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About Eureka

Eureka is Detroit Country Day's first and only academic journal; the publication is focused on highlighting student achievements in academic fields of study. Originally founded in 2008 and directed towards publishing scientific research, *Eureka* broadened its focus in 2019 to include all major academic disciplines at the school.

An academic journal publishes peer-reviewed articles written by student experts about their work in academic disciplines. While a magazine journalist's work is primarily concerned with summarizing the work of others, academic journals allow experts to present their own research on an academic topic. That presentation requires meaningful analysis of the topic and consideration of multiple sources. The editorial board of the journal peer-reviews articles in order to ensure accuracy and quality of content; additionally, staff writers frame the work of the experts in an overarching concept or theme.

Aims and Objectives

Eureka is a publication meant to showcase the high quality of student-produced academic work at Country Day. As such, the publication is entirely student-run and serves as an opportunity for students to develop their analytical writing skills and share their work with the student body at large. The staff of the journal strive to foster a welcoming environment in the *Eureka* club where students can learn how to create both academic work and the journal in which such work is published.

Students interested in being featured in *Eureka* are welcome to submit their academic work to eureka@dcds.edu; membership in the *Eureka* club is not necessary to be considered for publication. Submissions for the next issue are due by **March 2024**.

The editorial board will choose work for publication on the basis of quality of writing and content. *Eureka* holds the right to deny any work deemed unsuitable for publication.

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SCIENCE

Editorial

Albert Einstein once said, “The important thing is to never stop questioning.” As new thoughts, theories, formulas, and ideas are discovered, we learn more and more about our world and its unknowns that are still waiting to be revealed. Einstein continues, “Curiosity has its own reason for existing.” In fact, much of what we have learned about the universe so far stems from scientific curiosity that will drive us to continue our intellectual pursuits.

The following articles tackle a plethora of scientific issues that have become prevalent in the recent age, ranging from treating brain tumors, using microbots in human bodies, testing the limits of generative artificial intelligence, and even psychology studies on a dangerous level, with each of them exploring an innovative field. Through the combination of knowledge, experimentation, and the desire to learn more, the mysteries of our reality will become known, one by one. The world never stagnates, and science is that gateway to help us keep up with the ever-changing world.

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Innovative Combination Therapy for Treating Brain Tumors

Connor Kalkanis

Class of 2024

Research has been conducted to cure cancer and develop cancer treatments, but it is still a developing and ever-changing field. In the following paper, Connor Kalkanis studies the Glioblastoma Multiforme (GBM) tumor, which is a fatal and aggressive brain tumor. Beyond just studying it, Kalkanis remarks about his methods of researching and testing ways to treat GBM using TMZ chemotherapy in tandem with genetically engineered micro-RNA to prevent resistance-building to the TMZ.

Rationale and Background:

Glioblastoma Multiforme (GBM), the most malignant brain tumor, remains nearly universally fatal despite decades of research and countless advancements in modern medicine. Today, with optimal treatment, the survival time for GBM is a median of 15 months. Typical treatment for the disease involves surgery, radiation therapy and temozolomide (TMZ) chemotherapy. Shortly after TMZ treatment begins, the tumor quickly develops acquired chemoresistance; the tumor stops responding to the chemotherapeutic agent, typically leading to death within two years. I plan to utilize animal avatars, which mimic actual human GBM patients, to develop and test a three-part combination therapy involving TMZ, genetically engineered micro-RNA in exosomes, and Focused Ultrasound (FUS). Together, this combination will aim to prevent GBM's ability to develop drug resistance to TMZ, thereby enhancing its efficacy and improving patient outcomes.

Procedures, In Vitro: I plan to begin my experimentation with a proof-of-concept in vitro study in order to measure my micro-RNA's impact on increasing TMZ's efficacy. I will first administer TMZ by itself to GBM cells in a petri dish, and measure the number of cells present post treatment. Then, by administering TMZ in tandem with my genetic material enclosed in exosomes, I can measure the resulting number of tumor cells from this two-part treatment and compare the quantity to the monotherapy results. It may take several iterations of micro-RNA before I engineer a material that can sufficiently increase TMZ's efficacy.

Vertebrate Animal Research: While in vitro results may be promising in the cell culture lab, it is vital that my therapy be tested in mammal models, in order to most accurately gauge its potential effectiveness in treating real human GBM patients. The in vivo portion of my project opens the door to future research that will could eventually improve the standard of care for real brain tumor patients. Before any experimentation is

done to a given animal, it will be put under anesthetic (in accordance with the proper safety guidelines in place at Henry Ford Hospital). Care and comfort of the animal will be handled properly and as outlined in the IACUC approval form under which my project operates. I plan to utilize 32 individual Athymic NCr-nu/nu nude rats, supplied by my two supervising mentors and the Department of Neurology at Henry Ford Hospital. This is a very specific species of rat that is immunodeficient as a result of a genetic mutation, which is essential to the establishment of the animal avatar and implantation of foreign GBM cells. I anticipate the number of total rats involved in my study increasing by ~15% due to standard population thinning and pre-study screening of each animal, but I will only end up conducting my research and gathering data on 32 rats. Every animal in the study will be under the supervision of the scientists involved in regular laboratory maintenance. I plan to make regular visits to the lab for animal treatment and maintenance. All rats will be housed in Henry Ford's regulated research laboratory. By the end of the study, my supervising scientists will handle all animal sacrifices and disposal, following current safety guidelines and acting in accordance with our laboratory and institution's rules.

Procedures, In Vivo - Establishing Avatar Models: First, I will establish an animal avatar model using nude rats. This process begins with a neurosurgeon resecting a GBM tumor from a real patient's brain during surgery. Then, GBM tissue will be carried to the cell culture lab, and

by a series of enzymatic dissociation processes, I will be able to break down the tissues into their component cell parts. Then, I'll perform a neurosurgical procedure on the nude rats for tumor implantation. Once the cells take hold and the GBM develops in the rat, that animal will become a completed avatar for the patient in which the cancer originated; the rat will now be carrying the same exact GBM as the patient, which will allow for a possible extrapolation of my results to the human's actual therapy.

Procedures, In Vivo - Treating the Avatar Models: In applying the treatment from the in vitro part of my study to animals, I also plan on utilizing FUS. This device uses high frequency sonic waves to open the blood-brain barrier (BBB), hopefully allowing for a higher volume of TMZ and micro-RNA-exosomes to reach tumor targets, leading to an even further increase in TMZ efficacy and tumor reduction. After reviewing current scientific literature surrounding the topic and discussing with my supervising scientists, I am confident in beginning treatment with a 20 kHz frequency (which may vary slightly depending on initial results, as this is a novel application of FUS). TMZ oral administration will occur through the rats' water source five times per week, and micro-RNA exosomes will be delivered once each day.

In Vivo Data Collection: I plan to measure results by tumor volume and survival time. Using the nude rats supplied by my research institution, I will make MRI variable tumor volume measurements once per week. After the collection of data (once the animal has succumbed to the tumor or has lost 20%

of its body weight), I will resect the tumor and measure its volume by slices. At this point I will also record the death of the animal to be used in the survival study portion of my in vivo analysis.

Risk Assessment: Throughout this study, I will practice proper safety procedures in every aspect of preparation and data collection. I have been volunteering at the Henry Ford laboratory for over a year as of Fall 2022, and over the course of that time, my supervising scientists have given me an extensive lab safety training as it relates to both the cell culture lab and dealing with animals. In the cell culture lab, I will wear a research lab coat with sterilized gloves and a face mask. For the in vivo portion of my study, I'll do a surgical prep of the animals and use surgeon hand scrub, drapes, sterilized gloves, a mask, and will prepare the surgical site with a shave incision site, betadine, and alcohol (per standard animal surgery guidelines in all modern research institutions).

Data Analysis: For the in vitro proof-of-concept, I will use optical density readings in order to measure the volume of tumor cells present before and after treatment. A lower quantity of GBM cells present after being treated with TMZ and my micro-RNA vs. TMZ monotherapy will indicate a successful increase in TMZ's efficacy as a result of the genetic material. For the in vivo portion, I will measure the volume of the rats' tumor by dynamic MRI scans throughout the treatment. Once the animal has been sacrificed by the qualified scientist, I will measure the volume of its tumor by slices in order to make the most

accurate measurement. For both the tumor volume analysis and survival study, I will separate the rat population by which treatment they received, each with eight individuals: there will be a group for the no-treatment control, TMZ monotherapy, TMZ + micro-RNA, and finally TMZ + micro-RNA + FUS. By calculating a median tumor volume and survival time for each population and then comparing against each other, I'll be able to accurately determine the extent of the positive effects my treatment has on in vivo animal models, both by tumor volume and by survival time.

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Autonomous Navigation of Medical Microbots using Deep Reinforcement Learning

Vikram Goddla

Class of 2024

In the following paper, Vikram Goddla writes about methods of navigation for miniature sized shape morphing microbots in the human system. He uses reinforcement learning (RL) and inverse reinforcement learning (IRL) to assist with the navigation of such microbots, which mimics human trial and error. The RL solution was developed in an integrated in-silico framework with magnetically powered microbots in a human-vascular-system-like fluid. In Goddla's experiments, the RL solution successfully derived optimum control policies for autonomous navigation of microbots in undefined biometric environments.

Artificially made miniature sized micro robots (microbots) are small-scale autonomous devices which are capable of performing complex tasks by swimming in fluidic environments¹⁹. These microbots transduce free energy from their surroundings and convert it to directed motion²⁰. In many ways, the size and propulsion techniques of these microbots make them synthetic analogs of biological self-propelled units such as bacteria and algae. The swimming behavior of microbots is designed to mimic the motion of natural agents such as flagella, although the propulsion means may vary. These small-scale devices are also referred to as millibots or nanobots, differentiated by their size. In recent years, there have been significant developments in the manufacturing methods, propulsion

techniques and position and movement tracking mechanisms of the microbots. Such developments along with the usage of advanced soft-gel materials enabled the microbots to offer several advantages over the natural biological swimmers, since the surface properties, particle geometry and propulsion mechanisms can be customized to suit specific needs of any given application. Consequently, microbots are increasingly becoming excellent candidates for a number of biomedical applications including: direct drug delivery for hard-to-reach areas such as brain tumors; removal of blood clots in the vascular system; disease diagnosis with sensors and feedback as well as aid as surgical tools. Such applications in medicine are revolutionary in not only providing new means to address current problems in the mentioned

biomedical applications, but also reduce the risk of infection, shorten recovery time and improve the accuracy and effectivity of disease treatment²¹. The following diagram illustrates various characteristics of medical microbots as well as their applications in the biomedical space. There have been a number of invitro and in-vivo experiments till date which proved the effectivity of soft-gel medical microbots (a.k.a. colloidal microbots) in biomedical applications^{1,2,8,16}. Soft-gel or hydrogel advanced compounds have been the materials of choice to manufacture the microbots for biomedical applications. Several different designs of microbots made with different soft or hydrogel composite materials with dynamic morphologies including helical⁵, fish-like²³, bi-polar magnetic robots²⁵, self-folding magnetically controlled robots³⁷, as well as rectangular tumbling robots¹ have been successfully used in these experiments. The following diagram illustrates several recent designs of medical microbots for biomedical applications.

Different propulsion techniques including magnetic, acoustic, optical and chemical propulsions were employed to power the microbot movement^{21,24,25}. Various path planning algorithms and mechanisms have been experimented to facilitate microbot navigation⁷. However,

navigation of the microbot through unknown and complex environments such as a human body has been a significant challenge. Several manual navigation techniques have been utilized to navigate the microbot. Some experiments included attaching the microbot to flagella to navigate in tandem. However, automated control systems to navigate microbots in the human body have been elusive. The complexity, variability, and unpredictability of human system as well as with the shape morphing nature of the microbots, present a significant challenge in constructing accurate dynamic and kinematic models of microbot behavior and consequently making it impractical to use traditional feedback control mechanisms². The challenges in building comprehensive and accurate dynamic and kinematic models to represent the human system are detailed in the subsequent sections. To address the issues of complexity, variability and unpredictability of the human environment in which the microbot is designed to navigate, I propose a novel deep learning framework with reinforcement learning and inverse reinforcement learning solution components for positional control and autonomous navigation of medical microbots. Reinforcement Learning (RL) is a unique class of machine learning frameworks, in which an RL agent (control system) learns a control

policy by interacting with its environment through trial and error and with the guidance of reward and penalty functions. Reinforcement learning is inspired by human behavior which gains experience by performing tasks in an unknown environment on a trial-and-error basis. Guided by reward and penalty functions, an RL agent perceives, interprets and adapts to its environment and learns optimum control policies by rewarding desired behaviors and penalizing undesired behaviors. Such ability to learn independently based on experience, in any environment, without the need for detailed understanding of the environment's characteristics makes the Reinforcement Learning framework an excellent candidate for autonomous navigation of medical microbots. Several studies have been reported which successfully leveraged reinforcement learning algorithms for path planning and robotic control applications^{9,21,25,26,27}. For e.g., Colabrese et al. have shown via simulation that smart particles can learn to accomplish difficult navigation tasks in complex fluid flows, without making attempts at a fully realistic description of the particle dynamics nor at the actual complexity of real flows²⁷. Yang et al., have leveraged Q-learning to theoretically demonstrate navigation of colloidal robots in simulation⁹. Behrens et al., have demonstrated a

successful experiment to navigate a microbot in a circular track using reinforcement learning with soft actor critic algorithm². However, to the best of my knowledge, studies providing integrated reinforcement learning solution framework with multiple algorithms including Soft Actor Critic and Maximum a-Posteriori Policy Optimization algorithm, augmented by inverse reinforcement learning have not yet been reported. I present a novel and comprehensive solution framework with an integrated simulation environment (in-silico environment) with deep reinforcement learning and inverse reinforcement learning components, which are validated using in-vitro experimental setup featuring a fully functioning lab-on-a-chip environment representing a section of human vascular system. The components of the solution framework include: microbot design and manufacturing; lab-on-a-chip biomimetic environment made with polydimethylsiloxane (PDMS) representing a section of human vascular system; magnetic field generation using tri-axial electromagnets; image processing module enabled by overhead cameras to capture the position feed the current state of the microbot; a control system powered by multiple deep reinforcement learning algorithms; magnetic actuation module to power and direct the

microbot movement; and a deep inverse reinforcement learning framework to recover the reward function of an optimum navigation run. The solution components are provided in both the in-silico and in-vivo versions. The in-vitro version provides a physical demonstration of autonomous microbot navigation in a lab-on-a-chip environment whereas the in-silico environment enables experimentation of several deep reinforcement learning and inverse reinforcement algorithms.

Autonomous Microbot Navigation in a Lab-on-a-chip Environment (Invitro Experiment):

Invitro Experimental Setup:

With a successful proof of concept of autonomous medical microbot navigation in the in-silico environment, I conducted several experiments in the in-vitro environment. This in-vitro setup is constructed around a lab-on-a-chip microfluidic environment, which is similar to those used for organ-on-a-chip used in drug testing and other cell growth applications. The in-vitro setup is inspired by the procedure laid out in previous studies including Wang et al⁶, Jeon et al.³⁵, Hunter et al.⁴, and Behrens et al². I constructed an agar based soft-gel helical medical

microbot (which can be infused with drugs) and a tri-axial electromagnet to provide magnetic actuation. In addition, I developed an image processing framework to capture and feed the current state of the microbot to the reinforcement learning agent (control system).

The control system was not provided with any knowledge of the characteristics of the swimming environment, the microbot and the magnetic actuator. The RL control system was trained in a continuous action space and learned optimum control policies for autonomous navigation of the microbot. I finally used inverse reinforcement learning techniques to recover the reward function based on the most successful behavior of the control system. The materials and methods used in the in-vitro experimentation as well as the results obtained during the training process of the reinforcement learning agent, are described in the following sections. The following diagram illustrates the overview of the setup used for the in-vitro experiments.

Microbot: The materials and manufacturing methods for the microbots depend upon the medical application. Microbots are used in several biomedical applications including disease diagnosis, disease treatment, blood clot removal, precision medicine and certain microsurgical procedures. For any of the

medical applications, the most important factor to consider in designing an untethered medical microbot is the capability to transform diverse sources of energy found in its environment into mechanical force to facilitate navigation and perform medical procedures²⁹. At milli, micro and nano scales, locomotion is governed by low Reynolds numbers and Brownian motion. Hence the primary consideration for designing micro/nanorobots relies on developing engines that continuously “turn-on” and generate enough force to overcome the drag forces from the environment.

Based on existing research^{4,27,29,30,39,40-45, 47,48}, I developed two different morphologies for the microbots: a helical structure; and a spinning disc with claws structure. Both of these microbots are capable of converting their spinning motion in a rotating magnetic field into forward propulsion. My first experiment was conducted with a soft-gel magnetic helical microbot, which retained shape morphing characteristics, to facilitate its navigation through unknown and complex environments. Helical magnetic microbots have shown significant promise in experiments for both blood clot removal¹¹ as well as chemical infusion for targeted drug delivery⁴.

