21ST ANNUAL CELEBRATION OF STUDENT RESEARCH, SCHOLARSHIP, & CREATIVE WORK

APRIL 16, 2021 | WABASH COLLEGE

Congratulations!

The Celebration Planning Committee is excited to announce the winners of two prestigious awards associated with today's event.

Celebration Research, Scholarship, and Creativity Awards

These \$100 prizes are awarded to the students who most effectively articulated gains in professional development and personal growth as a result of their research, scholarship, or creative work. This year's winners are listed below, in alphabetical order.

Patrick Carper '21: One Fish, Two Fish, Red Fish, Blue Fish: The Inverse Coupon Collector's Problem

Paul Haesemeyer '21: The Haze Collection

Ahmaud Hill '21: Clyde: The Impact and Legacy of One Man

Justin Kopp '21: La belleza en la incertidumbre (Beauty in Uncertainty)

Robert Wedgeworth Library Research, Scholarship, and Creativity Awards

These \$500 prizes are awarded to recognize effective use of library resources in the preparation of Celebration work. This year's winners are listed below, in alphabetical order.

Liam Buckley '22: Breaking Bad, Hillary Clinton, and the Linguistics Behind Gender Hierarchies

Andrew Freck '21: Analyses of Capital's Effects on Immigration

Wear a mask. Wash your hands. Watch your distance. Wabash.

Welcome and Introduction

Welcome to the 21st Annual Celebration of Student Research, Scholarship, and Creative Work at Wabash College. For the past 20 years, the College has recognized in a proud and public way the creative accomplishments of Wabash students. We celebrate not only the particular achievements of individual students, but also a deeply embedded ethos of the College. The impressive breadth and quality of student creative work is evidence of the challenge and change that marks the Wabash experience. Given the circumstances of this year, the intellectual and creative work of this celebration may be more meaningful than any in the event's history and it is, in important respects, both a symbol of our resilience and a moment that marks a return to something resembling normal campus life.

This program is dedicated to the memory of Paul Caylor McKinney '52, who passed away in 2003 after a courageous battle with cancer. Dr. McKinney proudly served the College for more than half a century as chemistry teacher, department chair, division chair, and Dean of the College. He was an exemplar of the liberally educated person whose interests ranged from quantum mechanics to Plato, from playing the piano to pondering Nietzsche. He acted in Wabash College Theater productions and was often found backstage working on difficult equations in his notebook. He was a master teacher who helped countless Wabash students develop their creativity and love of the liberal arts. Likewise, he encouraged new faculty to embrace the culture of the College. I fondly remember the encouragement he gave me to teach in the Wabash first-year program and his mentorship on a teaching and learning project on which we collaborated. Among Wabash men, he would well understand and appreciate everything presented today; he would be the first to celebrate the successes of Wabash students and faculty members.

Close collaboration between Wabash students and faculty across the College is a hallmark of our culture, a labor of pedagogy and love that makes a difference for our students. It is a special pleasure to introduce some of the results of that collaboration in these presentations. Our thanks go to the students who are prepared to teach the Wabash community about their good work and to the faculty and staff members who have devoted considerable time helping students in their research and creative productions.

A conference of this size and scope would not be possible without the dedicated work of many people. I want personally to express my thanks to the planning committee for their hard work and creativity in championing an inperson Celebration in this most unusual of academic years: Chair Lon Porter, Michelle Janssen, Beth Lindsay, Peter Thompson, and Erika Sorensen-Kamakian. Aaron Elam and ETS students contributed to the poster production, as have other ETS and IT Services staff; Becky Wendt formatted and prepared the program for printing; Mark Siegel authored the online event presentation application system; Campus Services, and Mary Jo Johnston and her Bon Appetit staff make the logistical support appear effortless. Finally, we are grateful to all of you whose attendance supports this community Celebration.

Schedule for Oral Presentations

Oral presentations will begin at 1:30 p.m. and continue every 20 minutes with a 20-minute break. The last sessions begin at 3:30 p.m. In general, students will present information for 12–15 minutes with a few minutes for questions and passing time. Please see the following three pages for a list of oral presentations by room location and time slot. Names of the presenters, as well as their sponsors and abstracts, are listed in alphabetical order beginning on page seven.

Schedule for Posters and Exhibits

Students will present and discuss their posters and exhibits in 60-minute increments beginning at 1:30 p.m. and 2:50 p.m. on the Mall. Alternative poor weather locations are the lobbies of Hays Science Hall, Baxter Hall, and Fine Arts Center. You will find a list of presenters and their time slotbeginning on page six. Names of the poster presenters and co-presenters, as well as their sponsors and abstracts, are listed by alphabetically beginning on page 15.

-Todd McDorman, Acting Dean of the College

Oral Presentation Schedule

	Baxter Hall 101	
1:30	Nicholas Carson	The Gnostic Jesus Robert Royalty (History & Religion)
1:50	Break	
2:10	Benjamin Bullock	1877: Uncovering the Myth of Halesowen Town Football Club Richard Warner (History) & Mollie Ables (Music)
2:30	Break	
2:50	Gordon Harman-Sayre	The Runic Crucifix: State Transitions and Foreign Missions in Medieval Denmark Stephen Morillo (History)
3:10	Break	
3:30	Jeffrey Inman	Effect of College Students' Perceptions of Helicopter and Autonomy Supportive Parenting on Students' Academic Self-Efficacy: The Role of Causal Attributions Eric Olofson (Psychology)

		Center Hall 216
1:30	Dei'Marlon Scisney	Form Dictates Function: Concrete Poetry Derek Mong & Elan Pavlinich (English)
1:50	Break	
2:10	Micah Walker	<i>Wedding Crasher</i> Derek Mong & Eric Freeze (English)
2:30	Break	
2:50	Tomas Hidalgo	The Case for Video Games as a Creative Medium for Artful Storytelling Derek Mong (English)
3:10	Break	
3:30	Casey Akers	Covid-19 Effect on Public Art and the Artistic Process Annie Strader (Art)

