An analysis of the changes on asset prices, and other macroeconomic variables suggests the efficacy of incorporating stock purchases into central banks’ monetary policy frameworks.

After researching different central banks last summer as a part of a summer internship project, I became interested in unconventional monetary policy. Japan is the only country that has undertaken a long-term ETF-purchasing program in an attempt to stabilize financial markets and assets. This presents a unique opportunity to examine whether these types of programs can be considered an effective tool in monetary policy going forward.
All Are Punished: Metatheatre, Spectatorship, and Authorship in Seneca’s *Thyestes*

I explored Seneca’s use of metatheatre in his play, *Thyestes*, especially his use of internal authorship and spectatorship. In my thesis, I discuss how Seneca creates internal audiences who witness scenes that authorial figures stage and how this implicates the audience of the play. I also explore how Seneca uses the elements of a Roman stage and theatrical production, such as set pieces, to reinforce these themes.

When I first read *Thyestes*, I grew interested in what a production of the play might look like. As I began to research the play, I was intrigued by Seneca’s heavy use of metatheatre in the play. I was able to combine these two by looking at the play as a performance text and discovering the effects this had on the metatheatre.
Magnesium-26 (alpha, n) Reactions in Stellar Nucleosynthesis

In order to more precisely measure the 26Mg (alpha, n) 29Si reaction cross-section at selected energies, we designed and characterized a set of magnesium targets. These targets were exposed to alpha-particle beams using the Van-de-Graaff accelerator at Goethe University in Frankfurt, Germany, and the results normalized to other data to complete the calculation.

This reaction has been difficult to measure precisely due to its low reaction energy, or Q-value. However, the acquisition of a helium-3 spectrometer made it possible to measure this cross-section with greater precision than previous work. Therefore, the time was appropriate to reattempt the measurement.

Traveled to Frankfurt, Germany, with funding from the Glynn Family Honors Program.
Egypt as a Case Study for Nuclear Nonproliferation

My thesis seeks to understand why states with nuclear rivals might not choose to proliferate in response. To do this, I tested models of nuclear proliferation on the case study of Egypt between 1950 and 1980. I concluded that a “domestic politics” model of nuclear proliferation best explains this particular case study.

I have always been interested in the connection between peace studies and international affairs. After taking classes that included discussions of nuclear affairs, I became interested in nuclear nonproliferation as a tool for international peace.
Synthesis, Conformational Analysis, and Biological Evaluation of a Designed Analogue of the Microtubule-stabilizing Agent (-) - Zampanolide

Zampanolide is an interesting molecule found in deep sea sponges that has exhibited nanomolar cytotoxicity towards a variety of cancer cell lines. It functions by effectively freezing the cancer cell, preventing it from reproducing. Dr. Taylor’s lab works to develop zampanolide analogues and tests resulting cytotoxicity to learn more about the molecule.

I have been interested in the slight altering of structures that still retain desired activity. I really enjoy the process of tweaking one part of a molecule and looking to see what changes as a result, which in turn tells us more about what each part of the molecule is responsible for.
Conventional and Authentic Identity in Comic and Romantic Shakespearean Jealousy Plots

For my thesis, I wrote about Shakespeare’s jealousy plots in Much Ado About Nothing, The Winter’s Tale, and Cymbeline. I argue that in Much Ado the jealousy plot is a useful plot tool, but its characters are conventional, not authentically developed. When Shakespeare revisits the jealousy plot later on, it becomes the focal point for authentic characterization.

I grew interested in this topic because all three plays have a jealous hero who accuses his wife or betrothed. The heroine then apparently dies, before eventually having an apparent resurrection. It seemed like a very odd coincidence for all three plays to have. Sure enough, there is a common source, but Shakespeare is doing something very different with it in the later two plays.
Beyond the Glass Box: *Keepers of the Fire* Exhibit and Native American Museum Representation

My thesis examines museum anthropology, specifically that of Native American representation. It centers on an exhibit that was on display in the South Bend History Museum for several months — *Keepers of the Fire: The Pokagon Band of the Potawatomi*. The project questions the display of current peoples in museums and the implications for cultural understanding.

I became aware of the exhibit at the South Bend History Museum last summer, and it quickly became the focus of my thesis. As anthropologists, we learn about other cultures, and I wanted my thesis to reflect how important that is. Native American communities are facing many challenges, and representation is an urgent problem.

Received funding from the Flatley Center for Undergraduate Scholarly Engagement and the Glynn Family Honors Program.
Crossing the Line: Evaluating and Practicing Transboundary Conservation

Transboundary protected areas (TBPAs) are one practice of environmental peacebuilding in which two or more states comanage natural resources and ecological systems that cross their borders. I evaluated existing TBPAs for their ability to mitigate tension, develop economies, and foster peace, and I use my findings to propose a TBPA in the Sonoran Desert straddling the western United States-Mexico border.