To manufacture the helical soft-gel magnetic microbot, I followed the micro-molding fabrication technique, published

by Hunter et al.⁴ as well as Beherens et al.². I designed the microbot and the negative molds using SOLIDWORKS Fig.1. I considered 3D printing and CNC machining techniques to manufacture the mold, but I chose to use the CNC machining technique to create the negative molds, as it offered better accuracy and repeatability. The design of the microbot and the negative molds are shown below. The microbot was approximately 4 mm in length and 1 mm in outer helix diameter.

A medical microbot should be biocompatible and should exhibit shape morphing characteristics for easier navigation. In addition, the medical microbot should be capable of converting the energy in the surrounding environment into forward propulsion. For my experiment, I chose magnetic energy as the powering mechanism and accordingly the microbot should be conducive to magnetic actuation. To meet these requirements, I used 3% Agar hydrogel, uniformly mixed with 5% Iron Oxide to make the microbot. Agar is a gelatinous substance derived from red algae, which is used in several applications in microbiology. Agar, when mixed with iron oxide, can form into a soft-gel compound, which can be magnetized to become an effective

microbot. To manufacture the microbot, Agar was heated to its melting point and then immediately mixed with iron oxide nano powder until it became a homogenous mixture. This mixture was then poured into the manufactured negative mold and then allowed to cool until the microbot has solidified. Microbots were gently removed from the mold with tweezers, without compromising their structure. They are then magnetized across the short axis to make them susceptible to magnetic actuation. This soft-gel or hydrogel structure is a prime candidate for chemical infusion by which drugs can be encapsulated and directly delivered to the target areas. These chemically (drug) infused soft-gel robots can also be coated with synthetic E Coli to camouflage them and then be exposed to neutrophils to enable them to cross the blood brain barrier and deliver chemotherapy drugs directly to the hard to access brain tumors.

Polydimethylsiloxane (PDMS)

Microbot Swimming

Environment: A biomimetic swimming environment for the microbot is a critical part of the invitro experiment to demonstrate the effectivity of the reinforcement learning solution framework for the autonomous navigation of the untethered soft gel microbot. A few

decades ago, researchers used glass and silicon wafers to create microfluidic channels but lately Polydimethylsiloxane (commonly referred to as PDMS) has been extensively used in biomedical research, especially to create lab-on-a-chip and organ-on-a-chip environments. A PDMS lab-on-a-chip environment with microfluidic track would serve as an excellent candidate to serve as a swimming environment for the medical microbot, as it presents several distinct advantages including providing a biocompatible and transparent environment to create microfluidic tracks for a variety of applications including designing a lab on a chip. PDMS mimics biological environments such as human vascular system, by providing tortuous luminal environments, which are typically encountered by medical microbots. PDMS is also easier to manufacture and can easily be molded into any shape¹⁰. As PDMS tracks are transparent, there is no need for expensive imaging or tracking equipment to monitor and track activity or progress, including cell culture and microbot movement.

I designed and developed multiple PDMS environments to facilitate several parallel experiments. Each environment had two different tracks. The first track is a simple circular track with a 1.5 mm track

width. This was built to compare the results of this solution framework with similar prior research, which used Soft Actor Critic algorithm. The second track is a vascular microchannel representing a tortuous section of human vascular system with blood vessel forks. The vascular track was constructed based on the design presented in the study by Beverung et al., for Lab-on-Chip for Cardiovascular Physiology and Pathology⁵. The design of the vascular section was also inspired by some elements representing the 3D printed carotid artery used by Jeon et al. in their study of “A Magnetically Controlled Soft Microrobot Steering a Guidewire in a Three-Dimensional Phantom Vascular Network³⁵”.

A stereolithography 3D printer was used to create the designed mold with two tracks. We used the same mold for both the tracks to minimize the cost of manufacturing. It was then bonded to a silicon wafer and placed in a larger mold to completely seal the PDMS while it is curing. PDMS compound was cast over the mold as well as over a blank slab on silicon. Access holes were punched to provide input and output ports. The tensile properties of the PDMS track were thoroughly checked with established quality control procedures and then O₂ activated and bonded under vacuum. The following diagram presents two different PDMS

environments used in the in-vitro experiments. The PDMS microfluidic track was filled with Phosphate Buffer Solution (PBS), which serves as a biomimetic fluid, for the in-vitro experiment. PBS provides an excellent experimental environment with a low Reynolds number, to represent in-vivo like environments for which are encountered by the Microbots. During the experimentation, the PDMS environment was placed in a petri dish filled with the fluid. The microbot was placed in the PDMS environment using one of the access holes cut to provide input and output ports and then the entire environment was placed on top of the electromagnet. The overall setup for the experimentation is pictorially represented in the following sections.

Image Processing: The reinforcement learning agent requires the current state of the microbot position during its learning process. In real time in-vivo applications, such tracking is provided by sophisticated equipment such as MRI scanner. For my experiment, I used an Alvium 1800 U2050-USBC camera along with Basler lens C10-1214-2M, mounted and positioned right above the PDMS swimming environment. The USB camera functions by capturing the images of the Microbot in the PDMS environment, at a slow shutter speed and feeds them to the image processing module. I used a proven batching technique which was successfully used in the video games, to

calculate the angular velocity of the microbot. The USB camera was setup to take pictures at a desired frequency (some experiments were done with an image taken every 0.5 seconds and other experiments were done with an image taken every 0.25 seconds). The images were then concatenated before feeding them to the image processing module. The frequency of the images was aligned with the total step time of 1 second. The images included a reference marker (dark cross wires) placed at the center of the PDMS environment against which the microbot's angular position (angular displacement) was determined. The RL agent takes the concatenated images and calculates the angular velocity of the microbot which will be used in maximizing the reward. The image processing module was not required for the in-silico environment as the microbot position and the angular velocity were directly inferred by the in-silico framework.

Magnetic Actuation: Magnetic field has been proven to be an effective and viable energy means to power microbot movement in a number of micro-swimmer experiments, as the propulsion mechanism for the microbot^{17,20,24,29,30}. I used triaxial electromagnets² to generate a rotating magnetic field to impart a spin on the helical microbot. The microbot was designed to convert spinning motion into forward propulsion by leveraging its morphology, just like certain biological agents such as flagella. I used the documented procedures in Beherens et al², and Jeon et al³⁵. to construct the tri-axial electromagnet. The six bobbins for the electromagnet were made using locally

procured permalloy material and were attached to the 3D printed central cube, made from 9400e 3D printing resin material. The bobbins were wound with 30-gauge magnet wire and the entire electromagnet was placed in a 3D printed housing. The 3D printed housing was designed to protect the electromagnet from burnouts, using liquid cooling mechanisms. Sinusoidal current was passed through the coil using an Arduino board which was setup to convert mathematical signals from the reinforcement learning agent to pulse width modulating signals used for powering the microbot.

Microcontroller: The reinforcement learning control system is tasked with learning an optimal policy to direct microbot movement. The control system generates mathematical signals to direct the microbot movement, based on the current state of the environment. These mathematical signals were then converted by the microcontroller to generate pulse width modulated signals which were further converted to sinusoidal current waves with required frequency, amplitude and phase angle. These sinusoidal current waves were passed through the coils to generate the needed magnetic field to propel the microbot to its desired state to maximize the rewards. I used an Arduino StemTera breadboard to generate the pulse width modulated signals which were further amplified by an H-bridge motor driver This setup was used to modulate the frequency, amplitude and phase angle of the sinusoidal current waves for magnetic actuation of the microbot.

Reinforcement Learning Control System:

Reinforcement Learning (RL) control system is the most important element of the solution framework. As detailed in the in-silico section, this framework accommodates experimentation with multiple RL algorithms including Soft Actor Critic (SAC), Proximal Policy Optimization (PPO) and Maximum a Posteriori Policy Optimization (MPO). Additionally, this RL control system is augmented by Inverse Reinforcement Learning (IRL) solution component to further optimize the policies by applying custom methods based on Bellman equation and Logistics Regression functions for IRL. This combination of obtaining successful control policies by using several RL algorithms and IRL techniques is yet to be reported and this is what differentiates my research. I have illustrated some the key elements of the Soft Actor Critic algorithm, which I had considered for implementation. Similarly, I experimented with other algorithms including PPO and MPO to get experiment with a mixture of off-policy and on-policy algorithms to obtain the optimal behavior of the RL control system.

The RL agent takes the following inputs and learns by taking random actions on a trial-and-error basis, guided by rewards. The inputs include: angular displacement θ ; goal (a set angle – such as a 10 degree movement), the action values of magnetic actuation ($M_x, M_y, M_z, \Phi_x, \Phi_y$). Depending upon the type of the algorithm the RL agent tries to minimize the loss in the state-value function (also known as the

v-function), which represents the value of the state and action value function(s) (also known as the q-function), which represents the value of the current state and action. The following diagrams illustrate the overview of the SAC algorithm and the computation mechanisms for the v-function and q-functions for the Soft Actor Critic maximum entropy algorithm.

Results: The performance of the reinforcement learning solution is typically measured by the number of steps the agent takes to learn optimal policy behavior to achieve its stated goal. With respect to the autonomous microbot navigation experiment, the number of steps (and the time) signifies the angular displacement (and consequently angular velocity) of the microbot, which is the ultimate measure of the performance of the model. Additionally, the RL agent's performance is also measured by its ability to maximize its reward while as well as by its ability to minimize loss (value network loss, policy network loss). By conducting several experiments using the in-silico and in-vitro environments, I found that the reinforcement learning agents developed to autonomously control the medical microbot navigation learnt successful control policies and was able to navigate the microbot to its destination along the planned path, in several of my experiments. I conducted several experiments with 50,000 steps, 100,000 and 150,000 steps. In each of those sets of experiments, there were several

successful episodes where the RL agent provided mathematical signals to the microcontroller to modulate the frequency, amplitude and phase angle of the sinusoidal current waves to energize the magnetic coils and generate the desired propulsion to navigate the microbot. The following diagram illustrates one full episode where the microbot was autonomously navigated to its destination along its intended path.

This study illustrates that reinforcement learning can be used to develop intelligent control systems without detailed modeling of the environment to autonomously navigate medical microbots along their intended path. More studies are required to prove the navigation in representative models in-vitro and in-vivo. I am planning to extend this study to in-vivo setup to further study the efficacy of reinforcement learning framework to autonomously navigate the microbot in animal models.

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Using Generative AI to Explore the Limitations of CLIP Representation Space

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Class of 2024

This paper delves into the realm of generative artificial intelligence (AI) and its potential to conceptualize and portray abstract ideas, while revealing the boundaries of the CLIP (Contrastive Language-Image Pretraining) representation space. Generative AI, including ChatGPT, has shown remarkable prowess in generating diverse and creative outputs across various domains, such as images, text, audio, and combinations of the three. In this study, the utilization of unCLIP and Variational Autoencoders (VAEs) will be explored by leveraging the relationships between textual descriptions and visual depictions. Using the CLIP model, we aim to push the boundaries of creativity and abstraction, testing whether the AI model can generate concepts that challenge conventional categorizations and elude existing conventional frameworks through textual guiding prompts. Through a series of experiments, the potential of generative AI to synthesize abstract concepts by navigating the CLIP representation space is demonstrated. This study uncovers inherent limitations within this space, revealing instances where CLIP struggles to generate certain concepts specified by the user. These limitations highlight the need for a deeper understanding of the interplay between language and vision, particularly when dealing with abstract content. Furthermore, an analysis of the synthesized abstract concepts is presented by examining the extent to which they adhere to established linguistic and visual conventions. The findings of this study emphasize the delicate balance between pushing the boundaries of creativity and maintaining intelligibility, offering insights into the broader implications of generative AI in reshaping human understanding and expression

Generative AI has garnered significant attention with its ability to create new content, whether it be images, music, or even text. The models learn patterns present in the vast amounts of existing data available, opening up exciting possibilities in creative domains, data synthesis, and problem-solving. Among the various approaches to Generative AI, Stable Diffusion has garnered significant attention due to its ability to generate high-quality and coherent

outputs. Released in 2022, Stable Diffusion utilizes CLIP (Contrastive Language-Image Pre-training), which has emerged as a transformative approach that can simultaneously comprehend semantics and style from both images and text [1]. Stable Diffusion is trained on LAION, the largest training dataset available, with more than 400 million English image-text pairings [2]. CLIP has opened up new opportunities to explore and experiment with abstract concepts with its unique fusion of linguistic and visual

representations since its release in 2021 [3]. Previous models relied on learning image-text relationships from scratch in addition to the generation of the outputs, making the process much more difficult [4]. By learning to align images and their corresponding textual descriptions through a large-scale contrastive pre-training process, CLIP has achieved remarkable success in various image-text tasks, including image classification, object detection, and image retrieval.

Written prompts significantly influence image generation in Generative AI models, as these prompts serve as a guiding input to the AI model. Textual inversion has been used to guide AI models and shape the outputs based on provided images. By using 3-6 images, textual inversion allows users to teach new concepts to the model, resulting in personalized image generation [5]. The model learns new concepts in the embedding space of the text-encoder, which then can be used within textual inputs to generate images. Understanding the interplay between written prompts and Stable Diffusion models can shed light on how to optimize AI-generated results and identify potential pitfalls.

Due to its objectives, CLIP representations struggle with certain relational and assignment concepts. We aim to understand the feasibility of utilizing CLIP to generate abstract concepts and to identify and analyze constraints and boundaries of CLIP representation space. While CLIP has exhibited exceptional performance in tasks such as image captioning and concept-based

image retrieval, its effectiveness in handling complex abstract ideas present in textual inputs remains an intriguing area of exploration. By exploring the strengths and limitations of CLIP in this context, we can gain insights into its potential applications and further enrich the field of Generative AI. By systematically examining the performance of Generative AI models with various written prompts, we hope to uncover insights into their strengths and weaknesses. Additionally, this research seeks to contribute to the broader field of AI development, paving the way for enhanced AI systems that better align with human intentions and preferences.

Methods: Stable Diffusion will be employed for content generation. The model will be set up to generate abstract concepts based on the input written prompts. The textual prompts will have independent variables and conditions and will be created to test the model's ability to generate specific abstract concepts. Some prompts may involve relational or assignment concepts that CLIP representations have been known to struggle with, while others may focus on more straightforward concepts. The textual inversion technique will also be incorporated to help the model learn new concepts and generate personalized images based on the training images. Instances where the model is unable to generate specific relational or improbable concepts will be examined. Textual inversion will be utilized to refine and improve the generated concepts in such cases. The model struggled with generating

images given the prompt ‘a purple cat in a green hat’. Textual inversion was applied utilizing 6 images to teach the model the concept of a purple cat and an American football. The proportion of successful images generated by our model was calculated before and after using textual inversion. Images were evaluated as successful if they matched what the guiding prompt had indicated and generated the concepts specified by the input. For every prompt, 200 images were generated and evaluated individually.

Results and Discussion:

A. Prompt: “Purple cat in a green hat”

The model was given the prompt: “a purple cat in a green hat”. The proportion of successful images generated for purple cats increased from 13.14 to 22.06 after applying textual inversion.

B. Prompt: “Football in outer space”

The model was given the prompt “football in outer space”. The proportion of successful images generated for “football in space” increased from 13.33 to 28.00 after applying textual inversion. Textual inversion has been found to improve the proportion of successful images generated by the model for various unconventional prompts. We found this to be true for the “a purple cat in a green hat” prompt analyzed. However, textual inversion has also been found to suppress the model’s ability to generate a given concept within other contexts, including “a football in outer space”. The model learned the concept of an American football with images of a football commonly present on a football field or grass.

The images that were evaluated as failures for this prompt were generated with greenery present in the image. For this reason, we hypothesize that the model has associated greenery in the background with the new concept and was unable to generate the football in outer space as prompted. This phenomenon demonstrates that though textual inversion can be applied to improve the number of successful image generations, it also may learn a concept in a flawed manner, leading to the generation of more failure images. Additionally, the proportion of successful images ranged from 13% to approximately 30%, which highlights how new Latent diffusion models are within the field of Generative AI. As these models have only been developed as of recent, there are still various limitations regarding AI models and their ability to generate coherent images for users. This paper has identified one of these limitations as abstract concepts that are not commonly present within the LAION training data set that Stable Diffusion was trained on.