	Detchon Hall 109		
1:30	Justin Kopp	<i>La belleza en la incertidumbre</i> (Beauty in Uncertainty) María Cristina Monsalve (Spanish)	
1:50	Break		
2:10	Liam Buckley	<i>Breaking Bad</i> , Hillary Clinton, and the Linguistics Behind Gender Hierarchies Jane Hardy (Spanish)	
2:30) Break		
2:50	William Osborn	2020 Election: An Exception to the Rule? Shamira Gelbman (Political Science)	
3:10	B:10 Break		
3:30	Caleb Dickey	An Affectionate Theory of Subsidiarity Lorraine McCrary (Political Science)	

		Goodri
1:30	Chad Wunderlich	New Limits on D Dennis Krause (Physics)
1:50	Break	
2:10	Gabriel Cowley	The Dynamics of Chad Westphal (Mather
2:30	Break	
2:50	Joel Bailey	Machine Learning Mark McCartin-Lim (M
3:10	Break	
3:30	Patrick Carper	One Fish, Two Fis Collector's Problet Chad Westphal (Mather

		Hays Sci
1:30	Simon Hacker	Critical Rhetoric of the Death Pena Jennifer Abbott (Rhetor
1:50	Break	
2:10	Conner Brens	Rhetorical Critici Jennifer Abbott (Rhetor
2:30	Break	
2:50	Andrea Martino	The Virtuous Zor Cory Geraths (Rhetoric
3:10	Break	
3:30	Pete Trotter	New Testament N and Identification Cory Geraths (Rhetoric

		Hays Sci
1:30	Adam Berg & Jordan Scott	Using <i>De Novo</i> D Erika Sorensen-Kamak
1:50	Break	
2:10	Alexander Koers	Imaging Treated in a Fungicide Su Paul Schmitt (Chemist
2:30	Break	
2:50	Zane Linback	Cross and Cresce Intellectual Tradi Jonathan Baer (Religion
3:10	Break	k
3:30	Joseph LaRue	Coercive Admini Analysis of Dona Jeffrey Mehltretter Dru

f Rock-Paper-Scissors ematics & Computer Science)

ng Applications in Symbolic Mathematics (Mathematics and Computer Science)

Fish, Red Fish, Blue Fish: The Inverse Coupon em mematics & Computer Science)

ience Hall 003

c Analysis of Common Rhetorical Tropes in News Coverage nalty ^{oric)}

cism of Tucker Carlson ^{oric)}

ombie Slaying Dad: A Classical Analysis of *The Last of Us*

Narratives: Parables as Tools for Invitation on in the Synoptic Gospels _{ic)}

tience Hall 104

Designed Protein Switches in *C. elegans* kian (Biology) & Walter Novak (Chemistry)

l Leaves with SHG Microscopy to Rapidly Screen Adjuvants uspension Concentrate

cent: Catholicism and Shia Islam as Analogous ditions ion)

nistrative Rhetoric: Theories on Application and a Rhetorical ald Trump's June 1, 2020 Address rury (Rhetoric)

Oral Presentation Schedule

Fine Arts Center (Salter Hall)		
1:30	Daniel Cuevas	The Essential Elements of Music Composition Sarin Williams (Music)
1:50	Break	
2:10	Ian Gale	Songs David Blix (Religion)
2:30	30 Break	
2:50	Ahmaud Hill	<i>Clyde: The Impact and Legacy of One Man</i> Heidi Winters Vogel (Theater) Film Viewing followed by Discussion

Schedule of Poster Presentations and Exhibits

Outside on Mall (Poor Weather Locations: Lobbies of Hays Science Hall, Baxter Hall, and Fine Arts Center)		
	Andrew Freck	Analyses of Capital's Effects on Immigration Jeffrey Gower (Philosophy)
	Daylan Schurg	Making COVID-19 Partisan: A Case Study on Twitter Activity Shamira Gelbman (Political Science)
	Delmas Crum & Calum Bailey	Arithmetical Structures on Complete Bipartite Graphs Katie Ansaldi & Zachary Gates (Mathematics & Computer Science)
1:30-2:30	Eric Lakomek, Canton Terry, & Youran Wang	Decision-Making and Dieting: Discerning the Predictive Factors of Successful Weight-Loss Neil Schmitzer-Torbert (Psychology)
	Hayden Kammer	Chamon: My RPG Medievalism about Race, Class, and Gender Elan Pavlinich (English) & Heidi Winters Vogel (Theater)
	Isaiah McWilliams	<i>Romper la barreral</i> To Break the Barrier V. Daniel Rogers (Spanish)
2:30	Break	
	Keith Klein	Gauging Abundance of the Parasite <i>Halipegus occidualis</i> Eric Wetzel (Biology)
	Long Nguyen	The Determining Factors of Bilateral Trade in Vietnam and The Impact of Financial Stress on Trade Flows Peter Mikek (Economics)
	Paul Haesemeyer	The Haze Collection Andrea Bear & Heidi Winters Vogel (Theater)
2:50-3:50	Tyler Richmond	Innovative PDMS Manufacturing Nathan Tompkins (Physics)
	William Lillis, & Andrew Rippy	Numerical Simulation of Ion Optical Flight Paths through a Sweeper Magnet James Brown (Physics)
	Zachary Myers	Sequence and Structural Analysis of Metal Binding Sites in Metal Dependent Regulator Proteins Walter Novak (Chemistry)

Presenters: Sponsors: Title:

Adam Berg & Jordan Scott Erika Sorensen-Kamakian (Biology) & Walter Novak (Chemistry) Using De Novo Designed Protein Switches in C. elegans

The "Latching Orthogonal Cage-Key pRoteins" (LOCKR) technology consists of a de novo designed Switch and Key. The Switch cages a degron, a protein signal that destroys proteins, in the off or "locked" position. Upon Key addition, the Switch is turned on or "unlocked," which exposes the degron, simultaneously destroying the Switch and any proteins fused to the Switch. We are developing the LOCKR system for conditional protein destruction in *C. elegans*, a nematode worm that reproduces quickly and shares ~40% of its genes with humans. This is the first application of LOCKR to a multicellular organism. The degronLOCKR system requires two parts: 1) a gene fused to the "degronSwitch" and 2) the Key. We will fuse the degronSwitch to the dpy-10 gene. Loss of *dpy-10* results in the Dpy phenotype, or shorter than normal animals. We have also generated tissue-specific Keys. We predict that Dpy animals will be restricted to conditions where degronSwitch and Key expression occurs within the same tissue. Future work includes expanding the LOCKR system to include temporal and intensity control of Switch proteins, akin to timer and dimmer switches. This work establishes a novel method for regulating protein function in an animal model.