My research nicely ties together my academic disciplines with my passions for connecting people with the natural world. Moreover, if we hope to mitigate the effects of global environmental change, it is vital that we cultivate an interdependence between our social, political, and economic systems and the environments in which they are embedded.
Colonization, Capitalism, and Gender-Based Violence in Indigenous Alaska

Rates of violence against indigenous women are exorbitantly high around the world. In the United States, the highest rates of gender-based violence against native women occur among populations of native women in Alaska. With an intersectional lens, I investigate the ways in which colonial legacies and capitalist-driven resource extraction in the state engender violence against Alaska native women and their traditional environments.

After interning on the Kenai Peninsula of Alaska, I developed a passion for its landscapes and its people. I wanted to see what links, if any, exist between the rates of violence against Alaska native women and its dependence on natural resource extraction. Further, I hoped to provide a peace studies analysis of and response to this issue.
Andrew Seago
- Major: Architecture
- Minor: Classics
- Glynn Family Honors Program
- Adviser: Samir Younés

A New Parliament House in Valletta, Malta

My thesis project is a counterproposal to the recently completed Parliament House and City Gate Project in Valletta, Malta, by Renzo Piano. I argue that important civic buildings should reflect the building culture and traditions of the people they represent.

I chose this topic after visiting the island of Malta on a research trip and being struck by the incongruence of the existing Parliament building with the rich architectural character of the rest of the city. Knowing that I wanted to address the role of civic architecture in the city for my thesis, a counterproposal to this building presented the perfect opportunity.

Traveled to Italy and Malta with funding from the Nanovic Institute for European Studies and a School of Architecture Fagan Grant.
Katherine Sestrick
- Majors: Biological Sciences and Psychology
- Glynn Family Honors Program
- Adviser: Elizabeth Archie

Gut Parasite Community Structure Determinants in Baboons

In this thesis, I examine multiple hypotheses for the determination of gut parasite community structure of baboons from the Amboseli Baboon Population. Hypothesis regarding parasite competition, parasite coinfection, and baboon sickness are examined.

I chose this topic as I have always been interested in the determinants of community structure in various ecosystems, but have not previously had the opportunity to apply this concept to the study of microbiomes or parasitology.
The Islamic State’s Final Solution: A Strategic Theory of Non-State Mass Killings

The purpose of this study was to assess the strategic decision-making of non-state actors who commit mass killings. I applied Benjamin Valentino’s strategic theory of mass killing to a case study of the ISIS massacre of the Yazidi community in 2014. I found that strategic motivations, rather than extremism ideology or ethnic tensions, offer the most compelling explanation for the rapid rate at which killings occurred and the particularly brutal tactics employed.

After taking Ernesto Verdeja’s class Genocide in the Modern World, I found that the study of mass violence combined my interest in peace studies with the strategic perspectives I adopted as a fellow with the Notre Dame International Security Center. Because of the global proliferation of non-state groups and the continuing threat that ISIS poses globally, this is a timely topic with direct policy implications for early warning and atrocities prevention.
The Role of SGK-1 Mediated ATP Generation in Cellular Survival of ECM Detachment

In order for cancer cells to metastasize, they need to successfully detach from the extracellular matrix (ECM). Detaching from this matrix is associated with severe metabolic deficiencies. In this project, we investigated the role of the serine/threonine protein kinase SGK-1 in allowing detached cancer cells to recruit glucose and generate ATP. Our findings highlight SGK-1, and the proteins it acts on, as potential therapeutic targets for cancer treatment.

Metastasis is involved in around 90 percent of all cancer-related deaths. Therefore, if we are able to successfully inhibit or abrogate this process, we should be able to significantly improve patient prognosis. In addition, one of the most challenging aspects in designing cancer treatments is simply the shear amount we still do not understand about the disease. By having a better understanding of cancer’s internal mechanisms, we drastically increase our chances of successfully fighting it.
Life in Hegel’s Logic: Reading the Category of ‘Life’ in Hegel’s *Science of Logic*

I offer a reading of the chapter of “Life” in Hegel’s book *The Science of Logic* and its implications for his project in the *Logic* as a whole. I take the basic project of the *Logic* to be a sort of category theory: determining the basic conceptual requirements necessary for any cognitive experience in general. I discuss the relevance of “life” to this framework, with respect to thought’s autonomy and “life-like” internally teleological structure.