Conclusion: Stable Diffusion and CLIP struggled with generating abstract concepts as a user’s input became more complex and unconventional. When a certain concept within the guiding textual prompt was not commonly found within the training data set of the model, we found that the model’s ability to generate coherent images was severely limited. The model additionally generated multiple depictions of one concept, when the word defining the concept had various definitions. To improve the model’s ability to generate coherent

images, textual inversion was applied to specific written prompts, teaching new concepts of choice to the AI model. When the model was taught the specified concepts, the proportion of images evaluated as successful increased by twofold for both new concepts. The results suggest textual inversion can be applied to teach the model various abstract concepts when users find that generated images are unsuccessful. By building upon this foundation, this study seeks to contribute to identifying the constraints of current state-of-the-art generative models and areas of future advancements within artificial intelligence.

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The Psychology of a Serial Killer

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Class of 2024

In this paper, Armaan Dev writes about the impact of psychology on serial killers. Dev discusses the factors that the human brain controls. Such factors include thought processes in the brain, the control of emotions and senses, and motivation control. Dev continues by delving into the brains and behaviors of serial killers, including the role that genes play on the creation of serial killers, mental illnesses shared by serial killers, and several motivation factors that encourage serial killers to kill. This paper also states several methods that could be used to prevent the creation of serial killers.

Definition of a Serial Killer: We have all heard of them; people who commit the most heinous of crimes that seem to have no remorse for what they have done. Serial killers are individuals who have murdered a series of victims over a period of time (Psychology Today, n.d). The term “serial killer” became popularized when killers started getting more widespread media attention, brought upon by the true horror of their crimes (Psychology Today, n.d). Yet, no matter the atrocities these individuals have committed, there exists a curiosity among people around the world, who wonder what causes people to commit such acts. People also wonder if these killers were born a certain way, or if the environment around them influenced them into acting out their fantasies.

History of Serial Killers: Serial Killers have been the subject of talk throughout most of human history. Ever since ancient and medieval times, killers who slaughtered many were thought to be influenced by

supernatural creatures: werewolves, vampires, and witches just to name a few. Even after these killers confessed to the killings, they claimed that supernatural forces took control over them, causing them to commit some horrible acts (Psychology Today, n.d). Punishments included hanging, eye gouging, burning, and even castration depending on which part of the world the killer resided in. But in modern times, killing sticks to either the lethal injection or the electric chair. The amount of killers during the 1900’s drastically rose including killers such as Ted Bundy, Jefferey Dahmer, Richard Ramirez, the Zodiac Killer, the Boston Strangler, the BTK Killer, and a plethora more. These killers preyed upon their victims, each sticking with the same type of person they were going to attack, regarding race and gender. Even though serial killers had a different liking for who they wanted to kill, a common trend among most serial killers throughout history is to target weak and unfortunate victims. These individuals include those who are marginalized by society including the homeless, prostitutes, migrants,

homosexuals, children, and the elderly who can't define themselves from ruthless attacks (See Figure 1). These people are looked-over by society which provides serial killers with a lower chance of being caught as no one is looking out for these "forgotten" groups of people (Haggerty, 2011). Spaced out killings do still happen to this day, but have largely reduced due to more awareness and the wide use of security cameras along with the use of in-depth forensic analysis at crime scenes which can help identify killers through analyzing DNA. The United States has the largest number of serial killers in comparison to any other country in the world, and, to balance the scales, have produced the most advanced technology and state-of-the-art methods of catching killers (Whittington-Egan, 2008).

How Psychology Can Explain Serial Killers:

Many people wonder if a link can be made between the brain, and how it controls the motivations and fantasies of serial killers to commit such gruesome acts. Some people think that serial killers are just born a certain way that makes them want to kill people. Others believe that the environment in which serial killers are surrounded by, affects the way they behave and act. Thinking about the nature vs nurture debate, it is important to understand that genetics provide a spectrum for which someone can act on, while the environment in which an individual is faced with, determines the location on the spectrum for which the person lands (Berkeley Scientific, 2020). Finding the roots of the motivation that makes serial killers act upon their desires, has initiated a revolution

in research among scientists, trying to use data to identify a correlation between the brain and desires, and even run experiments to try to establish causation for why a serial killer kills people. This has proven to be an arduous task, as studying behavior is not as simple as running an experiment or looking at data. There are a variety of variables and factors that need to be considered when trying to determine a true cause. Delving into numerous studies and analyzing results, will help lead to a general direction of what causes serial killers to act the way they do.

Different Responses the Brain Controls

Thought Processes Within the Brain: Before looking into the mind of a serial killer and trying to analyze how the brain affects the behavior and motivation behind the actions of a serial killer, it is first important to establish the exact role the brain plays when affecting someone's behavior in the general population. Even though scientists are not entirely sure of how the brain forms complete thoughts, a general sense of how the brain processes and associates stimuli is understood. The brain receives external stimulation from sensory neurons. Neurons send signals throughout the body which then eventually leads to neurons being excited in the thalamus and primary somatosensory cortex. The specific process for which neurons are able to send a signal and produce a specific thought is not yet fully understood, but researchers have discovered that different regions of the brain are involved in specific cognitive processes such as perception, attention, memory, and decision-making. For instance, neurons firing

in the amygdala, initiate thoughts of fear (Reuell, October 5th, 2015). Researchers can identify the thoughts and the experiences of people by just looking at the specific regions of the brain neurons are firing in. A general sense of understanding what people are thinking about can be found from looking at brain scans (Reuell, October 5th, 2015).

The Control of Emotion/Senses: The brain plays a major role in initiating and controlling certain emotions. The James-Lange Theory of emotion states that emotion is created by the brain in response to a particular stimulus. Lange conducted a series of experiments where a subject's neural activity along with his cardiovascular activity was monitored with a change in environment and stimuli. Lange first measured the resting neural activity of the subject and his blood pressure before making the subject jump up and down violently. Lange measured a high increase in the blood pressure and neural activity after the repeated jumping around. This was the conclusion reached based on using Functional Magnetic Resonance Imaging. Lange found that an increase in heart rate led to widening of the capillaries, and increase in voluntary muscle innervation and movement (Wassmann, n.d). Lange stated that a particular biological response is perceived by the brain to then send out a particular emotion in the body. Lange stated that there must be some type of neurological center that must be responsible for processing emotion in different ways through similar stimuli (Wassmann, n.d). The brain plays an important role in distinguishing between different emotions and controlling them.

New studies have arisen that contribute emotional responses to the firing of neurons within specific areas of the brain. Scientists looked at the nucleus accumbens, central amygdala, and the ventral hippocampus. Kay Tye, the main scientist in this study, wanted to see how neurons fired in response to a pleasurable or frightening stimulus in three groups of mice. She trained the mice to distinguish between two different sounds, one of which was associated with a reward of sugar-water, while the other was associated with bad bitter taste of quinine. The scientists recorded the brain stimuli of the mice as they responded to these two types of stimuli (Trafton, 2016). The scientists found that neurons excited in the nucleus accumbens were excited by the rewarding cue but not the bad cue. The opposite result was found in the central amygdala as neurons were excited when presented with the quinine but were not excited when presented with the sugar-water. The ventral hippocampus served as a balance between the two, having excited neurons as a result of both cues (Trafton, 2016). This study found a correlation between different structures in the brain, having the ability to interpret different emotional responses. Serial killers may have an overabundance of neurons firing in the central amygdala, as this could lead to them feeling incredibly happy for the most basic reasons possible. Killing someone would generate an emotional high that killers would love to experience over and over again.

Motivation Control: The contribution of the brain to motivational desires is interesting. Studies have shown that dopamine plays a

role in motivation. When thinking about the rewards of a situation, the brain will release the dopamine neurotransmitter which creates a response of excitement for certain situations. The amount of dopamine released will then factor into the determination one will have when trying to achieve a certain goal at hand. The more dopamine released, the more motivation someone will have to complete a task. The less dopamine released, there will be a smaller amount of determination (Ramanathan & Dobrossy, n.d). To initiate the release of dopamine, scientists have looked at using Deep Brain Stimulation to initiate a response in the part of the brain known as the superolateral branch of the medial forebrain bundle. This structure in the brain is important when looking at motivation because patients diagnosed with clinical depression have been found to have fewer neurons firing in this part of the brain. Deep Brain Stimulation is the process of inserting a device just below the collar bone that sends electrical impulses to a particular part of the brain (See Figure 2). This type of treatment is commonly seen with patients that have Parkinson's Disease, as they have a loss of neurons firing in the part of the brain known as the substantia nigra, which is a dopamine pathway. Researchers wanted to see if using deep brain stimulation to excite neurons and release dopamine in the superolateral branch of the medial forebrain bundle would lead to an increase in motivation (Ramanathan & Dobrossy, n.d). Research conducted found that after a month of stimulation through the device planted under their collar bones, depressed patients stated that they felt a

drastic increase in their motivation to complete tasks and get their life back on track. A huge surge of dopamine in their bloodstream was detected. This led scientists to believe that increased neuron firing and an increased release of dopamine by the excited region of the superolateral branch of the medial forebrain bundle of the brain leads to an increase in motivation (Ramanathan & Dobrossy, n.d). An abnormal increase in the function of the superolateral branch of the medial forebrain bundle could be a potential cause for why serial killers would have a large urge to act upon their underlying desires, for which in humans with normal activity in this region, would have these urges suppressed.

The Brains and Behavior of Serial Killers

The Role of Genes on Creating Serial Killers: Moving on from the role the brain plays in creating different components of thoughts, emotions, and motivation throughout the general population, we'll now dive into the specific biological factors that are seen among most serial killers. Research has shown that serial killers have an ultra-expressed or non ultra-expressed version of a type of gene, which may play a role in their desire to kill people. A specific gene involved with aggression known as the monoamine oxidase A gene (MAOA). MAOA plays a major role in the breakdown of the neurotransmitter known as serotonin, which is a neurotransmitter which regulates behavior and happiness. A study regarding the effect of the MAOA gene was conducted in rats. Scientists performed a gene knockout on the MAOA. The trait for which this gene codes

for is aggression (Hagan, 2018). A “knockout” is when a gene of interest is purposely mutated, so that it can’t function anymore. This allows scientists to study the specific effects the gene has on the subject. When the gene knockout of MAOA was studied in rats, the rats became very aggressive, moving around and gnawing at the glass container they were being held in. The monoamine oxidase A gene was measured in low amounts for rats that were angry, but also in some rats where the gene wasn’t knocked out, they still displayed aggressive behaviors. This led scientists to conclude that when the monoamine oxidase A gene has either a high or low amount of gene expression in rats, (the gene produces a lot of RNA and proteins allowing specific traits to be expressed), the rats displayed aggressive behavior (Berkeley Scientific, 2020). Studies have shown that the large amounts of aggression shown by serial killers is the result of this gene either being expressed in low or high amounts. These studies on the genes of serial killers have proven that this gene plays an integral role in creating a person with uncontrolled behavior, and a high amount of aggression. Even though looking at the expression of a certain gene is not the tell-tale factor that someone is going to become a serial killer, it can explain irrational and over-the-top behavior (Hagan, 2018). Having increased anger would make a serial killer act out on their desires more readily, and would make them more prone to kill someone.

Mental Illnesses Shared Among Serial Killers:

Along with specific genes that may play a role in whether someone is more prone to killing

and lashing out, certain mental illnesses can also lead people to act out on their desires, as some have hit rock bottom or people are just not in the right headspace. The most common illness seen among 50% of all serial killers is a disorder known as Antisocial Personality Disorder (ASPD). At first glance, people attribute this disorder as just being a regular part of life for dozens of people. They deem being “antisocial” as a person who is shy and closed off to talking to others. The difference between just being antisocial and having Antisocial Personality Disorder is that people who have this disorder are characterized by using manipulation, being deceitful, and also not caring about others feelings. Serial Killers often try to trick and deceive their victims in order to make them vulnerable before attacking them. For instance, serial killer Ted Bundy would park his Volkswagen Beetle on the side of the road and act as if his car broke down, or one of the tires went flat. He would wait for a woman to help him out. Once the woman was focused on the car and was not paying close attention to Bundy, he would use a crowbar to knock her out and then put her in the back of his car (Sharma, 2018). Serial killers know that if they can lure their victims to them, and make them unaware of the real situation at hand, then they can more easily kill them without any struggle. Another common mental illness associated with serial killers is schizophrenia. Schizophrenia occurs when someone has jumbled thoughts, poor coordination, hallucinations, and disorganized speech and behavior. Someone with schizophrenia is more likely to attack people as they have a poor sense of what is going on around them,

and rational thoughts are intermingled with ones that are bad, which can lead to disorientation about their actions.

Schizophrenic people have a sense of reality that is distorted, and having this illness along with a drinking problem, can lead to even more erratic behavior patterns which can harm many people (Sharma, 2018). It is important to state that having a mental illness doesn't automatically create a serial killer out of everyone, but it should be noted that most serial killers did have a type of mental illness.

Motivation Factors that Lead to Killing: Serial killers have a strong sense of motivation to kill people. There have been many theories proposed as to why serial killers would want to kill people. Some theorize that the horrible murders committed by these killers are completely devoid of emotion. This can be further from the truth. When analyzing serial killers throughout history, a common trend can be seen between almost all of them. They tend to be insecure about making relationships with others; sparked from a past filled with either rejection or mistreatment (Sharma, 2018). To not face any rejection in their current lives, serial killers don't give others the chance to make an impression about them, as the killers exterminate their victims so that they can have full control and authority over the victim's body. They believe there is no way that they can be judged and hated, like they have been in the past, when the person they are spending time with is dead (Sharma, 2018).

Conclusion

Serial Killers in Today's World: Even after a

thorough abundance of research and analysis, the degree to which the creation of a serial killer is reliant on biological traits versus environmental factors is still unknown. At any given moment, it is estimated that there are around 25-50 serial killers that are active around the country (Psychology Today, n.d). But, with an advancement in technology through surveillance video, and DNA analysis, it is harder to get away with murder than ever. Take the Idaho College student killer Bryan Kohberger. After being on the loose for over a month, police were still able to identify him as the killer of 4 victims through a forensic analysis of his blood that was left over at the crime scene. Getting away with murder seems to get harder and harder every year, and will continue to do so as technology continues to advance. But, this may still play a limited role in how many serial killers remain in the country, as most of them could care less about the consequences of their actions, as they are only focused on fulfilling their desires (Psychology Today, n.d).

Preventing the Creation of Serial Killers Moving Forward: Moving forward it is important to check up on close friends and loved ones to make sure their mental health is in check. If odd behavior is noticed, finding help through a psychiatrist, clinical psychologist, or other person specialized in treating behavior, may prove to be the ultimate factor in stopping someone from going down a dark path.

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History

Editorial

Throughout history, radical changes and debates have arisen from political, economic, and social turmoil. From the revolutions in thought and ways of life in Europe in the 17th and 18th centuries to the Tulip Revolution in Kyrgyzstan in 2005, these revolutions have brought about immense changes to many aspects of people's lives, such as new forms of government, foreign involvement in their countries, and new ways of purchasing goods. The stories of these changes and conflicts provide a deeper understanding of the current state of mankind, and, importantly, they give insights into how to shape a better collective future. When we do not learn from these insights, in the perennial words of George Santayana, "we are condemned to repeat [our mistakes]."

These historical essays provide insight into revolutions throughout history and their short and long term effects. From these works, we learn about the far-reaching effects that changes in society bring and how those changes have shaped our world as it is, as well as the importance of remembering and understanding history in order to learn from humanity's past mistakes.

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Interstate 20:

Xavier Aviles

Class of 2024

In recent years, the protests triggered by George Floyd's death and the protestors' destruction of symbols of racial injustice caused the debate over whether or not Confederate monuments should be destroyed to gain widespread attention. In the following paper, Xavier Aviles examines the impacts that these monuments may have, including repressing African Americans socially and politically, promoting historical figures who unjustly sought to suppress African Americans, and enabling antebellum racism to persist. He ultimately concludes that Confederate monuments should be taken down because they perpetuate racism.

Starting in South Carolina, Interstate 20 spans over fifteen hundred miles and qualifies as one of the United States' major highways. The route ends in Texas, passing through Georgia, Alabama, and Mississippi. This road connects major southern cities, such as Columbia, Atlanta, Birmingham, Jackson, and Dallas, cutting through the heart of the Deep South. Around one hundred and eighty years ago, these states and cities were all a part of the black belt and had the largest slave population in the country. As enslavers, wealthy white men believed that it was their responsibility to civilize their slaves and that Africa was a country of savages. This undeclared duty became known as the White Man's Burden, used to justify the oppression of many races. A more nuanced version of these ideas is that white supremacy or the Caucasian race is superior to all others and should dominate society. The Old South supported and fought for white supremacy and firmly believed in the subjugation of Black people. During and after the Civil war, monuments and memorials were erected all over the country by the United Daughters of

the Confederacy (UDC), a hereditary association for female descendants of confederate Civil War soldiers. Postbellum, the southern effort to fight against the abolition of slavery is known as the Lost Cause and had a lingering effect in the south. In recent years, the intent of these monuments has been called into question and has become controversial. Despite acting as heirlooms to historical events, confederate monuments should be removed because they relegate Black people to an inferior status and espouse racist ideas.