Presenter:	Alexander Koers
Sponsor:	Paul Schmitt (Chemistry)
Title:	Imaging Treated Leaves with SHG Micr
	Suspension Concentrate

Second harmonic generation microscopy is an emerging technique capable of selectively imaging certain crystalline materials, including many crystalline small molecule active ingredients. Previous experiments showed the utility of SHG microscopy for identifying crystalline deposits of active ingredient directly on leaf surfaces, monitoring active ingredient crystallization on leaves in real time, and identifying the presence crystalline active ingredient down to sub-ppm concentrations. In the present study, SHG microscopy was used to assess the anticipated relative efficacy of three different additives for use within an SC formulation of the fungicide Inatreq. Model formulations consisting of the SC and a single adjuvant were prepared at commercially relevant concentrations and deposited onto wheatgrass seedlings, with imaging via SHG taking place at several timepoints thereafter. SHG images were analyzed to reveal anticipated additive efficacy, whereby the images showing the least amount of residual SHG signal from the crystalline SC are anticipated to show the highest level of active ingredient uptake.

Presenter:	Andrea Martino
Sponsor:	Cory Geraths (Rhetoric)
Title:	The Virtuous Zombie Slaying Dad: A

This presentation will analyze the rhetoric of the main character of the 2013 video game, The Last of Us, via the ideas of classical theorists of ethics. In the game, we see a man, Joel, have his life ripped apart by a deadly virus. Joel is given a purpose when he must spearhead the hunt for the cure by bringing a 14-year-old girl, Ellie, across the country to a group capable of creating the vaccine. To gain a clearer understanding of the rhetoric in the game, I will use the works of Plato, Aristotle, and the Sophists to better understand Joel's actions. The goal of this presentation is to take this critique of a flawed character and attempt to gain a clearer understanding of what the classical theorists would think of his actions in a rhetorical sense. These indefensible and selfish actions committed by Joel, when viewed through a classical lens, reveal that he is acting as Aristotle would hope a father would act. His decisions throughout the game, however, also emulate the ideas of the Sophists, as he too makes a convincing argument for his most despicable choices. This presentation's application of the character's actions to the classical works reveals that Joel is a selfish, but not a bad man, as well as one without a clear purpose.

Oral Presentations (Alphabetical by Presenter)

croscopy to Rapidly Screen Adjuvants in a Fungicide

Classical Analysis of The Last of Us

Benjamin Bullock **Presenter:** Richard Warner (History) & Mollie Ables (Music) Sponsors: Title: 1877: Uncovering the Myth of Halesowen Town Football Club

Halesowen Town F.C., a semi-professional soccer club from Birmingham, England, was formed by workers of the James Grove Button Factory in 1873, making them the oldest surviving soccer team in the West Midlands' or so the story goes. For decades, local historians and ardent supporters have sought to discover the truth behind how and when the club was formed. Consensus since the Second World War has supported the 'button factory theory', however, by re-analyzing the existing evidence, uncovering new sources, and framing the club's formation within the wider context of sports history, I argue that the club was not in fact established in 1873. Rather, I suggest the club was formed in 1877 out of Halesowen St. John's Church and did not move to the Grove, the team's present home, until ca.1882. This not only calls into question the team's proud title of oldest in the region but also runs contrary to decades of local scholarship. Thus, my findings are significant to both the football club and its supporters' as well as local researchers and residents.

Presenter:	Caleb Dickey
Sponsor:	Lorraine McCrary (Political Science)
Title:	An Affectionate Theory of Subsidiarity

Subsidiarity is the principle that decisions should be made as locally as possible. It attempts to define the proper relation between local government and more centralized government. In formulating a theory of subsidiarity, this presentation analyzes the role of affection in local communities and theorizes how that understanding of affection implies we should ideally organize government to best achieve our political ends. Previous theories have largely failed to account for the impact of affection, but this presentation, drawing from Aristotle, Alexis de Tocqueville, and Wendell Berry, focuses on what widespread affection within a community helps the community to accomplish, from where that affection arises, and what that means for communities long-term. The question of what this means for the relationship between local government and central government then arises. Ultimately, my research found that because affection arises from free associations and creates just, self-sufficient, and free communities that are sustainable long-term, centralized governments should intervene in the domestic affairs of local communities primarily to strengthen associations in order to enable those communities to achieve their political goals themselves.

Presenter:	Casey Akers
Sponsor:	Annie Strader (Art)
Title:	Covid-19 Effect on Public Art and the Artistic Process

The purpose of my presentation is to show and discuss my public performance artworks created during the past year. In my performances, I strive to pull people out of the everydayness of their normal lives. I use performance as a medium in order to pinpoint that all art, and in connection all of life is a performance. When Covid hit last March it changed the social contract of how all people connect with others especially in public space, We saw a new performative nature of humanity as people were required to mask and separate from each other. I saw this as an opportunity to experiment with public performances under these new rules. In my presentation, I will show video clips and discuss my performances reflecting on the choices I made and what I have learned from this research, and what it means for the future of public art.