I previously took Fred Rush’s course on Hegel’s *Phenomenology of Spirit*. I was interested in, though intensely skeptical of, Hegel’s general project, particularly by what he meant in his cryptic characterizations of his entire project in the preface to that work and the “Absolute Knowledge” chapter. Having read *The Science of Logic* and some secondary literature, the ambiguous position of the category of “Life” impressed me.

*Traveled to Berlin, Germany, with funding from the Glynn Family Honors Program.*
Systematic Review: Cutting the Complexities out of the CRISPR Ethical Debate

CRISPR is a genetic editing technique that could be used to drastically change the future of medical and reproductive health including making edits to cure diseases and enable enhancements. My thesis involved doing a systematic literature review of the publications related to CRISPR ethics in the last 10 years. I studied the publications through the lens of the four biomedical ethics principles: autonomy, nonmaleficence, beneficence, and justice.

I chose this topic because I am planning to go to graduate school to research the biology of genetic editing. I wanted to learn the ethics behind the topic in order to better inform my research and future career in the field.
Statistically Modeling Differences Between Performances on Learning Outcomes in AP Statistics Classrooms

Using data mining methods such as regression trees and random forests, I model students’ differences in performance across various learning outcomes in AP Statistics classrooms from midwestern U.S. high schools. My goal was to understand what personal or educational factors about a student or their environment influence their comparative performance on different assessment methods.

I chose this topic because it is a good mixture of my major and minor, and I am interested in the intersection between data and society. This topic allows me to apply the skills I have learned in statistical modeling and programming to an educational setting, which is something I am also passionate about.
The Existence of Moral Dilemmas

My thesis examines whether genuine moral dilemmas exist and what that entails for both the applicability of moral theory and for the legitimacy of fundamental rules of deontic logic. I chose to explore this subject in my thesis because I have been interested in moral dilemmas as a branch of moral theory since being exposed to the topic sophomore year.

Mary Szromba
- Majors: Philosophy and Political Science
- Glynn Family Honors Program
- Adviser: Ted Warfield
MAPK Gene Expression in Cisplatin-Treated Triple Negative Breast Cancer

This project aims to elucidate the patterns of gene expression in triple negative breast cancer cells that have been treated with cisplatin, a type of chemotherapeutic drug. Quantitative polymerase chain reaction is used to determine levels of gene expression for six key genes in the MAPK pathway, which is widely believed to be important to cisplatin’s mechanism of action.

I chose this topic because triple negative breast cancer is considered to be particularly lethal and is often treated by chemotherapies such as cisplatin. However, cisplatin and other similar treatments are notorious for their negative side effects and their vulnerability to resistance. I hope to add to the pool of cisplatin understanding in order to improve breast cancer treatments and their efficiency.

Received funding from the Glynn Family Honors Program.
Preferred Equity Abnormal Returns Due to Index Rebalances

My paper analyzes whether abnormal returns exist for preferred equity securities that are added or dropped from the S&P U.S. Preferred Equity Index. Every quarter, a group of securities is added or deleted, and abnormal returns are determined by comparing returns during the event periods to the expected returns.

I wanted to write a thesis on financial economics, and conducting an event study is one of the methods that was most interesting to me. There have also been stories in the news about rebalances affecting security prices in the common stock markets, and I wanted to see if those returns are replicated in a different asset class.
Meaningful Blankness in *The Little Review*

In this project, I examine the influence of Emma Goldman’s feminist anarchism on Margaret Anderson’s editorial uses of blankness in the modernist magazine *The Little Review*.

I took a class in feminist periodical studies with my adviser Barbara Green in spring 2018 and I was really intrigued by *The Little Review*. I wrote my final paper about Anderson’s references to Goldman in early issues and decided to expand on the project.

**Isabel Weber**
- Major: English
- Minors: Anthropology and Gender Studies
- Glynn Family Honors Program
- Adviser: Barbara Green
‘I Can't Take the Devil’s Pills, but I Need it for My Health’: Women’s Experiences Under Contraceptive Restriction Policy

Notre Dame has changed its contraceptive coverage policy multiple times while fighting the Affordable Care Act’s contraceptive mandate, causing variations in the accessibility of prescriptions for those who rely on contraceptives. To gain insight on the effects of these policy changes, I interviewed female insurance beneficiaries, focusing on both tangible public health impacts and qualitative themes. I compared these responses across socioeconomic groups.

Throughout my time at Notre Dame, I have become increasingly interested in public health and how health policy affects individuals, especially those belonging to vulnerable populations. I had followed the news coverage about Notre Dame’s contraceptive policy decisions and backlash and was interested in whether the decisions had real effects on the women at the University, especially lower-income or minority women, and how they felt about those effects.

Received funding from the Glynn Family Honors Program.