Historians argue that confederate monuments in the United States are solely artifacts of a historical era; however, the funding behind these monuments provides alternate interpretations. Robert Augustus Toombs was a politician from Georgia who played a significant role in forming the Confederacy. He was elected Secretary of State of the Confederacy and fought in the battle of Antietam, where he was injured. Toombs was blamed for losing the Battle of Columbus because of his reluctance to use inhumane tactics. Approximately twenty

miles north of I-20, on the way from Columbia to Atlanta, in Washington, Georgia, the state preserved his summer home and established it as a historical marker. An average of \$18,000 of state funds annually goes to this residence's preservation. In 2017 alone, \$80,000 went to Toombs' historical monument for renovation purposes, a memorial to a man who fled the United States after refusing to sign an oath of allegiance to the Union (Palmer). Robert Toombs proved to be a man dishonored by America, but taxpayer dollars still maintain his legacy. This monument can be interpreted as a tribute to treason because of Toombs' attempt to flee after the war. The fact that the state government is supporting a memorial to this man is offensive to the American people, especially those who abide by the law and pay taxes. Over the last ten years, confederate monuments have been awarded \$40 million in federal funding (Palmer). Some Americans don't believe these monuments are old relics and think statues meant to oppress deserve to be adequately maintained.

To some, confederate monuments are not the product of a bygone era; their interpretation, however it may be seen, should impact current events. As well as being currently funded, the origins of these monuments date back to the Jim Crow Era (Palmer). The original purpose of confederate monuments was to remind all Black people of the race in charge. When viewed in the present context, monuments of this origin are no longer appropriate. With recent efforts to improve the equality between white and Black Americans, passers-by may interpret confederate monuments as inhumane,

discriminatory, and a display of white supremacy.

Confederate monuments imply superiority over Black people by simply existing. I-20 passes by Livingston, Alabama, three hundred and seventy miles west of Toombs' house, where a confederate monument stands in the courtyard of the Sumter County Courthouse and is dedicated to soldiers. Inscribed on the bottom of the monument is "Our Confederate Heroes." Organizations like the UDC could place tributes to the Confederacy anywhere, but the majority were erected on state or federal grounds (Cox). By building monuments in these specific areas, the UDC and other organizations are associating the racist white men of the Old South with governmental authority. People who believed in oppressing and subjugating Black people are honored in a context of power and justice, while almost none of their actions or beliefs represent those things. The monument in Livingston, dedicated to the memory of confederate soldiers, stands on the grounds of the city courthouse. By this choice of location, people who fought in the name of slavery are associated with justice, when in fact, the institution couldn't have been more unjust. These monuments are not only endorsed by the government but by law. It is a crime to move or modify them.

Governmental authority and its opinions can have a significant impact on society. According to the American Historical Association, the purpose of confederate monuments was to mask the effort to overthrow Reconstruction and intimidate Black people politically, isolating them from

"the mainstream of life" ("Statement on Confederate"). Democracy is meant to govern equally to represent the entirety of a nation. Erecting monuments intended to instill fear into a particular group of people goes against the foundation of government that America is built on. Unfortunately, at this point in history, the swaying of a local, state, or federal election was rarely investigated, perpetuating confederate memorials' effect on Black people. This intimidation kept them from gaining political power because of their severe impediment to casting a vote. Most monuments were erected postbellum between 1895 and World War I. Although Black people are making strides in civil rights, the 1896 Furgeson case legalizing segregation and the Jim Crow era established the New South. The monuments' primary intent was to present the southern cause as just and to make slavery seem like a valid societal institution. However, their erection took place during a time of segregation and extreme racial inequality and were put up as a demonstration of white supremacy (Cox). The UDC and other monument builders knew how each memorial to the Confederacy would affect the community. The inscription, "Our Confederate Heroes," was a distraction meant to intimidate Black people. Understanding that most people perceive slavery as inhumane, an attempt was made to sugarcoat the institution. It was not until the Civil Rights movement and the heightened use of violence against Black people that America publicly realized the purpose of confederate tributes.

Confederate monuments allow for the persistence of antebellum racism. The south

has come a long way from when it was the Cotton King and, therefore, the King of Slavery. Black people have developed and assimilated into American culture, part of that being religion. One establishment, Emanuel African Episcopal church, experienced a horrific shooting. The gunman, Dylan Roof, opened fire on a bible study group killing nine Black people. Additionally, before his attack, Roof had spent time touring former plantations and places associated with the subjugation of black people (Palmer). Roof's experience while visiting these historic locations negatively affected his perspective. His time at these memorials changed his feelings about Black people into a sudden urge to hurt them. The racism of the Old South, witnessed at these sites, inflamed his hatred towards Black people. Monument builders and designers must consider the adverse effects of these monuments because of the violence that tributes to the Confederacy can provoke.

Continuing one hundred and seventy miles west on I-20, Vicksburg, Mississippi, situated on the Mississippi River, harbors three monuments to significant confederate figures; Stephen D. Lee, John C. Pemberton, and Joseph E. Johnston led the south in the Civil War and fought to preserve slavery. Having numerous memorials and tributes close to each other reinforces the significance of the location and purpose, which is called symbolic accretion. It is used to magnify the power of confederate monuments (Labode). Symbolic accretion works over time, and its negative effect on the community increases exponentially. Adding to the number of monuments representing slavery and the

subjugation of Black people promotes systemic racism. Therefore, while the government continues to allow the erection of confederate monuments, racism in the United States will not only exist but grow. Black people have sacrificed their lives for their freedom and the freedom of others. The Red Summer of 1919 was when white supremacists terrorized Black people and took part in riots in over 26 major cities. "It has organized a nation-wide and latterly a world-wide propaganda of deliberate and continuous insult and defamation of black blood wherever found...This is the country to which we Soldiers of Democracy return. This is the fatherland for which we fought! But it is our fatherland. It was right for us to fight...We return. We return from fighting. We return fighting" (DuBois). World War I was when many Black people lost their lives, but those who returned home returned to a country that wanted to lynch them. Confederate monuments are meant to intimidate (Best). The south disrespected American soldiers who were Black. There is no worse welcome for soldiers than one where their country takes away the freedom they just fought for. Constant intimidation from physical reminders, such as monuments, adds to the stress and anxiety that come from PTSD or, as they called it, "shell shock." The American military is a body that protects and fights for democracy, and it is unfair to burden soldiers with the harmful effects of racism.

Although they are physical, historical connections to the Civil War era, states should take down confederate monuments because they demote Black people to a lower

social status and perpetuate racism. Much like I-20 in the United States, Autobahn 2, 4, 6, and 8 in Germany connect significant World War II concentration camp memorials. Tied to the start of both world wars, Germany has proven to be disfavorable; however, adopting its approach to addressing the Holocaust could benefit America. In Germany, there is a commission dedicated to deciding whether or not monuments are by any means offensive (Szayna). "Erwin Rommel was a great general, but there are no statues of Rommel in Germany. 'They are ashamed...the question is, why aren't we'" (Wilkerson 341)? Meanwhile, each US state makes its own decisions on the monuments in its borders. An organized body with the sole purpose of regulating monuments and their projected effect on society could help America on its road to equality. Humankind must remember history to learn, but the way by which it is remembered must be decided by the people who will remember it. ■

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Diplomacy and Peace: Hitting Refresh on the US-Japan Alliance

Arthur Gayden

Class of 2023

After the Second World War, Japan found itself with severe population loss and economic instability, a contrast to America who towered above the rest of the world. Fearing the potential spread of Soviet Union ideals of communism to other countries, the United States strived to rebuild the war-torn nations. This paper by Arthur Gayden analyzes the United State's attempts to help Japan, their greatest ally in the Asia-Pacific Region.

Once the dust of the Second World War had settled, America found herself at the pinnacle of a new world order. The great nations of Western Europe lay in ruins, and the powers of East Asia no longer flew rising sun flags over their once-mighty warships. Yet, in America, the war had resuscitated the American economy from depression, and by 1945, her GDP had nearly tripled (Herring 597). Although the United States towered above the rest of the world economically, Americans felt threatened by the spread of the Soviet Union's Communist ideology. As a result, post-war American foreign policy centered almost entirely on halting Communist expansion. In 1946, the United States adopted George F. Kennan's policy of "containment," which held that America must contain the spread of Communism or else countries would fall to it like dominoes (Kennan). American strategy pivoted towards helping war-torn nations to rebuild their economies in the hope that they would be less susceptible to Communism (Herring 620).

Having lost 3 million people and its economy during the war, Japan desperately required American assistance (Herring 596). In the following decades, America would restructure Japan's government and nurture its economy into one of the world's largest in an "economic miracle" (Appendix A) (Gersotel & Goodman 7). Japan has been America's greatest ally in the Asia-Pacific Region, allowing the United States to encourage economic prosperity in the region, ensure political stability, and advance foreign policy objectives.

Japan's restructuring began during its occupation by American troops, led by the authoritative General Douglas MacArthur (Iokibe & Minohara). MacArthur hoped to turn Japan into the "Switzerland of the Pacific" by democratizing Japan and designing a new government founded on American ideals (Herring 633). The "blue-eyed shogun" began with demilitarization, dissolving the military and

and the secret police (Herring 633; Iokibe & Minohara 139). MacArthur's General Headquarters also ensured that Article 9 of the new Japanese Constitution explicitly prohibited Japan from forming a standing army, even for the interest of national security, in order to keep the peace (Iokibe & Minohara 141).

The Americans held a trial for 28 war criminals, six of whom were executed, including General Hideki Tojo - the orchestrator of Pearl Harbor (Iokibe & Minohara 140). MacArthur hoped to set a precedent that American human rights standards would be upheld. However, MacArthur did not prosecute Emperor Hirohito (Iokibe & Minohara 141). The terms of the Japanese surrender, according to the Potsdam Declaration, had promised that the new Japanese form of government would be built according to the "freely expressed will of the Japanese people." (Potsdam Declaration). Many Japanese refused to surrender without a guarantee that the Emperor would maintain his position (Iokibe & Minohara 135). Many American experts believed that keeping the Emperor could be the key to reconciliation with the Japanese people following the bloody and arduous war (Iokibe & Minohara 130). MacArthur respected the spiritual significance of the heavenly sovereign in Japanese life; his goal was not to impose American rule but to keep the fragile peace.

The Americans promulgated sweeping democratic reforms by writing a new Japanese constitution. The General Headquarters created an elected parliamentary system and granted fundamental civil and legal rights to both

men and women, who could now own property and vote (Herring 633). MacArthur made sure to instill these core American values in the new Japanese government. In economic reform, the Americans pushed through the Labor Union Act, laid out a comprehensive plan for Land Reform, and, perhaps most notably, dissolved the industrial conglomerates known as *zaibatsu*, which held ultimate control over organized labor and wages (Herring 633). The *zaibatsu* were supplanted by new organizations that formed conservative parties, while the labor unions formed progressive parties (Iokibe & Minohara 141). In eliminating the *zaibatsu*, MacArthur democratized the system of government and the economy, affording greater control to the citizens and encouraging free market capitalism. The disappearance of the *zaibatsu*, paired with the Land Reform, meant that many farmers now owned their land, making Japanese farmers more productive, generating a surplus profit and cultivating rapid economic growth (Iokibe & Minohara 141). American reforms transformed Japan into an economic powerhouse founded upon American ideals that would become a powerful regional ally in the following decades.

After the initial rehabilitation, the focus shifted to adapting the new Japanese economy to be independently viable in the global economy (Iokibe & Minohara 143). At the outset of the Korean War, President Truman released a set of foreign policy objectives that reaffirmed the strategic importance of Japan as a "natural anchor" in defending the West in the Pacific (Iokibe &

Minohara 151). When Eisenhower succeeded President Truman in 1952, he and Secretary of State John Foster Dulles brought along the “New Look” foreign policy strategy, which cut the army’s funding but drastically increased nuclear weapons funding (Iokibe & Minohara 152). Eisenhower stated that in order to maintain the American hold on the Pacific, the United States must bolster Japan’s economy and potentially reinstate its military, given the lack of American ground troops. To boost the development of Japan’s global economy, the United States pushed to allow Japan to join the General Agreement on Tariffs and Trade (Iokibe & Minohara 152). In April 1953, the United States successfully advocated for Japan’s entry into the World Bank and International Monetary Fund and extended to Japan “Most Favored Nation” status (Iokibe & Minohara 154). America brought Japan into the Western free trade bubble, allowing easier imports and exports from Japan and encouraging foreign investment and funding in Japan (Iokibe & Minohara). At the time, America had established the Coordinating Committee for Multilateral Export Controls to limit exports to communist nations strictly (Iokibe & Minohara 154). However, America allowed Japan to open limited trade with China under Japan’s *seikei bunri* (“separate economics and politics”) policy; trade relations ended briefly during the Korean War (Envall). In the years to come, Japan underwent unprecedented economic growth, with its gross domestic product (GDP) experiencing a 123-fold increase from \$44 billion in 1960 to \$5.45 trillion in 1995 (“GDP (current US\$) - Japan,”). American aid put Japan’s economic

recovery on steroids, fostering prosperity and economic viability.

During the post-war period, Japanese Prime Minister Yoshida formulated his namesake doctrine under which Japan would focus on economic growth while relying on the United States for military protection (Envall 17). In return, the United States military would gain access to Japanese bases (Envall 17). During the Cold War, this security allowed Japan to focus its resources on economic growth. The United States gained a much-needed ally and military outposts in a volatile region.

However, the need for this arrangement has expired. According to Japanese political scientist Mataka Kamiya, during the Cold War era, circumstances necessitated a US-Japan alliance to “counter a manifest, specific security threat,” such as that posed by the Soviet Union (Envall 21). In contrast, modern threats in the Asia-Pacific are “latent, unspecified sources of instability.” (Envall 21). Today, the two primary threats to peace in the Asia-Pacific region are the unstable, nuclear North Korea and the more significant Chinese territorial threat (Envall 28; Heer 96-98). China has disputedly laid claim to the Japanese administrative region of the Senkaku Islands, various South China Sea islands, and even Taiwan (McCurry). Territorial disputes pose the greatest threat to peace in the Asia-Pacific region.

To counter the threat, America should assist Japan in transforming its Self-Defense Forces into a fully-fledged military, including a navy. American forces should not protect Japanese borders from imperialistic encroachment such as the Chinese threat;

doing so is an insult to Japanese national sovereignty and, thus, a betrayal of American values. Japan has been an independent nation for nearly 75 years and should become capable of self-defense. However, much of Japan's leverage rides on the large American nuclear umbrella. America must learn to keep its distance while maintaining a strong alliance with Japan.

Japan's economic alliance with the United States is paramount, especially with rapid technological development. In recent years, the Chinese defense industry has developed AI-enabled weapons systems that could "threaten global security and stability, particularly as U.S.-China rivalry intensifies." (Brookings Institute). China has successfully "indigenized" the semiconductor industry - an industry dominated by Japan with the United States' during the 1980s (Gerstel, Goodman 7) American research and development in new technologies like 5G must improve if the United States plans to keep its position as a peacekeeping power worldwide. A partial solution lies in greater cooperation between Japanese and American tech companies through programs like the Japan-U.S. Strategic Digital Economy Partnership (JUSDEP) ("U.S. Relations with Japan"). The United States should apply to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), a free trade alliance of Asia-Pacific countries, to further bind the American and Japanese economies and facilitate a greater research and development partnership (Schott).

The US-Japan Alliance is more important today than ever. Japan is the most remarkable example of a thriving free market

economy and democratic government in the Asia-Pacific region, serving as a shining example to the world of shared Japanese-American values. Japan also serves as a base for American defense operations should a threat arise and necessitate an American military response. When a tsunami hit Indonesia in 2004, American ships quickly delivered aid, thanks to naval bases in Japan (Cronin, Kliman, Denmark). If the United States were to abandon its alliance with Japan, conflict in the Asia-Pacific region could destabilize the global economy. In the era of globalization in which nations' fates are intertwined, it is essential for the United States to maintain its long-standing allies to preserve diplomacy and maintain peace in the world. ■

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Economic Policies of Seventeenth and Eighteenth-Century Europe

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Class of 2025

The sixteenth and seventeenth centuries were a period of tumult and change in Europe. The development of several seminal intellectual, socio-political, and religious frontiers during this period fundamentally altered European history and, eventually, the world. The Religious Reformation, Scientific Revolution, Enlightened socio-political ideas, and discovery of sea routes to the New World are among the oft-discussed ones. These frontiers had both progressive and regressive effects on European society. However, "Economic Policies of Seventeenth and Eighteenth-Century Europe" argues that during this period, no single intellectual frontier integrated the regional, national, and global socio-political landscape more than the switch from the feudal economy to the development of economic frontiers, mercantilism and liberal economic policy. In this paper, Saahith analyzes the context, cause, and impact of these economic frontiers on Western Europe.