Presenter:	Chad Wunderlich
Sponsor:	Dennis Krause (Physics)
Title:	New Limits on Dark Matter Wind Force

During the summer of 2020 I worked with Dr. Krause on researching dark matter wind force and how to measure it. Dark matter wind force refers to a force felt by the earth, and object on the earth, from dark matter as we travel through space. Experiments to detect this force typically use an apparatus of a suspended, microscale, metal sphere as a threedimensional harmonic oscillator whose motion is detected by a laser. I created a mathematical simulation of how a dark matter wind force would drive such an oscillator. Previous experiments have established limits at which dark matter wind force could be detected by this method. I read and gathered data from several research papers and, using formulas derived by Dr. Krause, found that the theoretical limit for detecting dark matter wind force is lower at certain distances than previous experiments have shown.

Presenter: Sponsor: Title:

Conner Brens Jennifer Abbott (Rhetoric) Rhetorical Criticism of Tucker Carlson

In this essay I use the theory of critical rhetoric to reveal how Tucker Carlson's segment over the George Floyd Protests functions rhetorically. I propose that, in this segment, Carlson reaffirms a discourse of power that oppresses black Americans by utilizing the color-blind ideology, providing a narrow perspective of BLM, and reframing the BLM movement as a political party. This functions to diminish public favorability for the Black Lives Matter movement. Finally, by taking this perspective, Carlson effectively gives a flipped discourse of power, which furthers the divide between conservatives that agree with him and those that support the BLM movement.

Presenter:	Daniel Cuevas
Sponsor:	Sarin Williams (Music)
Title:	The Essential Elements of Music Comp

Music composition requires more than a combination of harmonious notes. It requires theoretical knowledge, inspired melodies and creative choices, and some degree of emulation to be associated with a genre or canon of music, among other components. Last semester, I composed two pieces of music for an independent study. Under the lens of one of those pieces, a choral adaption of the African American spiritual O Freedom, I will discuss both the process of composing a piece and the essential elements of musical composition. The session will include a presentation of the aforementioned material and a live performance of O Freedom by eight students: William Borland, Benjamin Bullock, William Andrew Harvey, Drew Johannes, Nicholas Kobs, Gerard Seig, William Trapp, and John Vermeulen.

Presenter:	Dei'Marlon Scisney
Sponsors:	Derek Mong & Elan Pavlinich (English)
Title:	Form Dictates Function: Concrete Poetry

The same thing can be said in the humanities, life sciences, and even social sciences: "form dictates function." All writing has a specific structure. A text message, for example, is short and could use slang; a tweet is concise and limited to a character count; an email can be more formal and holds qualities of letter writing. These forms contribute to the overall function or message of the writing. Poems can be described as literary work written in stanzas, made up of lines that use rhythm, emphasizing or expressing the image, emotion, or idea at hand. We pay careful attention to elements like sentence length, word placement, syllables, and even how lines are grouped in poetry. This is poetic "form." One example of this is concrete poetry. Concrete poems can be described as a "linguistic arrangement in which the poetry is communicated by using patterns of words or letters that you see on the page" (Oxford Learners Dictionary). It is sometimes referred to as visual poetry. Inevitably, the poem's form, its physical image, dictates the way the poem functions. My presentation includes a reading of concrete poems inspired by Ralph Waldo Emmerson's Nature.

Presenter:	Gabriel Cowley
Sponsor:	Chad Westphal (Mathematics & Com
Title:	The Dynamics of Rock-Paper-Scissors

Suppose that two opponents play repeated matches of rock-paper-scissors, where each chooses their move randomly with probabilities r, p, and s (r+p+s=1). The purpose of this research project is to investigate how different models of player behavior affects the dynamics of the player strategies over time. What will happen if the players use the same or different strategies? Will r, p, and s each converge to 1/3, or will they keep oscillating? How does over-correcting for losses or wins affect the game? Through a first-order differential-equations-based approach, we found that in cases where players adjusted r, p, and s proportional to their current values, the probabilities usually kept oscillating. If the players adjusted based on their unutilized potential, the probabilities often converged to 1/3. If players adjusted based off of what the other player did, their probabilities almost always converged to 1/3. Over-correcting for losses sped up the convergence of the probabilities and over-correcting for wins heightened the use of r, p, or s.

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Concrete Poetry

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Presenter:Gordon Harman-SayreSponsor:Stephen Morillo (History)Title:The Runic Crucifix: State Transitions and Foreign Missions in Medieval Denmark

Between approximately 850 and 980, Denmark launched two large-scale invasions into the English mainland. During the first, the Danish and Scandinavian state seemed decentralized and similar to a loose confederation of states. By the second, Denmark alone led the invasion with a strong, centralized political army that was eventually able to conquer all of England. Using Stephen Morillo's methodological frameworks such as the trans-cultural typology and the cross-cultural typology of military service, I prove that warfare between the English and the Danish evolves from a place of mutual misunderstanding during the first invasion to a mutual understanding during the second. Evidencing English sources from the time period and Scandinavian sagas depicting Christian conversion, I analyze the changes in language in describing the Danes between the first and second invasions. The descriptors for Danish Pagans and Danish Christians prove to be different, and therefore evidence of a mutual acculturation. Furthermore, I show that due to mutual acculturation due to Christian conversion, Denmark is able to participate in the Western-European international community and assimilate into their military and cultural framework. Christian conversion between the two invasions, therefore, is a defining feature of Denmark's place in the Western-European community and has had long-term effects. In a minor instance, this manifests in the history of Harald Bluetooth, who first converted Denmark to Christianity and is now recognized as the first real king of Denmark.

Presenter:	Ian Gale
Sponsor:	David Blix (Religion)
Title:	Songs

Since my Freshman year at Wabash, I have written and recorded a number of songs in Wolcott 307, continuing my efforts in entertainment that began when I was still in high school. Though I performed at various clubs while still attending high school, I have not performed publicly since. I would like to present my original material to a Wabash audience, a performance which will serve as my first since last year.