History provides a lens for understanding the development of economic frontiers that develop in the context of societal values and political realities of the times. Following the fall of the Western Roman Empire in the fifth century, paused for a brief interlude by the Carolingian rulers (Pippen and Charlemagne), Europe was politically and geographically fragmented, with no dominant central authority and overwhelming domination of the society by religion for nearly a thousand years (Ferguson 41). As a consequence of the fragmentation of political authority and papal dominance, the economic policies across the several kingdoms and domains in Europe were seigneurial, i.e., feudal, in nature. Trade, commerce, and taxation were based on fealty and not based on overarching, rational economic principles. They were not

intentional, intellectual, or scientific constructs but rather a by-product of practice and socio-political dynamics. In the sixteenth and eighteenth centuries, England, the Low Countries (Dutch), and France saw the development of two new economic frontiers, mercantilism and liberal economic policy, following nearly a thousand years of feudal economy (Fitzgibbons 23-28). The Religious Reformation and the Age of Exploration in sixteenth-century Europe led to the development of the first new rational economic frontier, mercantilism. In contrast to the non-economic principles of feudalism, mercantilism was the first rational policy based on economic principles of trade, such as profits and surpluses, that led to increased economic growth and the scope of trade activity. While mercantilism was borne out of the Religious Reformation and the Age of

Exploration, it was marinated in the context of eighteenth-century enlightenment principles in England and France that collectively ushered in the second economic frontier, the liberal economic policy of Adam Smith and Jean Turgot that has resonance to this modern day.

Before the sixteenth century, Feudalism was the economic (and socio-political) structure of Europe for over a thousand years. Feudal economies were built on the exploitation of the masses and not on economic principles. It was a system by which a lord (often the king) divided portions of his/her land amongst his vassals (Dukes), who in turn subdivided their share into smaller lords (Earls, Barons, etc) for services, specifically military and taxes (Ferguson 103). This created a hierarchy amongst European nobility. The commoners, the serfs, tilled the land for produce and pledged fealty to the lord. A notable definition of the feudal economy of Europe, without broadening it to the socio-political aspects, came from Belgian historian Francois Ganshof, who said, "Feudalism describes a set of legal and military obligations among the warrior nobility revolving around the three concepts of lords, vassals, and fiefs" (Ganshof 34-35). In this system, the production of goods (mostly agricultural) was by the peasant/serf tenants of the land who then paid the lord with tax, military, and other services (Ferguson 105). Thus, it was a seigneurial system and was not based on rational economic endpoints like supply/demand, surplus/paucity of goods, services, or labor. Instead, it was a system based on the pillar of fealty and loyalty to the seigneur, with layers of control, obligation,

and often cruel authoritarian implementation. It discouraged trade, forbade entrepreneurship, and promoted serfdom by tying the majority of the population to lords or seigneurs.

In the sixteenth and seventeenth centuries, the Age of Exploration opened Europe to other cultures, ideas, and trade across far-flung nations of Asia, Africa, and the New World (Ames 56-62). This allowed for access to new and cheap raw materials from their colonies and the need to control sea routes (Ferguson 147). These factors, along with the increasing societal changes, especially characterized by the Religious Reformation in Europe, led to the reduction of papal influence and the clergy (Churchill 3: 290). The Religious Reformation and Counter-Reformation unleashed pent-up frustrations that ensnared France and most of Europe into a battlefield, like the French civil war, between the Catholics and Huguenots, starting with St. Bartholomew's massacre in 1572 and the bloody Thirty Years War from 1618-1648 (Churchill 3: 284-290). Protestant Reformation, especially Calvinism in the Low Countries, and the Anglican church in England promoted the role of the laity and allowed for the development of entrepreneurship, giving rise to a new merchant class in society. The religious divide and wars also led to death, famine, emptying of the treasury, lack of structure, and control of the vassals by the lords in most of Europe. This, in combination with exposure to other cultures and growing access to raw materials in the New World and Asia/Africa with expansion in sea trade, led to the growth of nationalist fervor and allowed for the

development of absolutist monarchies (Mjaaland 163-169). All of these factors collectively led to the development of the first rational economic frontier, mercantilism, in England/the Netherlands, and France.

Mercantilism emphasized nationalism and self-sufficiency through a favorable balance of trade in seventeenth-century England and Low countries. Mercantilist policies focused on the accumulation of national wealth and resources while maintaining a positive trade balance with other countries (Ferguson 278). Its economic principles were based on two core beliefs: the notion that the wealth in the world was finite and that of nationalism based on the Divine Rights of the monarchs (Smith 4). These principles gave rise to policies that relied on building excess trade surplus with other nations by exporting more than what the respective nations were importing. These factors were inextricably tied to the access to cheap raw materials, indigent hapless labor, and exploitation of the native population in the New World, Africa, and Asia from the development of sea routes (Smith 4). The royal decrees prohibited the import of textile goods, and restrictions were imposed on the export of gold with the notion that trade was a zero-sum game, and therefore the king/country needed to always have a surplus in exports. England developed mercantilist policies by passing the Navigation Acts in the seventeenth century to gain a competitive edge on naval trade while freezing the routes for other countries, specifically France (See Appendix I).

As a means of extending its far-reaching colonies, England formed the British East India Company in 1602 to control trade with

Asia, especially India, and thus built hegemony over the spice trade. Similar policies were followed by the Dutch, who formed the Dutch East India Company in 1600 that controlled trade with Southeast Asian countries (Gottmann 3) (See Appendix II). Often, European countries were at economic war with each other because of the notion that wealth was limited and nations needed to grow it, mostly in the form of gold, to allow for building armies and fighting wars.

The roots of mercantilist economic policies in France reside in the notion of the Divine Rights of the kings, a doctrine that germinated in the context of the Reformation and Counter-Reformation that placed the monarch at the apex of the state as being divinely preordained and derives his/her authority from, and is therefore only answerable to, God (Ferguson 285). The monarch was not answerable to the estates of the earthly realm (Estates General), namely the Clergy, Nobles, or Commoners. This led to the notion that the state and the king (monarch) were synonymous. Therefore all policies were directed towards the betterment of the monarch or state based on the decrees issued by the monarch (Ames 107-111). This was specifically exemplified by seventeenth-century France and was the cause of the Dutch wars of Louis XIV (Churchill 3: 301). The architect of French mercantile policies was its Finance Minister, Jean Baptiste Colbert, who was a staunch believer and supporter of the absolutist powers of the king. His policies, termed Colbertism during the times, evoked French dirigisme, the direct and authoritative control

of the economy by the state (Ames 89-97). He passed laws so that the state or national industries were protected from tariffs and taxes while exploiting French colonies and taxing finished products that were imported from other countries (Churchill 3: 304). This was practiced to keep the import expenses down but sell the exports at a higher price. Furthermore, to promote quality, his policies led to the building of guilds and craftsman organizations in urban areas that served as gatekeepers and prevented rural peasants from making products and competing in the marketplace (Ferguson 291).

The protectionist measures multiplied throughout the seventeenth and early eighteenth century and initially led to surpluses that helped fund Louis XIV's wars and the building of palaces (Churchill 3: 309). Thus, the mercantilist economic system developed in England and France as global trade increased and was based on the notion that the amount of wealth (gold) is the primary source of power for the monarch/state and had to be achieved at the expense of other nations because global wealth was finite. To achieve these goals, states intervened, controlled, and regulated most trade by passing restrictions, increasing taxation, protecting the local urban industry while exploiting colonies and rural peasants, promoting serfdom, and being in a permanent state of economic warfare with other countries. Thus, juxtaposed against Feudalism, mercantilism was based on rational economic principles of trade such as balance, profits, loss, surplus, and exchange of goods and services, whereas the feudal system

was based on the non-economic principle of fealty to the seigneur rather than the state.

Although mercantilism was based on economic principles, it did not reduce policies that led to the exploitation of the rural populace by the urban guilds and still limited the growth of many commoners (Sturtevant 202-233). The trade and economy of a nation develop in the context of societal values and political realities of the age. While the mercantilist policies led to global trade and surpluses in France and England, their societies in the eighteenth century were undergoing tumultuous intellectual changes that led to the development of the second economic frontier, the liberal economic policy. These changes were borne from efforts to apply the principles of reason and rationalism in understanding nature and led to the Scientific Revolution of the sixteenth and seventeenth centuries (Fitzgibbons 57). Application of these principles from the natural realm to understand the human condition, society, and politics led to the Age of Enlightenment (Hutchison 49-53). This ushered in the questioning of the core principle of Divine Rights, which was a basis for Mercantilism (Ferguson 303).

Furthermore, ideas of equal rights for all men and the questioning of the trade practices that allowed for serfdom laid the ground for the intellectual development of economic principles that would represent a new frontier (Rothschild 270-293). Specifically, the notion of freedom and the basic rights of humans, presented in the writings of John Locke and David Hume in England, and Montesquieu, Voltaire, and other philosophes from France, led to liberal notions of equality,

opportunity, and freedom to pursue crafts and talents for all people, urban and rural (Fitzgibbons 61) (Lock 7-9) (Hume 25). These liberal enlightened principles were then applied to the development of trade and industry, which led to a new frontier of economic policy, the liberal economic principles of Adam Smith of England and Jean Turgot of France (Pettigrew 204-211).

In direct contrast to mercantilist policies, these new liberal economic principles argued for minimal state intervention, free trade (and not protectionist policies), that wealth can grow at all times, and that trade is not a zero-sum game (Fitzgibbons 68). This was best described by Turgot as a *laissez-faire* type of economic system in which transactions between private groups of people or individuals should be free from state intervention. Adam Smith put forth the notion that trade can benefit both trading nations and individuals and that it need not be a competition for power. He saw the control of trade, commerce, and guilds by the state as the pantomime villain of economic development (Tracy 191-203). In fact, he was the one who coined the words 'mercantile system' to describe the policies followed by the erstwhile French and British governance of trade and commerce (See Appendix III).

Importantly, it laid out the economic principle that specialization in manufacturing and access to urban markets for all people, including peasants, will lead to competitive costs for goods and, thus, greater affordability and upward mobility (Fitzgibbons 70). Because they would be guided by the "invisible hand" that drives the common good, Smith argued that unfettered free

markets and imports/exports will lead merchants and manufacturers to invest in their home country (England), even if it is not the most profitable (Smith 1: 423). This concept of the invisible hand is mentioned only once in the above context but is misunderstood as stating that selfish profit-seeking by individuals will lead to the betterment of others in society (Hirst 107-129).

These liberal economic principles of Smith drove policies that led to the growth of cottage industries, the industrious revolution, and the dissolution of guilds, which led to upward economic mobility for peasants by the nineteenth century. Finally, the principle of specialization directly contributed to the development and impact of the future Industrial Revolution (Sturtevant 151-173). Thus, while still based on rational economic principles of profit/loss, supply/demand of goods, services, and labor, but informed by enlightened principles, the liberal economic policy represented a new frontier. In direct contrast to mercantilist principles in which trade is a zero-sum game and is strongly regulated, liberal economic policy was grounded in the notion of free trade, and that trade is not a zero-sum game instead, it can always grow wealth and improve all sides. Therefore, the liberal economic policy of the eighteenth century represents a new economic frontier that was adopted by the English/Dutch, and French.

Hence, the first rational economic policy, mercantilism, led to trade surpluses in England/Dutch, and France. This was the first new economic frontier from the centuries-old feudal system of economy. The

trade surpluses informed by the Enlightenment in eighteenth-century England and France led to the development of the second economic frontier, liberal economics. Both of these frontiers had a profound impact on the economy and the societies of these countries and, eventually, the rest of Europe and the world. For instance, for over a thousand years prior to the seventeenth century, during the period of feudal economy, the English/Dutch and French economies grew only 0.01%. But the development of rational economic frontiers,

mercantilism, and subsequently, the liberal economy led to an economic growth that averaged 1.5% per year and took only fifty years to double the economies of the English, Dutch, and French and contributed to the betterment of commoners (Ferguson 255). Although aspects of mercantilism are still practiced by a few countries, such as China and OPEC countries, in their foreign trade practices, the liberal economic policies of the eighteenth century are the sources of many modern-day capitalist societies in the West and Asia. ■

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Fighting for an Island: The United States' Support of Kyrgyzstan's Democracy

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Class of 2023

“Fighting for an Island: The United States’ Support of Kyrgyzstan’s Democracy” examines the United States’ efforts to support and promote democracy in Kyrgyzstan and provides suggestions for what the United States could do moving forward to continue those efforts. The paper evaluates the successes, limitations, and failures of the United States’ policies and programs aiming to increase voter turnout, strengthen the parliament, increase freedom of speech, and create a fairer judicial system. Ultimately, it concludes that the United States’ policies have been beneficial, but there is an urgent need for the United States to further promote and protect democracy in Kyrgyzstan.

Hailed as an “island of democracy,” Kyrgyzstan remained a hopeful example in Central Asia for its burgeoning democracy upon the dissolution of the Soviet Union in the 1990s (Pelkmans). However, by April 2005, the Tulip Revolution had rocked the country with more than ten thousand protestors gathering demanding the resignation of President Akaev, president since 1991, for flawed election results and a corrupted government (Pelkmans). The short-lived stability in Kyrgyzstan’s fledgling democracy was the manifestation of a poorly executed transition in the post-Soviet era. Adhering to the advice of major international bodies like the International Monetary Fund and World Bank and global players like the United States, the Kyrgyz government started large economic privatization programs along with deregulation of markets; these internationally-lauded measures did not attract any major investors in Kyrgyz’s economy, resulting in production levels to dip

below those of the Soviet period (Pelkmans). Facing a population deeply frustrated with the government’s version of democracy and capitalism, Akaev tried to maintain power through majority support in the parliament, whose members included a significant portion of his own family, pushing Kyrgyzstan to enter the Tulip Revolution and enter a period of remarkable uncertainty for the fate of the country’s democracy (Pelkmans). The United States has borne witness to significant political turmoil since then, with violent protests as recent as 2020 erupting over presidential and parliamentary leadership (“Kyrgyzstan Profile”). Ultimately, the United States Foreign Service’s efforts in Kyrgyzstan have been successful in securing a freely elected presidential democracy, yet the nation is still limited in its progress regarding democratic governance of its people and securing basic freedoms and individual rights.

With the support of the United States Foreign Service, Kyrgyzstan has implemented a legitimate election process as the underpinning of its democracy. As early as 2010, the United States has worked to monitor elections in Kyrgyzstan, sending monitors to all regions and collaborating with international groups and local officials to preserve voting regulations (“US Urges”). More recently, the United States has taken an active role in both educating the Kyrgyz republic on election protocol and increasing the capability of Kyrgyz bodies overseeing votes like the Central Election Commission through the Kyrgyz Republic Political Process Program (“Kyrgyz Republic Political”). While concerns about breaches in voting protocol remain in Kyrgyzstan, the Organization for Security and Cooperation in Europe declared the recent 2021 parliamentary elections to be competitive and peaceful, despite having only 35 percent turnout (“Kyrgyzstan's Parliamentary”). This assessment indicates that Kyrgyzstan’s protocols for elections, along with the United States’ and other bodies monitoring them, have fostered a suitable environment to create legitimate contention and mobility between political parties, allowing for Kyrgyz citizens to decidedly influence their representation in government. However, the low voter turnout indicates the need for greater civic engagement amongst the general Kyrgyz public before the United States can declare Kyrgyzstan’s population as duly represented in its elections.

The power distribution of Kyrgyzstan’s government leans heavily towards the country’s president, nullifying investments the United States has made in

bolstering Kyrgyzstan’s legislative branch. In 2010 a new constitution was approved by more than 90% of voters in a referendum, officially establishing Kyrgyzstan as a parliamentary republic (“Kyrgyzstan Profile”). The United States, in response, worked to strengthen the legislative branch with the 2010 to 2015 joint initiative with the United Kingdom, the Kyrgyz Republic Parliamentary Strengthening Program (US Agency for International Development). The initiative allocated equal attention to the parliamentary minority and majority and spearheaded numerous projects including creating a training center for legislative drafting, more than a hundred training sessions for parliamentary staff, and establishing a joint research fund for legislation (US Agency for International Development). These points of focus promoted a well-equipped legislature by providing staff the necessary background to pass legislation in a well-informed manner. Furthermore, by supporting minorities within the legislative body, the program supported diversity within the lawmaking process, allowing for minority groups and their representatives to possess influence in the Kyrgyz parliament. Unfortunately, by 2020, Kyrgyzstan’s legislature had turned over most of its constitutional power to the office of the presidency, a move made official when Kyrgyzstan’s voters later approved a new constitution with a presidential system (US Congressional Research Service). The constitution transferred significant legislative power to the president and reduced the number of legislative seats from 120 to 90, a transition that deeply concerned the United States (US Congressional Research Service).

By limiting the power of the legislature, Kyrgyzstan's new constitution acts antagonistically to the growth the Parliamentary Strengthening Program instituted and, more importantly, dramatically undermines political diversity and representation by consolidating most of the government power under one individual, the president, and their respective party.

Furthermore, Kyrgyzstan's media sector and freedom of expression are hindered by newfound legal restrictions, despite United States Foreign Service programs. The U.S. Agency for International Development has been involved for decades in promoting freer media in Kyrgyzstan: amidst the Tulip Revolution, the agency funded the only-print media outlet for opponents of President Akaev, and the U.S. embassy even provided generators for the company when a Kyrgyz company refused to provide it electricity (Shishkin). Kyrgyz media, as a result, has developed a reputation for being the best example of free reporting in Central Asia (Roberts). More recently, the United States' Cultivating Media Independence Initiative supported eleven private broadcasters in increasing their audience range by nearly 80% on average; the project resulted in the country jumping 15 places in the World Press Freedom Index in 2019 (US Agency for International Development). The United States' efforts have produced fruitful results in providing the Kyrgyz people with independent and diverse media outlets, especially encompassing the ability for them to access opposition viewpoints as opposed to solely state-influenced media. This freedom of

thought and expression is an encouraging sign for ingraining American ideals in Kyrgyzstan, but this progress is unraveled by increasingly restrictive laws on the media and non-governmental organizations. This past July, President Japarov, in violation of parliamentary procedure, passed a law allowing an undisclosed government body to block "false information" through service providers; furthermore, civil society organizations that accept funding from abroad, including from the United States, are now required to abide by tedious financial reporting requirements in order to protect against "'Western ideology' and 'LGBT+ propaganda'" (Kyrgyzstan). The troubling progression of legislation passed by the Kyrgyz government not only imposes restrictions on initiatives supported by the United States in Kyrgyzstan but also grants the government direct power to restrict the spread of information at the whim of some government agencies, directly contrary to the United States' efforts to preserve free access to media and information in the country.

Furthermore, the United States' initiatives to reform Kyrgyzstan's judicial system still leave Kyrgyz citizens without fundamental guarantees like due process under the law. The United States' Judicial Strengthening Program has encouraged Kyrgyz legislation strengthening judicial education requirements and increasing transparency on court decisions through the online publications of court decisions ("Reforming the Kyrgyz"). While these measures work to seemingly increase the reliability of Kyrgyzstan's judicial process, they do not directly address the lack of the

most basic individual rights in Kyrgyzstan's court. Freedom House's 2022 assessment of Kyrgyzstan revealed that evidence obtained through torture is regularly accepted in courts and corruption amongst judges is widespread, including amongst the Supreme Court, contradicting the United States' ideal of fair trials and protection from self-incrimination (Kyrgyzstan). Human rights activist Azimjon Askarov was convicted of inciting ethnic hatred in 2010 after documenting the violence against ethnic Uzbeks in southern Kyrgyzstan (Putz). Not only does Askarov's case highlight a widely publicized example of Kyrgyzstan's violation of due process for criminal cases, but it also underscores the United States' unwillingness to steer Kyrgyzstan towards making desired judicial reforms. Though the United States acknowledged Askarov's unfair imprisonment and even granted him a Human Rights Defender Award, the United States Foreign Service refrained from putting any diplomatic pressure on Kyrgyzstan to release Askarov in fear of pushing Kyrgyzstan closer towards its other ally, Russia (Putz).

Without serious pressure on Kyrgyzstan's government, the United States' involvement in the country will likely further Kyrgyzstan's course, still leaving citizens without guaranteed access to free media or impartial trials and keeping an imbalanced government in power. While the conflict in Ukraine continues, Russia has shifted its attention and aid away from Kyrgyzstan, allowing the United States to open talks with Kyrgyzstan over a new bilateral discussion agreement (Higgins). The United States should use this lack of Russian focus as an

opportunity to use its economic and other aid programs as leverage to steer the Kyrgyz government into rescinding laws that restrict its independent media sector and civil organizations along with establishing clear legislation protecting civil liberties in court. In addition, the troubling transition in Kyrgyzstan's government to a nearly unchecked executive branch can be traced back to constitutional changes passed by the Kyrgyz public along with decreasing voter turnout, meaning the United States has an immediate need to galvanize Kyrgyz voters into calling for a more balanced power division between the executive and legislative branches and involving themselves in their country's democratic processes. By doing so, the United States promotes a far-reaching domestic interest in government participation amongst Central Asia's "island of democracy" in Central Asia (Pelkmans). ■

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The Irish Revolution as Catalyst of Nationalism and Social Change

Henry Jiang

Class of 2025

Through the oppression of the British particularly during the era of the Reformation, Irish power was severely diminished due to restriction of Irish identity, unification and culture. As Irish nationalism grew little by little, the colony grew closer to the Irish Revolutionary Period driven by the power of small groups forming the Home Rule Movement. In this paper, Henry Jiang analyzes the results of the Home Rule Movement and how it developed Irish political and social changes.

As Britain's first colony, Ireland fought against its British oppressors for over nine centuries. Conflict ebbed and flowed throughout the early centuries and reached an escalation of tensions during the era of the Reformation, when British Protestants fought against Irish Catholic elites. In the 1690 Battle of the Boyne, the Catholics were defeated and the British created the Penal Laws, which prevented Irish landowners from passing land to their eldest son, therefore limiting the accumulation of power by Irish families (Howell). The Penal Laws were meant to prevent nationalism and the consolidation of power in Ireland and were further extended in the eighteenth century. These laws would continue to be in effect almost to the nineteenth century, and were relatively effective at preventing major uprisings, though revolutionary ideas still appeared occasionally (Howell). The British Protestants continued to fight and control the Irish Catholics, putting down a united rebellion in 1798 (Rahman & Clarke & Byrne). Fearing further unification among the Irish, the

British sought a more permanent political approach.

Throughout their control, the British sought to destroy the art, culture, and language of the Irish, preventing the people from speaking Gaelic or singing traditional songs, in an attempt to destroy any kind of Irish identity and therefore prevent them from unifying against British Rule (Figgis). Regardless, throughout the nineteenth century, Irish nationalism rose little by little. As the century progressed, a determined Irish spirit emerged in a few small groups with the Home Rule Movement (Rahman & Clarke & Byrne). Since British policies still dictated most people's opinions on achieving freedom, revolution attempts remained mostly unsuccessful. However, these small groups would rise and start a tumultuous decade known as the Irish revolutionary period. The turbulent development of the new idea of home rule in Ireland constituted not just a political frontier, but a major social one, starting steps in overcoming British-enforced political divisions and fostering nationalism

among the populace, which, as a result, addressed major social struggles and precipitated a shift in ideals and policies among the Irish people.

The early events that started the Irish revolutionary period, despite their failure, precipitated a major breaking point in rejecting British oppression and allowing greater unification. One of the first major events on the journey to self-rule was the Easter Rising in 1916. In 1916, a hodgepodge of small nationalist groups (such as the Irish Republican Army and the aforementioned Irish Volunteers) attacked government buildings in Dublin in an attempt to drive out the British occupants (Santos). However, due to poor internal communication, the attack was postponed by some groups and executed poorly by others (Santos). This lack of communication prevented groups from obtaining firearms, making future uprisings small and scattered (Santos). People associated with the uprising were imprisoned, while much of Ireland remained hostile toward the idea of rebellion. This was mainly because England, throughout their era of control, created disunion in the nation using bribery and policies such as the aforementioned Penal Laws (Santos). Irish soldiers in World War I particularly condemned the revolution, with one soldier, Gerald O'Driscoll, writing to his father that "the temple of glory built by our brave Irish regiments, had been pulled down by their own kindred." (O'Driscoll). At the time, many groups still wanted to please the British and thought that such rebellious actions would undo the harmony they had worked hard to build. One of the main reasons that revolution had not succeeded

was due to these conflicting opinions among the Irish people. However, these ideals would start to change when the populace saw how British officers handled the Easter Rising.

Despite the general pushback against insurrection, the revolutionaries in the Easter Rising were established members of society and interacted often with people in the cities. For example, the diplomat Roger Casement, an influential member of Irish society, was a major leader of the rebellion. The British government sentenced Casement to execution for his role in the uprising.

In response, Casement gave a speech to incite the people to the revolutionary cause, saying "If there be no right of rebellion against a state of things that no savage tribe would endure without resistance, then I am sure that it is better for man to fight and die without right than to live in such a state of right as this." ("Casement's Speech from the Dock"). Many Irishmen petitioned or wrote to pardon and free Casement, demonstrating the impact that Casement had on public figures and commoners alike. A petition to the prime minister found, as requested by the government, "men of character and weight and position" to sign a petition for Casement's pardon, totalling 299 bishops, university leaders, or other important figures ("Letter from the Casement Relief Petition Committee to Herbert Henry Asquith"). Casement's wife, also a respected member of society, wrote to the prime minister asking for Casement's freedom. Her letters and the British's unsympathetic response sparked great anger and sorrow in the Irish people (Santos). Confused by the commotion, some accounts stated that Casement had been

executed by firing squad just after the Rising, which stirred up more public unrest; in actuality, he was executed by hanging in August 1916 (Hanna). Many other upstanding Irish citizens faced Casement's plight, which swayed the public opinion to respect the revolution and those who died for it. Fliers were even posted, listing those who participated in the Easter Rising and asking for prayers for the men who died "fighting for Ireland." (See Appendix I). As the aftermath of the revolt developed, public opinion turned away from British manipulation. Before the Easter Rising, a combined effort to free Ireland was not possible due to a lack of coordination between the various Irish revolutionary groups. At the start of the Irish revolutionary period, however, the Easter Rising and merciless execution of beloved members of society sparked calls for greater unity and impacted many important communities who felt the heavier crackdown by the British on a more personal level. Thus, the failed attempts at revolution that started the Irish revolutionary period still proved to be a major turning point for public opinion. A historic level of nationalism suddenly began expanding throughout Ireland, and would further develop throughout the war of independence. Although this attempt at a revolution showed disunity and failure, it left room for unity to grow and inspired the unified efforts that eventually freed Ireland.

Further advancements in nationalism would be necessary and ultimately brought about throughout the Irish revolutionary period and the start of the Irish War of Independence. On January 21, 1919, members of The Irish Volunteers, one small group of

revolutionaries, ambushed British officers in Tipperary, officially sparking the Irish War of Independence (Flynn). After the Easter Rising and the start of the war, the movement for Ireland's freedom gradually became a mass movement, which gained traction despite the fact that the revolution's ideologies would never truly gain support from many important groups. Until 1921, the Dáil Éireann (Parliament of Ireland) never declared war, nor approved the actions of the IRA and Irish Volunteers (Flynn). With less government support than desired, and even internal resistance, the revolutionary groups relied solely on nationalism to garner support. Among the revolutionary groups, the number of members became large enough that ideas could be spread throughout all Irish people. By 1919, the Irish Volunteers' ideals spread through government announcements, as well as propaganda presented in the form of media, even including postcards (See Appendix II). Groups also created journals such as *The Irish Bulletin* and *An t'Oglac*, which the Irish Volunteers created in 1918 solely to incite the people to revolution (Rast). This journal declared that any Volunteer could use "all legitimate methods of warfare against the forces of the English usurper." (Flynn). These propaganda efforts reflected the requirement of growing support for the Irish revolutionary cause. The newspapers highlight both greater support for nationalism by the people and greater efforts to maintain it by revolutionary figures.

As changes in Irish nationalism were brought by the Irish revolutionary period, various social struggles were also addressed to strengthen it. One of

the main struggles was that of the workers, especially with the Soviet Union playing a bigger role. Irish revolutionary groups tried to eliminate any possible division that was placed in the previous centuries by British laws, which came mainly from the division between classes (Coquelin). The revolution was a time for change and breaking of the status quo; thus, due to salary cuts and British control over land distribution as previously mentioned, Marxist and socialist ideas appealed to many Irish people. While some Irish revolutionary groups and governments tried to oppress the Marxists to prevent worker uprisings, others tried to ease workers' lives by providing easier solutions to their problems (Coquelin). For example, a new National Land Bank was created in 1919, which facilitated the process of purchasing land by providing loans for farmers or tenants (Coquelin). The goal of this Land Bank was to "[prevent] the national struggle from being turned into a land war," thereby drawing the peoples' focus to the battle at hand ("Dáil Éireann Debate"). The spread of socialism also impacted worker's unions. The Irish Labor Party, for example, endorsed a socialist constitution and a manifesto in 1918 to ease the concerns of striking workers (Coquelin). The class struggles provided by the Irish revolutionary period were also related to the battles themselves. Lenin, for example, greatly admired the 1916 Easter Rising, saying that it "[refuted] opponents of self-determination," ushering in an "epoch of crisis... for imperialism as a whole." ("Lenin on 1916"). The Irish Soviet movement was eventually overshadowed by the war itself, with the people finding independence more

important than class differences, eventually focusing almost exclusively on the former (Laukaityte). These shifts demonstrated just how high the nationalist spirit had become, eclipsing even the class revolutions sweeping Europe in spite of heavy Soviet influences on Irish political thought at the time. However, these changes also demonstrate the Irish government's need to appease workers, and prevent strikes and disunity, forcing them to make many reforms in favor of the workers and their new union. The need for unity in the Irish revolutionary period caused a major change in addressing class differences in Ireland. While the main focus of the period was not on social reforms, the quest for home rule nevertheless had a crucial and transformative impact.

Another important social change that was required by the Irish revolutionary period was the role of women. During the Easter Rising, women formed their own group, Cumann na mBan, which performed much of the espionage. While they had less responsibility in battle due to discrimination in the early 1900s, they still carried letters and guns. The leaders of Cumann na mBan were even considered official leaders in the Easter Rising (Santos). Throughout the war, women smuggled weapons and ammunition and played an important role in communication between the various revolutionary groups ("Women and Violence in the Irish Wars"). Outside of those groups, women were critical to increasing nationalism within the country by spreading media and propaganda among the Irish people (Rast). The revolutionary groups still had their differences, so the women who maintained communications

were crucial to preserve a united offensive against Britain. Large numbers of women would not be needed in this role prior to the Irish revolutionary period and Easter Rising, but as the British were still very heavily influencing and keeping disunity within Ireland, this role became necessary as the revolution started.

After the Easter Rising, groups such as Cumann na mBan continued to fight for women's rights. In a 1917 pamphlet, the organization described itself as "an independent body of Irish women, pledged to work for the establishment of an Irish Republic." ("Circular about the Cumann na mBan, Its Constitution, Policy for 1917-18, and Organisation). Praising the glory of women's roles in the Easter Rising, Cumann na mBan called for more women to join and fight for their organization ("A Call to Irishwomen"). Outside of these organizations, women also contributed greatly to the revolution. When the British executed Irish revolutionaries five years after the Easter Rising, women marched outside the prison in protest, demonstrating that their prominence in the revolution continued throughout the war (see Appendix III). Individual women also gained more power within the community, such as suffragist Hanna Sheehy Skeffington, whose husband was murdered along with two others, which investigators deemed to be related to the Easter Rising ("Henry Lemass to Herbert Henry Asquith"). As a result, Skeffington received letters offering condolences, some detailing the future of the suffrage movement and calling the murder a "loss... sustained by the great progressive movement of which the suffrage

movement is a part." ("Telegram to hanna Sheehy Skiffington"). Like worker reforms, the suffrage movement attached itself to the larger movement of Irish Home Rule. Later in the revolution, as the revolutionaries created their policies, groups of women were invited to discuss changes to certain policies. The Women's Civic Union was invited to send representatives to make amendments to the Midwives Bill ("Letter by Thomas Kirkpatrick").

It is no coincidence that these articles appeared in the years following the Easter Rising, as the Irish revolutionary period provided a major turning point for the role of women in Ireland. Since revolutionary groups needed to maintain the sense of nationalism and unity that they had developed, it became easier for women to fight in the war or otherwise gain influence, power, and rights. Advocates for women's rights increased as every input to the war was needed. Thus, by starting a new quest for home rule, Ireland added more chances to increase the role of women.