Presenter:Jeffrey InmanSponsor:Eric Olofson (Psychology)Title:Effect of College Students'

Effect of College Students' Perceptions of Helicopter and Autonomy Supportive Parenting on Students' Academic Self-Efficacy: The Role of Causal Attributions

The purpose of this presentation is to present findings from a senior psychology research project regarding the effect that college students' perceptions of helicopter and autonomy supportive parenting behaviors on students' academic self-efficacy, and the role that attributional style plays in these associations. Wabash College students completed an online survey containing a series of questions assessing their experiences with their parents, academic self-efficacy beliefs, and tendencies to attribute performance on academic tasks to external factors. Data are being collected during the month of March, so the results will be prepared and analyzed by the day of the research presentation. Results of this study should shed some light on how the parenting relationship college students experience influences their academic self-efficacy beliefs through their influence on causal attributions.

Presenter:	Joel Bailey
Sponsor:	Mark McCartin-Lim (Mathematics and Computer Science)
Title:	Machine Learning Applications in Symbolic Mathematics

The paper Deep Learning for Symbolic Mathematics (Lample & Charton, 2019), studied how effective machine learning can be for solving certain mathematical problems, such as symbolic integration. In our experiments, we look at how useful the researchers' techniques are for other symbolic problems like simplifying Boolean statements into a normalized form. In Boolean algebra, formulas like "x AND (y OR z)" evaluate to true or false depending on each variable's true/false input. The significance is that we can interpret reasoning tasks as these symbolic formulas. If a computer can learn how to manipulate these formulas, then we are a step closer to automating logical reasoning. While there already exist software tools for solving some of these symbolic computation problems, such tools have mostly been engineered with algorithms derived from human intelligence. Until recently, there has been little work on solving these problems from data alone. This research involves machine learning and is a part of an effort to develop programs automated to manipulate logical expressions.

Presenter: Sponsor: Title: Joseph LaRue Jeffrey Mehltretter Drury (Rhetoric) Coercive Administrative Rhetoric: Theo June 1, 2020 Address

In 2020, America was racked by nationwide protests in response to the death of George Floyd. Throughout the protests, Donald Trump's response received significant attention, widely being viewed as inflammatory and counterproductive. In this paper, I first examine the current understanding of "coercive persuasion" and "administrative rhetoric," before turning to address a new theory: "coercive administrative rhetoric," which draws upon the key elements of both "coercive persuasion" and "administrative rhetoric" in order to provide a method that accounts for both how the rhetorical space for "coercive administrative rhetoric" is created and maintained, as well as the specific rhetorical tools that institutions can use to maintain their power. This new theory ultimately suggests that the two methods, on their own, do not provide enough to achieve a nuanced analysis; this new, singular method bridges the gap between the two theories by connecting how the tools function within a created rhetorical space. In my analysis, I find that the President's June 1, 2020 Rose Garden Speech, his first national address of the protests, represents a clear example of "coercive administrative rhetoric," and as such, undermined his ability to manage the situation and maintain credibility as a unifying national leader.

Presenter:	Justin Kopp
Sponsor:	María Cristina Monsalve (Spanish)
Title:	La belleza en la incertidumbre (Beauty

La belleza en la incertidumbre, translated as *The Beauty in Uncertainty*, is a project that began in August of 2020 for Spanish Senior Seminar. The project, in total, is over 21 pages and utilizes 18 different sources primarily in Spanish. La belleza en la incertidumbre analyzes the work of three prominent Spanish Romantic poets from the 19th century. Gustavo Adolfo Bécquer, José de Espronceda, and Rosalía de Castro were three of the most influential poets from the era of Romanticism in Spain and explored ideas such as monotony, love, and beauty. La belleza en la incertidumbre analyzes the primary works of each poet to apply the three themes listed above to discover how beauty is found in uncertainty for each poet. The conclusion of the work explores what beauty in uncertainty means today in such uncertain times and how one should go about approaching such uncertainty.

Presenter:	Liam Buckley
Sponsor:	Jane Hardy (Spanish)
Title:	Breaking Bad, Hillary Clinton, and the

This presentation looks at specific features of language such as modal verbs, imperative sentences, adjective use, and vocal inflection to analyze differences in usage between males and females. Male and female speech accurately reflect the hierarchical imbalance of society, and on the part of females, an unconscious behavioral adaptation to overcome it. Looking at studies that range from analysis of interruptions by males vs. females, expletive use, and more passive features such as syntax and intonation, this presentation offers an aggregate look at how we use language differently depending on our sex. The research also looks at two modern examples of differentiating language use, analyzing the fictional character Skyler White from the show *Breaking Bad*, and former Secretary of State Hillary Clinton during her 2016 presidential campaign. Describing the double standard of perceived seriousness between sexes, Professor Lisa Feldman Barrett of Northwestern characterized our perceptions as being, "She's a bitch, but he's just having a bad day." We know this double standard to be true; this presentation asks how it manifests itself linguistically.

Coercive Administrative Rhetoric: Theories on Application and a Rhetorical Analysis of Donald Trump's

y in Uncertainty)

e Linguistics Behind Gender Hierarchies

Presenter:Micah WalkerSponsors:Derek Mong & Eric Freeze (English)Title:Wedding Crasher

In my short story, loosely titled *Wedding Crasher*, I use the main character's hatred for weddings as a vehicle for him to self-reflect on his love life. *Wedding Crasher* is laced with a plethora of flashbacks that focus on the complications of romantic toxicity and maternal abandonment. Though only on my fourth draft, this is the most developed short story I have written this academic year, I plan on adding it into my Creative Writing portfolio collection of short stories. I believe that every story leads readers into deep, lonely yet revitalizing, ruins of magic. They operate as confessionals for readers to lift up their masks to, associating their very own trauma, love, hate, dreams, and curiosity with the magical words that they come across on the pages. It is this magical, artistic telepathy that I plan on achieving within my own writing, creating illuminatingly raw prose that matures and inspires the eyes of those who have yet encountered its intimidating beauty.