The Irish War of Independence and the struggle to gain home rule dramatically impacted the ideas and fighting spirit of the Irish people, and transformed social and nationalist ideals in the newly emerging state. The Irish people, after years of oppression by the British, finally rose against their oppressors with fiery battles just as the twentieth century began. After this period, however, nationalism would still have a long way to go. Some who didn't support the revolution fought against the new leaders, leading to a brutal civil war from June 1922 to May 1923. Even in 2021, Northern Ireland

still favors remaining in the UK, showing that tensions within Ireland are nowhere near gone ("Majority of Northern Irish Voters Want Vote on Staying in UK"). Nevertheless, the attempts to maintain some nationalism brought social changes, which left an impact on every Irish citizen, commoner or elite. The social reforms that came along with the unity needed in the Irish revolutionary war had a lasting effect on the people. The women's suffrage movement, jump-started by the revolution, would achieve full suffrage in 1928. Although some policies were clawed back in the following years, a revival of the movement in the late 1900s brought reforms in female employment, education, and representation (Cullen). Socialism saw slower developments after the revolution, but several parties were founded in the twentieth century. One of the largest, the Workers' Party, was founded in 1970 and is still very active in the Irish government, while several earlier parties such as the Communist Party, founded in 1933, are still actively advocating for reform (Kostick). Although Ireland is still a country of much conflict, the Irish War of Independence pushed the boundaries of unification in a way that had never been felt before. The start of an Independent Ireland was undeniably a social revolution in many ways, precipitating changes that were felt throughout the rest of the twentieth century and even today. ■

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LITERATURE

Editorial

Words are humanity's greatest invention - and literature and poetry represent its most sublime expression. They capture inner and outer beauty; the personal and the universal; the emotional and the hopeful; and reveal or conceal the imaginary or reality. They touch, and they hurt; they have the power to move us humans individually and collectively, to solitary happiness or global movements.

This edition includes juxtaposing Dunbar's poem and Melville's prose to explore the reflections of black Americans on how they hide in plain sight to avoid judgment, probing the complexity and depth of the love between parent and child in Roethke's poem, analyzing the personal and universally profound implications of Plato's allegorical cave, and applying Freudian psychoanalysis towards a better understanding of the development of Frenakenstein's character by Shelley.

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Fear of Perception

Katherine Chen

Class of 2025

The poem, "We Wear the Mask" by Paul Laurence Dunbar, is a reaction to Dunbar's experience as a black American in the post-Civil War era. Dunbar specifically reflects on the social challenges faced by black Americans. In the following paper, Katherine Chen analyzes Dunbar's poem and reaches the conclusion that the human tendency to hide one's feelings and self from society is an attempt to protect themselves from the judgment of others. Katherine also relates Dunbar's poem to Herman Melville's "Formerly a Slave", drawing clear distinctions between the two.

People are social creatures by nature, so they place emphasis on the opinions of other people. These opinions often take the form of judgment, which forms from the perceptions of others. People act in order to protect themselves from the negative judgment of others, which can take the form of attempting to change their perceptions. In Paul Lawrence Dunbar's poem "We Wear the Mask", the subjects of the poem, whom he refers to as "we", wear a metaphorical mask, as he suggests in the title, to conceal what they really feel. People hide their suffering in order to protect themselves from the judgment of others.

People hide their suffering by presenting a false image of themselves. The subjects of the poem have "torn and bleeding hearts" and "tortured" souls and feel that the very ground beneath their feet is "vile" (l. 4, 11, 12). While suffering both internally and because of the world around them, with even the ground causing them pain, they "wear the mask that grins and lies", hiding their suffering behind this positive facade of smiles (l. 1). The metaphorical mask, which hides the

features of the wearer and presents a false appearance, allows them to mask their suffering with its falsely positive lies. The mask hides their pain behind a lie of "smil[ing]" and "sing[ing]", concealing their suffering with the false image of themselves and their fake joy (l. 10, 12). They mask their struggles with a facade.

People hide their feelings in order to protect themselves from the judgment of others. The subject of the poem decides that the world should "only see [them]" while they wear the mask, concealing their feelings behind the mask's facade. By only allowing the world to see their masked selves, they hide their true feelings from others. The speaker rhetorically asks why the world should be "over-wise" in "counting" their sadness and concludes that they should always wear the mask in front of others (l. 6-7). A wise person has the power of "discernment", the ability of "judgment and understanding" ("Wise", "Discernment"). Those wearing the mask do not want the excessive judgment and understanding of others, a much deeper level of judgment. They also don't want others

“counting” their sadness, fearing the resulting close observation and perception of their suffering that leads to judgment (l. 7). They also wear the mask while they suffer in order to “let the world dream otherwise” (l. 14). The word “let” works both in the sense that they both give the world a dream and that they only permit the world to see the dream, creating a contradiction. By wearing the mask, they both give and restrict the world to this dream, a positive false reality, in order to ensure the world sees them in a positive light, protecting themselves from the judgments of others which come from negative perceptions.

On the contrary, in Melville’s poem “Formerly a Slave”, the “sufferance” of the subject’s race “is shown” once she gains freedom, but she is “not at strife” and finds “cheer” in the fact that her descendants will have “the good withheld from her” (l. 1, 4, 6-7). Unlike the subject of Dunbar’s poem, who hides their suffering and pain behind a mask, she acknowledges that she has struggled, and it’s shown and obvious to all, but she does not feel upset about it. She does not feel the need to hide her suffering in order to protect herself, nor does she feel that her struggles have been shown, and she even

finds cheer in the fact that others will not suffer like she did. Despite this contradictory example found in Melville’s poem of the woman not feeling the need to hide her suffering and instead looking to the future, people hide their suffering in order to avoid others judging them in a negative light. ■

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Unconditional Love, Unavoidable Pain

Naomi Zakalik

Class of 2025

In the following article, Naomi Zakalik critically analyzes the poem “My Papa’s Waltz” by Theodore Roethke, drawing conclusions about love. She observes that the waltz between the father and son is representative of the love between the two. However, the father is clumsy, intoxicated, and hurts the boy during the waltz, signifying the difficulties in their relationship. Regardless, the dance continues and Naomi concludes that familial love will persevere despite struggles and conflict.

Have you ever gotten into a huge fight with your sibling? One you thought you would never forgive them for? Or perhaps your mother and father chastised you about something which you found completely unnecessary to have anger over. Family relationships have much complexity, and although they may cause us to have anger and annoyance, our love almost never goes away. Theodore Roethke, a contemporary American poet, explores this idea of complex family relationships in the poem “My Papa’s Waltz”. Roethke grew up with a Prussian father, a man whom he describes as “strong and firm”, which, for Roethke, “was a source of both admiration and fear” (Malkoff). Similar to Roethke, the speaker in “My Papa’s Waltz” has a rough and complicated relationship dynamic with his father, seeming to love him in spite of the violence he inflicts. Therefore, through “My Papa’s Waltz”, Roethke argues that people can still love one another despite the flaws and conflicts that they have within their relationship.

The speaker depicts the conflicts and flaws that occur within relationships through the metaphorical waltz he engages in with his

father. This waltz not only represents a literal dance, but more so symbolizes the complicated and flawed relationship that this son and father have. As the two dance, every time the father misses a step, the speaker’s “right ear scrape[s] a buckle” (l. 12). Using words such as “scrape” portray a negative connotation and imply that this waltz is inflicting pain upon the son, essentially showing the flaws of their relationship. Moreover, the father is quite intoxicated, so much so that his whiskey filled breath “could make a small boy dizzy” (l. 2). Intoxication not only leads to irresponsible behavior, but also to clumsiness and uncoordination, making abundant the number of missed-steps that take place and thus the number of scraped ears. In general, over ingestion of alcohol, an action in which the father has evidently partaken, almost never results in a healthy and peaceful relationship. In fact, alcoholism often acts as the main flaw and conflict inflictor in relationships, so the mere fact that the father has drunk so much shows the flaws of their relationship. The drunken state of the father also acts as the reason for his “beat[ing] time on [his son’s] head,” again showing that

the young speaker is physically suffering from this dance (l. 13). In all, the intoxication and evident alcoholism of the father causes their waltz/relationship to have flaws and conflict, as seen by the violence that takes place within the dance.

In spite of such conflict and violence between the young speaker and his father, the boy still shows love to his father. The entire poem fills itself with instances of violence, primarily violence that the father inflicts onto his son. Regardless of such violence, the speaker does not show signs of anger, resentment, or despair toward his father, caring little about his evident alcoholism and roughness. Instead, the son “hung on” to his father during a time when the father’s intoxicated state made him “dizzy” (l. 2-3). Hanging on to another shows a sense of reassurance, safety, and most importantly, love; so despite the father being drunk and making his own son dizzy, the son still loves him by hanging on to him. In fact, even after their waltz results in the speaker receiving a “beat” on the head and a “scraped” ear, the speaker goes to bed “still clinging to [his father’s] shirt” (l. 12, 13, 14). His love persists through these hardships and through these brutal moments in their relationship. He “clings” onto his father even when he had just endured pain and suffering (l. 16). The speaker uses the word “cling” to depict the connection and love that he “still” has for his father even after their flaw-filled waltz (l. 16). Overall, the usage of verbs that suggest love and adherence, both of which come after moments of conflict and violence, show that the speaker still loves his father in spite of their flawed relationship.

Although “My Papa’s Waltz” can be seen as an extreme example of complicated and flawed relationships, the poem effectively argues the idea of how love can push through the hardships that interfere in a relationship. Especially when it comes to family, no conflict can ever permanently take away one’s love. Sure, we may hold grudges against our siblings, or get into huge fights with our parents, but the love does not simply go away, rather, it pushes through the conflicts and flaws. Through the imagery and description of the violence of the metaphorical waltz, Roethke does well to convey this idea. In fact, according to the critic James Dickey, Roethke “is a great poet not because he tells you how it is with him, but how it can be with you” (Dickey). Roethke immerses the audience into the relationship dynamic of the speaker and his father, and, in doing so, not only shows how relationships have conflict, but how those conflicts do not overrule the love. ■

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Cause and Effect: A psychoanalysis of Victor Frankenstein

Connor Kalkanis

Class of 2024

In the following essay, Connor Kalkanis analyzes how viewing a character, such as Victor Frankenstein from Mary Shelley's Frankenstein; or, The Modern Prometheus, through a psychoanalytic lens can help one better understand their actions. Connor argues that the creation of the creature stems from Victor's traumatic youth, such as the death of his mother. Applying a psychoanalytic lens to Victor allowed Connor to reach the conclusion that childhood trauma will carry into adulthood.

In her book *Using Critical Theory: How to Read and Write About Literature*, Lois Tyson explains that psychoanalytic theory is a useful tool for understanding human behavior, offering a formulaic approach to analyzing individuals with complex backgrounds. More specifically, by examining sources of trauma in one's childhood, a psychoanalyst could explain some "dysfunctional behavior" that an individual exhibits as an adult (Tyson 84). In her discussion of childhood, Tyson explains that the family plays the most crucial role in facilitating the child's development because their "sense of self" is first developed there (Tyson 85). In the case of childhood trauma, repression of troublesome memories is common, because the subconscious is the "psychological storehouse" of frightening, regrettable, or overly complex thoughts. Repression, however common, is dangerously unhealthy; if one allows emotional hardship to fester, it will materialize in self-destructive behavior, like substance abuse or inappropriate social interactions (Tyson 85). In addition to one's waking experiences, dreams often serve as a release valve for subconscious tension, revealing an

individual's most consuming and troubling thoughts. Tyson dives deeper still into dreams, describing specific symbols that, when encountered in a dream, correspond to certain tenets of one's subconscious hardships (e.g. water representing fluidity and unpredictability) (Tyson 88-89). Many times, childhood trauma can be confined to a "core issue" around which one's thoughts and actions revolve, especially if the individual fails to address the said issue. These issues could come in the form of low self-esteem or the fear of abandonment (Tyson 86). Psychoanalytic theory gives readers many tools to understand characters more thoroughly and therefore arrive at more complete conclusions about them.

In *Frankenstein; or, The Modern Prometheus* by Mary Shelley, Victor Frankenstein deals with severe emotional hardship. Many of his struggles are a result of his ongoing conflict with the monster, and he is understandably emotionally wounded when his creation kills his closest loved ones. However, preceding any toil with the creature, Victor dealt with internal turmoil at a young age. Applying a psychoanalytic lens

to Victor's childhood trauma offers an explanation for the dysfunctional behaviors that he exhibited as an adult. Following his mother's death, Victor repressed the trauma he faced, allowing his new core issue of a fear of abandonment to materialize in his self-isolation from his family and his creation of the monster.

Following Caroline's untimely death, teenage Victor doesn't take enough time to address the loss properly. Victor initially expresses some sadness after she succumbs to scarlet fever, saying that he "need not describe ... the despair" that he feels (Shelley 32). However, immediately after a short explanation of the impact her death had on him, Victor moves to his studies, saying that he still has "duties which [he] ought to perform." Instead of spending time grieving his mother's death, perhaps while staying with his family, he takes a "speedy departure" to Ingolstadt where his studies await (Shelley 32). Because he made minimal effort to grieve (i.e. efficaciously address the traumatic event), psychoanalytic theory dictates that his subconscious therefore bears the burden of the trauma.

Victor's repressed trauma reveals itself in a dream and evolves into a core issue of a fear of abandonment in death. One night at the university, Victor attempts to gain some much-needed rest, but is prevented from doing so by a frightening dream: he imagines himself in the streets of Ingolstadt, holding the "corpse of [his] dead mother in [his] arms" (Shelley 46). The nightmare evidences the pervasive nature of Victor's trauma, because as psychoanalytic theory states, dreams can be outlets for built-up

subconscious tension. It follows, then, that his mother's death continues to be a major source of stress in his life, whether known to Victor or not. Moreover, such is the origin of his core issue: his fear of death and accompanying abandonment. He was, in a way, abandoned when his mother died and left him to live on without her. Because of his core issue, Victor carries with him an unending paranoia that someone close to him will again die or abandon him, which results in some destructive dysfunctional behaviors.

As one actualization of his core issue, Victor isolates himself from his family. After his mother's death, he rapidly sets a course for the university instead of grieving with his family, as previously discussed. But in addition to leaving quickly, he stays away from home for a prolonged period of time. While entrenched in his pursuit of creating life, "winter, spring, and summer" pass by him (Shelley 44). As far as the reader is aware, there isn't any communication between Victor and his loved ones during this time. Victor references being sick during the winter after creating the monster, and later the reader learns that another year and a half will have passed before Victor is scheduled to return to Geneva (Shelley 57). In total, the timeline accounts for at least two and a half years for which Victor doesn't visit home, a satisfactory amount of time for someone whose goal is to isolate himself. However counterintuitive it may seem, his fear of abandonment perfectly aligns with this motive; as Tyson explains, if one keeps their distance from their loved ones, then they wouldn't be so devastated if they were to lose their loved ones. In this way, fear of

abandonment “can result in fear of intimacy” (Tyson 87). Victor’s core issue, his fear of abandonment, leads him to act out a dysfunctional behavior by distancing himself from his family.

In the same vein, Victor’s core issue leads him to create the monster. While he is hard at work developing his creature, Victor fantasizes about the implications of accomplishing such a feat. With the successful completion of his experiment, a “new species would bless [him] as its creator” (42). With this subtle meandering thought, Victor reveals volumes about his character: he wants to create a companion to counteract his fear of abandonment. With a new species of humanoids who all “owe their being” to Victor, he could finally be free of the gripping paranoia that those who are closest to him will abandon him. Moreover, even if his creations were to die and effectively “abandon” him, Victor would always be able to create more. Thus is the twisted reasoning behind his dysfunctional behavior.

Because he repressed the childhood trauma associated with his mother’s death, Victor developed a core issue of a fear of abandonment, resulting in dysfunctional behaviors. Applying a psychoanalytic lens to Shelley’s *Frankenstein; or, The Modern Prometheus* reveals one of the novel’s thematic messages: unaddressed childhood trauma will grow and remain present into adulthood, and can contribute to serious behavioral issues. Macaulay Culkin, *Home Alone* star, has sadly lived such a reality. On a podcast in 2018, the actor openly discussed his father’s abusive actions towards him as a child working in the film industry (“Home Alone Star”). As a

grown man, he developed a substance abuse problem and was frequently involved in legal disputes. Through psychoanalysis, one could connect the dysfunctional behaviors he committed as an adult to the trauma he experienced as a boy. Psychoanalytic theory is a vital tool for gaining a deeper understanding of not only characters in a novel, but also of people in the real world. ■

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Nothing is as it Seems

Peja Liles

Class of 2024

This article by Peja Liles relates Plato's Allegory of the Cave to her view on her older sister. Peja talks about how she has always seen her sister as the "perfect child", but when realizing her sister's flaws, Peja concludes that she has been living in a metaphorical cave, not realizing the difference between appearance and reality. She advances this point by saying that everyone experiences a different reality due to their own experiences and environments. Peja finishes by saying that no one person can truly realize another's reality.