Presenter:	Nicholas Carson
Sponsor:	Robert Royalty (History & Religion)
Title:	The Gnostic Jesus

Religion has touched the lives of each person in some way, and of all the religions in the world the largest and most influential is Christianity. Despite Christianity being an everyday presence in the lives of millions of Americans, many do not understand its origins. In reality, the four gospels in the bible were not the only books written that can be described as Gospels. A movement parallel to early Apostolic Christianity has its own set of Gospels that discussed the teachings and life of Jesus, but remain largely unknown by the general population. This movement led to a second community of Christians called Gnostics. My research analyzes three of these Gnostic Gospels and compares them to the traditional Gospels found within the bible. My purpose is to compare and contrast how Jesus is portrayed by both movements, in addition to what we can learn about the life of the historical Jesus from the Gnostic Gospels.

Presenter:Patrick CarperSponsor:Chad Westphal (Mathematics & Computer Science)Title:One Fish, Two Fish, Red Fish, Blue Fish: The Inverse Coupon Collector's Problem

Suppose we start with a pond of all blue fish. We cast a line, catch a fish, and reel it in. If it turns out to be blue, we paint it red and throw it back in. If it turns to be red, we just throw it back in. Assuming each fish stands an equal chance of being caught, what can we infer about the number of fish in the pond based on the number of blue fish observed after some number of iterations?

Presenter:	Pete Trotter
Sponsor:	Cory Geraths (Rhetoric)
Title:	New Testament Narratives: Parables as Tools for Invitation and Identification in the Synoptic Gospels

Drawing guidance from Walter Fisher's narrative paradigm, this paper conducts a cross-analysis of the Parable of the Sower and the Parable of the Tenants between Matthew, Mark, and Luke. The analysis seeks to answer two questions: (1) How do Jesus' parables function rhetorically to encourage identification with the Christian faith, and (2) how might the narrative rationality of Jesus' parables be influenced by the differing authorship of the synoptic Gospels' These questions expand on the existing work by focusing specifically on Jesus' parables as they appear in the synoptic Gospels, which lacks attention in rhetorical scholarship. Through my cross-analysis of shared parables in the synoptic Gospels, I argue that Jesus' quotation of scripture, as well as his construction of secular narratives and purposeful characterization, create narrative rationality in both the Parable of the, which serves to encourage audience identification with his parables. These findings expand on the themes of hermeneutics and polysemy in existing discussions of Jesus' rhetoric in the Gospel by improving our understanding of Jesus' parables, the most frequently used rhetorical device in his spoken ministry. By cross-analyzing the parables, I also hope to determine whether differences in authorship decisions might influence the rhetorical impact of these Gospel narratives.

Presenter: Sponsor: Title:

Simon Hacker Jennifer Abbott (Rhetoric) Critical Rhetoric Analysis of Common

The death penalty is an inherently flawed practice rooted in discrimination and injustice. Today, the criminal justice system in the United States is consistently bias against defendants in death penalty cases. Research indicates that the news media has a significant impact on the American public's opinion about the death penalty. Scholars have also found that news media coverage of death penalty cases is consistently bias against defendants. Finally, rhetoricians have discovered three common tropes that both death penalty supporters and abolitionists frame in different ways to make their argument. This criticism examines the presence and functionality of these tropes in local news coverage of death penalty curve. Ultimately, I argue that the rhetorics of closure and difference function to support the continuation of the death penalty as an oppressive legal practice in the United States while the rhetoric of systemic error consistently advocates for more a more equitable discourse of power between defendants and the government. In my criticism, I will explain the relevant contextual information surrounding the death penalty, news coverage of death penalty cases, and the rhetorical methods I use to conduct my analysis. Then, I will explain my findings in detail and their implications for journalists going forward.

Presenter:	Tomas Hidalgo
Sponsor:	Derek Mong (English)
Title:	The Case for Video Games as a Creativ

A generation ago video games were little more than squiggly lines on a blurry screen often located in the darkest corner of a moldy basement, yet today the industry rivals that of Hollywood. The result is that video games have become one of the prime methods through which a potential audience interacts with storytelling and narrative. Yet there is great hesitation, especially among "serious" writers, to consider video game writing as an artform in itself. In the following presentation I will make the case that video games are not only a valid creative medium, but in fact excel at conveying story and narrative in ways that other forms cannot. I will do so by showing the artistic heights that video games can reach though compelling examples such as *Brother: A Tale of Two Sons* and *Hyperlight Drifter* and the unique effect video game have on their audience, specifically their ability to close the distance between the player and the story being told. I will also share a brief reading of my own humble attempt at creating a game concept document.

Presenter:	William Osborn
Sponsor:	Shamira Gelbman (Political Science)
Title:	2020 Election: An Exception to the Ru

Few things garner more attention on the nightly news than the state of the economy and Presidential elections. Both events directly impact the lives of millions of people and the direction of countries. But what happens when these two ultra-important events coincide? The conventional wisdom seems to validate what logic would dictate: when the economy is good, the incumbent party is in good shape for re-election, and when the economy is bad, the incumbent party is likely to perform poorly. But do voters hold parties and individuals accountable for recessions, regardless of their cause? This is the question I seek to answer. Namely, do different causes of poor economic performance lead to different views in opinion polling and at the ballot box? To answer these relevant questions, I utilized a comparative case study. It compared various opinion polls and other data from the 2008 election in comparison with the 2020 cycle. Despite the fact that President Trump was not successful in his re-election campaign, opinion poll data suggests that the state of economy did not play a detrimental role like it did in the 2008 election. Going forward, forecasters may need to include an analysis of the cause of a recession before issuing their projections. If not, they run the risk of issuing inaccurate projections, both as to the scope of the margin of victory and the actual victor.

Critical Rhetoric Analysis of Common Rhetorical Tropes in News Coverage of the Death Penalty

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Zane Linback **Presenter: Sponsor:** Jonathan Baer (Religion) Title: Cross and Crescent: Catholicism and Shia Islam as Analogous Intellectual Traditions

The purpose of this presentation is to serve as a primer on the unique intellectual traditions of Catholicism and Shia Islam; Particularly the similarities in Ecclesiology, Socio-Political Thought, and Jurisprudence (ففال). There are an estimated 1.2 billion Catholics globally, while over 150 million Muslims identify as Shia. Though observers often focus on the differences between Christians and Muslims, I argue that the similarities between Roman Catholicism and Jafari Shia Islam are numerous. Dispelling myths and exploring what these two distinct, influential faiths share will enrich our understanding of each tradition. For serious scholars of geopolitics, understanding the basic framework of both Catholic and Shi'i thought is a must.