In Plato's *Allegory of the Cave*, I agree to the greatest extent that there is a vast distinction between reality and appearances. Appearances can be acts and illusions to make someone believe an idea that is not necessarily true. Although a complex philosophy, reality is the real, naked, and external world where we can see ugly truths and beautiful phenomena. For me, I have had influential people in my life who showed me the aspect of appearances and reality to a moderate extent to hide their own dark realities and endure the pressure of appearances.

Growing up, my two sisters and I were always very close. My older sister, Javin, was my best friend. We played the same sport and did the same activities our parents put us through. Eventually, she chose to pursue dance, and I stuck with being a multi-sport athlete. I hated dance. It was not for me, but I did it as long as I could handle it to be around Javin and her friends, whom I looked up to. I admired Javin and all she had accomplished. My sister was an exemplary student and an exceptional athlete who balanced her social

life and had various friends throughout our childhood. She was an incredible dancer; I'll never forget when I saw her dance performance at Interlochen Arts Academy, where she attended high school to continue her academic and dance career. I swear my eyes started to water. Watching her on stage made me proud to be her sister. I always thought she'd have a bright future. When we were younger, she talked non-stop about becoming a doctor and how fascinating the human body is. When she was accepted into such a prestigious art school for dance, I thought she'd achieve the things she's always talked about. She moved only thirty minutes away from home to board for school, but, for me, it felt like we were hours away. I saw her as the "golden child," my parents spent so much time and energy to make her dreams possible and supported her no matter what. She was my biggest role model.

To a moderate extent, this "passion" I had for wanting to be like my sister set unrealistic expectations for my experience in high school. Whenever I struggled in math class or had an off day during sports, I would ponder, "How does Javin keep her life

together?" I reached a point where I could not continue without comparing myself.

I didn't know how to balance sports and school. I had spent countless nights crying in my room over test material I couldn't comprehend, or after a basketball game or tennis match I played poorly in. I put an enormous amount of pressure on myself to reach a high level of success like my sister. I dreamed of playing any of my sports in college, and I wanted nothing more than to make my parents proud, to hear them talk about me the way they spoke about Javin.

When I was in eighth grade, Javin was a Junior. Right before COVID-19 hit the world, I was visiting my sister, and when I asked her how Interlocken had been, I found out she was doing awful. She was struggling mentally, had a stomach ulcer-causing her to get sick all the time, had a back injury that took her out of dance, was failing classes and getting in trouble, and most of all, she didn't want to dance anymore. I found out this has been going on since her sophomore year. I was convinced she was thriving for those three years of high school. I watched her life from a distance and believed it was how it appeared to be.

To a moderate extent, I felt like a prisoner until this point in my life. I was chained to a cave where my sister projected fake images, like the shadows, in order to protect me. Once I came into the light, there was no way I could go back into the cave and see my sister for the way she was. Being younger, my innocence was used as an excuse to shield me from the truth, which, to a moderate extent, I am now grateful for.

I could never resent my sister for putting up that barrier between us. She was only trying to protect me from reality and viewing her differently. However, it has been difficult to believe that someone so influential in my life was truthfully struggling just like me.

For a long time after coming out of the cave, I found it difficult to differentiate between appearance and reality.

Appearance is not always reality. Reality is the naked truth. We, as humans, know our own reality through memory, reason, imagination, faith, intuition, language, emotion, and sense perception.

People argue that appearance and reality can be the same since the appearance you are exposed to is technically your reality, considering that how something appears is how you see it. However, I believe no one can infer someone else's reality based on their perspective. For example, it is unfair for me to say that my sister's experience was not true because I did not see it that way. By saying this, I am invalidating my sister's direct experience with my perspective of how I viewed her life. The notion that there is only "one reality" is flawed because even when two people go through the same experience, different factors can alter the perspectives that come out of the incidents. Everyone faces different realities.

Ultimately, there is a clear distinction between reality and appearances. In today's world, it is challenging to separate appearances from reality when everyone is submerged in a world of social media and the simple ability to hide the truth. Society and the media today like to wrap reality into

whatever appearance they want and spread unrealistic expectations. My older sister opened my eyes to a world where reality can be ugly but true. Once I understood this, I looked at other people's family home lives differently, especially if I knew they were the firstborn. No person is "perfect" or the "golden child," and no one can know someone else's reality behind their appearance.

Some people believe it is easier to fake a smile than to face reality. People react to situations differently; we feel emotions, think, and interact with others differently. To the greatest extent, everyone's reality is different. No one has the exact same experience as someone else. There is no way to experience how someone else feels or thinks. You will never know their ultimate truth of reality. ■

Escaping my Cave: An Analysis of Plato's *Allegory of the Cave*

David Yun

Class of 2024

In the following essay, David Yun analyzes Plato's Allegory of the Cave, applying the concept of a cave to his own life. He recognizes his Catholic faith as the way he perceives reality, offering him meaning and helping form his identity. However, he also considers religion's negative aspects, such as ignorance and a lack of acceptance to other beliefs. Ultimately, David concludes that he must overlook his faith in considering other opinions.

In the context of the *Allegory of the Cave*, truth can be understood as spiritual understanding or enlightenment—something that gives people's lives structure, just like religion. In people's lives, such spiritual edification is gained or pursued through the practice of faith. Plato's *Allegory of the Cave* is an accurate description of mankind's relationship to the truth to a great extent because religion can give meaning to one's life, but it can also pose barriers and restrictions upon one's ability to see the truth. In the allegory, prisoners have been trapped in a cave for their whole life, with only a fire to cast shadows of objects. One prisoner is liberated from the cave and is exposed to the light from the sun and the objects of the "real world." Plato explains that the "real world" quickly becomes his sense of reality, and he begins to grow a sense of pity for the other prisoners, hoping to liberate them so that they would be able to experience the beauties of the "real world." The freed prisoner goes back to the cave but is ultimately killed by the other prisoners while doing so, showing their refusal to accept the truth and their blurred sense of reality. Similarly, I have experienced

both the positive and negative aspects that religion has had on my life. While religion has shaped my reality and many of my morals and beliefs, it has also caused me to develop a sense of ignorance, just like the prisoners in the cave.

On one hand, religion is the way I perceive reality. For my whole life, my Catholic beliefs have colored every single experience and thought that I have, and they have also shaped how I perceive the world. Just like in the cave, religion is the fire that helps me see the shadows of objects, even if they aren't always an actual reality. For my whole life, I have followed my parents to mass every Sunday, and have gone to Sunday school afterwards. While growing up at my Church, I have spent a lot of time learning about the different stories in the Bible, and religion has become the backbone of my perception of reality. My faith is like a double-edged sword that helps order my life and gives me a sense of meaning, helping to root my identity. When I first entered high school, one of the first units I was taught in both my History and Biology classes was the Darwinian Theory of Evolution, in which we

learned that many scientists have argued that humans have evolved from apes to become the species that we are today. At first, I was conflicted by the Darwinian Theory and the stories of Adam and Eve that I had read many times in the Bible and that I had been taught countless times in Sunday school throughout my childhood. I was always taught that Adam and Eve had been the first people on the Earth, and that God had created them and the rest of the universe from scratch. After telling my parents about the struggles that I faced grasping the concept of evolution, they told me that people have constantly been debating what the origin of the universe was, and that the Darwinian theory cannot be accepted as a truth just because it is taught in school. In the end, it is just a theory, and can never be proven for certain because of the lack of evidence. Likewise, the stories of Adam and Eve in the Bible can never be proven as the truth, but it is something that my family has chosen to believe because it has been taught to us for our whole lives. While there is a possibility that the Darwinian theory may be true, I accept a different truth because I am perceiving a different version of reality that exists.

However, as shown through the prisoners in the cave, religion also has many negative aspects, oftentimes causing blind obedience and ignorance. In Plato's allegory, the prisoners refused to accept any sort of idea that there is a reality beyond the cave, even going as far as killing the freed prisoner when he tried to liberate them. Nowadays, social issues are becoming more prevalent in society, as people's relationships and identities are changing and adapting because the world

is becoming more accepting. However, according to the confines and teachings of my religion, certain ideas and beliefs are looked down upon, and certain prejudices are in place. I have been able to look past those stigmas and form my own opinion. In a sense, I am rising beyond the limitations of this belief system, just as a philosopher is able to look beyond the confines of the cave and see the bigger picture, getting one step closer to the truth. Last year, after graduating from Sunday school, I was able to have a conversation with a youth pastor at my Church, and it gave me insight on many important details concerning the connections between my faith and the modern social issues arising in society today. We had a conversation about facing challenges against my own beliefs and ideas that I had always been told and blindly accepted to be true. Modern political issues such as abortion or same sex marriage have been argued and debated based on political arguments, but also ideas concerning the ethics of religion. While I was always told to believe one idea or take a certain stance on each political issue based upon my faith, my conversation with my youth pastor ultimately opened my eyes to other viewpoints and arguments that could be interpreted in different ways depending on one's understanding of the Scripture and the Bible. While my faith has become an anchor for my sense of truth, my religion can oftentimes restrict me, causing me to be ignorant, just as the prisoners in the cave were. However, it is ultimately my responsibility to look beyond the confines of my faith and to keep up with the changing viewpoints and identities in today's society,

leaving my cave to develop my own sense of truth or spiritual understanding.

In conclusion, Plato's *Allegory of the Cave* is an accurate description of mankind's relationship to the truth to a great extent because it grapples with the idea that religion can give meaning to one's life, but can also present barriers on one's ability to see the truth. In the allegory, the freed prisoner is ultimately killed by his fellow prisoners because of their refusal to accept a different reality outside their cave. While the cave is comfortable, their ignorance causes them to be blocked out from the rest of the world. Similarly, religion has become my spiritual understanding and truth, and I have been able to base many of my morals and ethics around

my faith. As I have grown older, I have been able to see both the positive and negative aspects that religion has had on my life, which has ultimately caused me to look past the restrictions of my faith. As I grow older and am exposed to new cultures, I know that I must accept that there are many different truths and realities beyond my cave. It is my responsibility to carry on the lessons and morals that Catholicism has provided me with, but also to keep an open mind to accept and to look beyond the confines of my religion. ■

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Mom, You've Given Me Everything I need: Gilmore Girls and Defiance of Patriarchal Motherhood

McKenzie Randolph

Class of 2026

In the following essay, McKenzie Randolph analyzes the mother-daughter relationship between the two main characters of the television show Gilmore Girls through a feminist framework. She argues that the show, though not without its issues, offers a uniquely positive perspective on mothers and daughters through its complex and flawed female characters. She concludes the paper by applying her analysis to her own life.

Each autumn, a familiar wave of the stereotypical nostalgia and pumpkin-flavored beverages are again embraced within popular culture. The trends of autumnal girlhood in recent years, more specifically, are defined by the tenets of Taylor Swift's Folklore, romance novels, and of course, Gilmore Girls. Set in a quintessential small northeastern town, the early-mid 2000s dramedy provides a peek into the fictional life of tight-knit mother-daughter pair, Rory and Lorelai Gilmore. With its female-focused plot, storylines, and perspective, the series embodies a powerful statement about the visceral relationships between mothers and daughters and defies patriarchal implications placed upon them.

In patriarchal society, notions of motherhood conjure images of idealized, nature-bound, almost goddess-like symbols of fertility. A mother cares and nurtures and sacrifices endlessly for her family (Van Mens-Verhulst). She is the ultimate symbol of womanhood, and as such, she is positioned as object and not subject. Her existence and

purpose are centered around and defined by her children (Rich 58). The perfect patriarchal mother exists more as an idea and set of verbs than a fleshed out human being. In fact, the notion of a flawless earth-mother with the capability to perfectly provide for and satisfy all of her children's desires isn't uncommon even among feminists, as a possibility or some kind of supreme and defining womanly form (Van Mens-Verhulst). Obviously, the perfect stereotypical mother-figure does not exist, nor is her existence desirable. No mother is endlessly giving or unfailingly selfless. Mothers, as people, are naturally flawed and have the right to exist for themselves as much as they do for their children.

Daughters on the other hand, seem to be able to exist purely in relation to themselves, at least for the time being. They are still girls, not yet mothers, not yet women. Not yet women, daughters retain their humanity, their position as subjects in their own lives. As infants, still entirely dependent on their mothers, girls are strongly

attached to them. They explore their world, themselves and their mothers through their own perspective. In true Freudian style, daughters are expected to detach themselves from their mothers and develop animosus jealousy toward their mother and their relationship with their fathers (Kilmartin and Dervin). Often, they do.

In a fashion similar to the Duboisian concept of double consciousness, girls begin to exist in relation to themselves and (as women do) in relation to others. In other words, they see themselves through their own eyes and through the eyes of others (Du Bois 3). In seeing men posited as absolute, and themselves as “other”, as inferior, girls begin to posit themselves as “other” and as inferior. As objects, they lose internal senses of self. They seek to define themselves by men, to live vicariously through them. Thus, they seek their approval. Naturally, the seeking approval under a style of consciousness directly shaped by misogyny will be deeply entwined with misogyny. Misogyny can be described as woman hating, and as mentioned above, motherhood is a supreme form of womanhood. Unfortunately, womanhood exists as a set of contradictions. While it is desirable for women to try to elevate themselves to the position of men, the maintenance of one class’ superiority over another necessitates that they be rigidly set: one cannot imitate or usurp the position of the other. Thus, it is far more socially acceptable for girls to accept their “place” as feminine women, as objects. Typically, and in accordance with what is expected of them, get married, have children, and become mothers.

Obviously, since media are the product of the society in which they are created, real-world mother-daughter dynamics are going to be reflected in entertainment. The importance of mother-daughter stories seems to pale in comparison to those that are more Oedipal (Walters). I feel that *Gilmore Girls*, however, is a little bit different. *Gilmore Girls* has very interesting character and plot dynamics. Since it’s a show made for teen girls, it is not particularly surprising that it is about women, with fleshed-out female characters, and that it is told from a female perspective. What makes the show unique is the close mother-daughter relationship that it centers. Both Lorelai, the mother of the pair, and Rory, the daughter, are main characters. It is Lorelai’s developed and multi-faceted character, combined with the deeply attached relationship that the two have, that I find so fascinating and quaintly powerful. While I am writing about the show’s feminist statements, I do not intend to imply that it has no issues. In addition to the homophobia, drunk-driving, and not-always-subtle racism, the show most certainly has its misogynistic moments. Slut-shaming and body-shaming are common themes. Regardless, the show is still rather progressive in the elements that I would like to explore.

Lorelai Gilmore, for one, is far from an ethereal or unreal mother figure. She is a single teenage mother, which is often seen as a less legitimate and devalued family dynamic, due to both her age and lack of husband (Rich 58). She has many, many character flaws. Lorelai is neotenous, stubborn, and she

struggles with commitment. Yet, she's also funny, resilient, and clever. Moreover, she absolutely has her own life. She runs and later opens her own inn with her best friend Sookie. She's a coffee addict who's obsessed with junk food. She isn't a perfect parent, her incredibly lenient parenting style leaves her daughter entitled and resistant to authority. She isn't a bad parent either. She raises an incredibly bright daughter who loves her daughter and goes on to study journalism at Yale. I find it wonderfully refreshing to view a show with such a multi-dimensional mother character. Lorelai does not exist on either side of some dichotomy between a perfect and a terrible mother. She is no kind of ideal or symbol, she is just herself.

Another fascinating dynamic of this show that contributes to the love I have for it is the relationship between Lorelai and Rory. As I mentioned above, the "normal" thing for a daughter to do in regards to her mother is detach from her. A teenage girl is supposed to resent her mother. In contrast to that norm, Rory has a very strong bond with her mother, and that is not portrayed as a negative thing. Their relationship is a foundation for the support, love, and care that they give one another. It also teaches Rory how to be confident in her identity and have a strong sense of self that exists independently of her romantic relationships with men. In seeing men posited as absolute, and themselves as "other", as inferior, girls begin to posit themselves as "other" and as inferior. As objects, they lose internal senses of self. They seek to define themselves by men, to live vicariously through them. Thus, they seek

their approval. Rory isn't entirely innocent of this, but she always ultimately stays true to herself, her own needs, and her own desires. The show and its portrayal of mother-daughter relationships has taught me personally how close and trusting mother-daughter relationships can be, and it has helped me recognize that my mother is just as much of a person with just as many emotions and thoughts and needs as me. Which isn't to say that I didn't know that before, but I certainly didn't always act like it. I often found myself shunning my mother's ideas and needs, as if I were on some higher level of thinking, or as if my desires were more important than hers. *Gilmore Girls* taught me that maybe, some of my resentment of her was simply resentment of my own girlhood.

In spite of the patriarchal attitudes that deeply envelop and influence every part of our lives, it is easy to find positive female media if you look in the right places. *Gilmore Girls* is just the right place to look. With its genuine and well-developed female characters who are central to the plot and its lack of reverse-oedipal mother detachment, *Gilmore Girls* is a positive influence for how close mothers and daughters have the potential to be, without any shame at all. ■

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