Film Screening & Oral Presentation

Presenter: Ahmaud Hill Heidi Winters Vogel (Theater) **Sponsor:** Title: Clyde: The Impact and Legacy of One Man

Clyde: The Impact and Legacy of One Man is a documentary that was conceived, researched, recorded, and edited by myself. When I decided to put this film together it was because of the impact Coach Clyde Morgan posed not only in my life, but also the Wabash Community as a whole. Through the methods of personal interviews, a sit-down interview with the man himself, and recorded chapel footage; I was able to compile a film capable of showing any viewer just how much of an impact Coach can have on anyone's life.

Poster & Exhibit Presentations (Alphabetical by Presenter)

Presenter:	Andrew Freck
Sponsor:	Jeffrey Gower (Philosophy)
Title:	Analyses of Capital's Effects on Im

This project seeks to combine the various conclusions from two of my papers, written during my junior and senior years, and to highlight the underlying theme of each: the relationship between capital and the right to migrate. My final paper from PPE200, Rising Tide Migrations: The So-Called 'Climate Refugee' as Hannah Arendt's Scum of the Earth, theorizes that, if nothing is done to address climate change, those who are forced to find cross-border solutions will be reduced to what philosopher Hannah Arendt described as "the scum of the Earth." This is a reference to the stateless people following World War I who were left with no homeland, no state, and no rights. My final paper from PPE400, The Public Charge Rule and the Divinity of Capital, concludes that economically-motivated immigration policies, which are more permanent and far-reaching than nationalistic policies, signal the rise of an era of divine capital. In this era, capital is shown to control power over life and to have the ability to transcend national borders. These two papers seek to build upon one another, creating a body of work which examines one central issue—the relationship between capital and the right to migrate-from multiple different vantage points.

Presenter:	Daylan Schurg
Sponsor:	Shamira Gelbman (Political Science)
Fitle:	Making COVID-19 Partisan: A Case S

COVID-19 is not inherently a partisan issue, but politicians have made it a partisan issue in America. Previous research suggests that Members of Congress have been increasing their use of Twitter, so I began my research with Twitter. I collected data on Twitter in the form of tweets to see what Members of the United States Congress are saying about COVID-19. I separated the tweets into categories of nonpartisan tweets, tweets including positive rhetoric, and tweets including negative rhetoric. I found that a little over half of the tweets were partisan in nature, blaming the opposite party for a negative result or praising one's own party for a positive result. In finding that Members of Congress frame COVID-19 as a partisan issue, I also found that Democrat Members of Congress were more likely to produce tweets that are negative in nature, blaming the Republican Party, and that Republican Members of Congress were more likely to produce tweets that are nonpartisan in nature. Overall, the data suggests that both political parties contribute to making COVID-19 partisan, so it is not the case that only one party contributes to partisanship while the other party mitigates the issue.

Presenters: Sponsors: Title:

Delmas Crum & Calum Bailey Katie Ansaldi & Zachary Gates (Mathematics & Computer Science) Arithmetical Structures on Complete Bipartite Graphs

An arithmetical structure is a labeling of the vertices of a graph with positive integers such that all of the labels share no common factor and that each label divides the sum of the adjacent labels. In 1989, Dino Lorenzini showed that there are finitely many of these arithmetical structures, but did not explore how to construct these structures. The structures on paths, cyclic graphs, and complete graphs have since been explored at length, but complete bipartite graphs have not. Because of this, the main subject of this research is to study arithmetical structures on complete bipartite graphs and develop properties for them. In researching these structures, we have determined that there are bounds to the size of the integers relative to the size of the graph and other integers, and we have found other properties regarding the structures and the relationships between them. Arithmetical structures on bipartite graphs can be visualized as a set of positive integers, which can be divided into two subsets. Each positive integer in one subset must divide the sum of all integers in the other subset, and vice versa.

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Study on Twitter Activity

Eric Lakomek, Canton Terry, & Youran Wang **Presenters: Sponsor:** Neil Schmitzer-Torbert (Psychology) Decision-Making and Dieting: Discerning the Predictive Factors of Successful Weight-Loss Title:

Would you rather take a smaller reward now or wait a month and get an even bigger reward? Studies have demonstrated that elevated delay discounting (e.g. being more impulsive, or less willing to wait for a reward) is associated with smoking, drug use, and obesity. In addition, decision-making factors may even have an impact on an individual's ability to stop a behavior. Specifically, among smokers, those who have low delay discounting rates are more likely to successfully stop the behavior, either on their own or using a cessation program. Thus, this study aims to identify the predictive decisionmaking factors that lead to weight-loss for an individual (either on their own or with a weight-loss program). Delay discounting is only one aspect of decision-making and may not be the best predictor of behaviors like dieting to lose weight. In this study, we are examining delay discounting and measures from a foraging task (where participants waited for real rewards in a virtual navigation task) to predict who will successfully lose weight. We are interested in determining which of these measures will best predict weight-loss.

Presenter: Havden Kammer Elan Pavlinich (English) & Heidi Winters Vogel (Theater) Sponsors: Chamon: My RPG Medievalism about Race, Class, and Gender Title:

Tackling tough issues such as race, gender, religion, and even sexuality has polarized our country, and many of the people who benefit from these systems of oppression choose to ignore the social problems. I employ fantasy to combat oppression, so that audiences can interact with these social issues in the context of a game much like Dungeons and Dragons. Dungeons and Dragons is a tabletop-roleplaying game that allows people to play as fantasy characters and interact with the world in a unique way. The medieval setting is significant because the Middle Ages evoke fantastical, fairy tale nostalgia while maintaining historical importance. My game is a medievalism, which is an adaptation of medieval themes in a contemporary setting. I constructed a class system that imposes racist and sexist stereotypes based on biological factors, while empowering a small population through religion and technological advances associated with magic. The goal of this project is to run a campaign for players that highlights various social issues and spark critical conversations. The Dungeons and Dragons community is predominately heterosexual, white men, so many of these social issues go unnoticed. My goal is to create a space that allows us to recognize problems being raised by marginalized communities in a way that doesn't personally call out or attack anyone. The game avoids inciting defensiveness; rather, it invites dialogue.

Isaiah McWilliams **Presenter:** V. Daniel Rogers (Spanish) **Sponsor:** Romper la barrera / To Break the Barrier Title:

In this presentation I want to dive into learning a different language and how it is beneficial to an individual. The language example I will be presenting is Spanish. I want the viewers to see what they are missing out on by not learning another language and try to influence the viewers to potentially learn a different language. The aspects that I will be focusing on is food, culture, religion, and entertainment (such as movies, TV shows, or events held in Spanish speaking countries). I feel as this will be beneficial to students at Wabash as learning another language can aid students with traveling the world if they liked to and/or understanding how to have a conversation with individuals that speak the same language that they have learned ...

Presenter: Sponsor: Title:

Keith Klein Eric Wetzel (Biology) Gauging Abundance of the Parasite Halipegus occidualis

Parasitic organisms make up significant contributions to an ecosystem's characteristics, including biomass, trophic interactions, and species richness. The life cycle of the digenetic trematode Halipegus occidualis includes four host animals and thus has the potential to have important impacts. Specifically, we were interested in the timing and extent of larval parasite (cercarial) release from the first intermediate host snail, about which relatively little is known in our region. Working in the Wabash College Biology Department's pond, located 15 minutes north of campus, we aimed to characterize the production of H. occidualis by quantifying production of cercariae from their snail host. Cercariae of H. occidualis are encysted and non-motile, making them easy to count. We collected snails from the pond and identified those infected with H. occidualis. Infected snails (n=17) were fed lettuce ad libitum and placed in clean individual dishes containing well water for 24 hour periods; cercarial output was assessed at 3-hour intervals throughout the day. We found that there was significant variation in output throughout the day as well as week-to-week among snails at individual levels. Future Wabash students could carry out this study to further quantify cercariae output.

Presenter:	Long Nguyen
Sponsor:	Peter Mikek (Economics)
Title:	The Determining Factors of Bilateral Tra
	Trade Flows

This paper uses the gravity model of trade to analyze the determining factors of bilateral trade in Vietnam and the impact of financial instability on trade flows. The Poisson-Pseudo-Maximum Likelihood regression model indicates that for this dataset, economic size, distance, and common border have statistically significant impacts on Vietnam's trade activities, while exchange rate, landlocked, and membership in ASEAN and APEC do not have any direct impacts. Moreover, the regression coefficients for the FSI suggest that financial crisis has a negative impact on both Vietnam's exports and imports.

Presenter:	Paul Haesemeyer
Sponsors:	Andrea Bear & Heidi Winters Vogel (Th
Title:	The Haze Collection

Men's childlike wonder dissipates as they accept the understated identity Beau Brummell established two-hundred years ago. They no longer express themselves with wit and panache their forefathers possessed. Their tools of expression are constrained. Escape into this new world considering history's perspectives, dreams. Fantasies, and its haziness of masculine identity. The Haze Collection culminates designer Paul Haesemeyer's years at Wabash into a final display. Inspired by Anna Sui's exhibit at the MAD Museum during his fall semester in New York City, Haesemeyer sought to design a collection representing his interests in fashion and masculine expression. This collection asks men to look beyond "Dress for the job you want, not the job you have" to "Dress for the man you want to be, not just the man you are."

Presenter:	Tyler Richmond
Sponsor:	Nathan Tompkins (Physics)
Fitle:	Innovative PDMS Manufacturing

The process of soft lithography is well established as the standard methodology for rapid prototyping of microfluidic devices. However, despite the flexibility of soft lithography the typical process still utilizes photolithography as one of the steps. Here, we describe a variant of the soft lithography process utilizing an inexpensive 3D printer in the place of photolithography. This variation allows for fully three-dimensional microfluidic devices, at a fraction of the cost, while maintaining all of the material advantages of PDMS. Improving the older 3D device. Starting this project there was a device that was already made that had a similar design. One of the main goals of the work here was to improve this existing device by reducing its size and complexity.

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Presenters:William Lillis, & Andrew RippySponsor:James Brown (Physics)Title:Numerical Simulation of Ion Optical Flight Paths through a Sweeper Magnet

Simulation of ion trajectories in the magnetic field of a "sweeper magnet" are an important part understanding many nuclear physics experiments. We developed methods via code in C++ and Python that create a 3D model of a magnet's field from measured values as well as to track high speed ions as their paths are bent by the magnetic field. We compare our results to a traditional ion-optics approach. This work then serves as a test of a critical part of the analysis infrastructure for experiments to explore neutron-unbound states of atomic nuclei using the MoNA-LISA neutron detector system at the National Superconducting Cyclotron Laboratory.

Presenter:	Zachary Myers
Sponsor:	Walter Novak (Chemistry))
Title:	Sequence and Structural Analysis of Metal Binding Sites in Metal Dependent Regulator Proteins

Gram positive bacteria possess metal dependent regulator proteins (MdeRs) which regulate the uptake and efflux of metal ions. MdeRs share a common fold, yet are highly diverse in sequence space, often sharing less than 20% sequence identity. Further, MdeRs exhibit important differences in metal binding and specificity. In this study, we determined the sequence and structural motifs responsible for these differences. We used sequence analysis tools to construct networks of MdeR sequences, then based on network analysis, we identified characteristic sequence and structural metal-binding motifs within each subfamily. Each of these subfamilies possess overlapping, yet unique sequence and structural motifs that may enable different metal ion specificities and modes of activation. This work enhances our current understanding of MdeR function and improves the assignment of specific function within the MdeR family.

