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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.

Submit articles by December 2022 in order to be featured in next year's issues!

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

When most people think of science, they think of the archetypal image of bubbling beakers of dangerous chemicals in a lab, with complex equations messily scribbled on a blackboard behind them, all overseen by a man with disheveled hair in a lab coat. Though this image is an accurate representation, science is, at its core, about the universal human need to explore and answer questions about the world around them and the way it works. The one overarching model that governs almost all scientific endeavors, from high school science fair projects to professional research studies, is scientific inquiry: a synthesis of the underlying principles that comprise human curiosity into a comprehensive, detailed method of posing and answering questions about natural processes.

So though many people think of science as only accessible by professionals with expensive equipment, the truth is anyone with an inquisitive mind and an understanding of scientific inquiry can complete research on their own. This message has been increasingly important in the time of the COVID-19 pandemic, where most students have not had access to the equipment and resources they would have in normal years. However, these limitations have not stopped many students from executing their passion for exploration and discovery, in many cases even using their passion to complete work that has real-life applications and could potentially help numerous people. In this issue of Eureka!, we have compiled several papers from these students, who have refused to let unfortunate circumstances prevent them from losing sight of the fundamental principles that allow us to learn about the world around us.

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Evaluation of a Raman Spectroscopy Probe in the Diagnosis of Brain Tumors: Abstract

Nicholas Kalkanis

Class of 2022

As the percentage of brain tumor that is resected increases, a patient's life expectancy drastically increases. Thus, neurosurgeons need to be able to differentiate between healthy brain tissue and tumors in real-time during surgery, and more easily make an intraoperative decision as to which part of the brain to resect. Raman Spectroscopy is a unique type of measurement of inelastic light spectra that can be used to determine the spectral fingerprint of molecules, and identify and differentiate molecules of any substance. In this project, a wand utilizing Raman spectroscopy was used to take 1066 spectra from 225 brain tissue samples from brain surgeries. In the operating room, I used the wand to assess the spectra of the brain tissues. I then compared these spectra against the pathology reports of the same tissues, to judge the efficacy of the Raman wand in identifying normal brain tissue vs. the various brain tumors. Finally, I split the data into two groups: a training subset to teach an algorithm to differentiate between the groups, and a testing subset to judge the efficacy of the machine learning program on actual specimens. The result is that the Spectroscopic wand was 94% accurate in differentiating between healthy and tumor tissues, with 100% specificity and 100% sensitivity between the various types of tissues. Ultimately, with this new Raman technology that has only recently been tested on living human tissue, we can hopefully help patients with the dreaded disease of malignant brain tumors live longer.

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BDNF in Early Life Stress: The Link to Epigenetics and Opioid Addiction

Azeem Saifee

Class of 2021

Early life stress (ELS) experienced by human children is highly prevalent, has deleterious effects on the brain and central nervous system (CNS), and contributes greatly to the pathophysiology of psychiatric illness, mood disorders, and addiction. Candidate genes related directly to the hypothalamic-pituitary adrenal axis (HPA-axis) are well explored; however, the effects of ELS on the brain-derived neurotrophic factor (BDNF), involved in long term potentiation (LTP) and synaptic plasticity, were chosen due to their potential involvement in the opioid addiction process and the novelty of this type of study. We also reported findings from studies on DNA methylation changes from ELS, as epigenetics is an emerging field. We hypothesized that ELS produces similar effects on BDNF expression in multiple species and that genetics predispose humans to the effects of ELS. We found that studies in humans consistently showed reduced serum BDNF expression that dovetailed with increased methylation of BDNF. Rat studies using maternal separation and abuse paradigms demonstrated a consistent decrease in BDNF expression in the prefrontal cortex (PFC) and hippocampus (HIP) that again dovetailed with increased methylation. In primates, specifically rhesus macaques, peer-rearing (PR) and

surrogate/peer-rearing (SPR) ELS paradigms demonstrated differential BDNF expression by sex; however, no studies have been done on BDNF methylation. Interestingly, rats and macaques had age-dependent effects on BDNF. Response to ELS by rats found increased ventral tegmental area (VTA) BDNF expression, which may be critical to opioid addiction vulnerability, although further investigation is required. Furthermore, we demonstrated how histone deacetylase inhibitors (HDACis) and DNA methyltransferase inhibitors (DNMTis) have the potential to reverse the harmful BDNF epigenetic consequences of ELS.

BDNF in Early Life Stress: The Link to Epigenetics and Opioid Addiction

Stress experienced early in life, usually during the weeks directly following parturition (childbirth), can cause adverse effects throughout adulthood (Franklin et al., 2010). Early life stress (ELS), including child abuse, neglect, and other stressful environments, has reached epidemic proportions (Heim & Nemeroff, 2001). Almost 700,000 children in the United States experience parental abuse each year ("National Child Abuse Statistics,"

n.d.). Studies have linked ELS to the psychopathology of various diseases, including major depressive disorder (MDD), anxiety-related disorders, and addiction (Provençal & Binder, 2015). Because of the serious implications of ELS on physical and mental health, the investigation into the biological mechanisms involved in ELS has grown over the past decades (Lewis & Olive, 2014).

The BDNF protein is a strong candidate for the adverse psychiatric effects of ELS. It is a neurotrophic factor and has been implicated in the neural bases of memory, reward, and learning systems. When BDNF is deficient, children can be at greater risk of psychiatric disruption. We know that the BDNF protein is disrupted at multiple levels by ELS (Boulle et al., 2012). The present research will link early dysregulation of the BDNF protein by ELS with later psychopathology of opioid addiction and with DNA methylation.

The influence of ELS on BDNF is a powerful one – we see it in multiple species and in response to multiple types of ELS. In human children, “abuse (sexual, physical, emotional), neglect (emotional, physical), and parental loss (death, separation)” are the principal types of ELS that can impact children long-term (Heim, 2013). The CTQ test inventories the prevalence of these types of ELS in turn (Bernstein et al., 1994). In one study, female subjects with MDD that experienced high CTQ scores (reflecting emotional, physical, and sexual abuse and emotional and physical neglect) had reduced serum BDNF levels. Benedetti et al. (2017) also showed lower serum BDNF levels correlating with higher CTQ scores in bipolar disorder (BPD) diagnosed patients (Benedetti et al., 2017). Similarly, Şimşek et al. (2015) compared

sexually abused children with a mean age of 13.1 ± 2.7 years against controls with a mean age of 13.8 ± 2.9 years (range of 8-17 years in both groups). Again, serum BDNF levels were significantly reduced in children experiencing ELS (sexual abuse), showing that ELS has long term effects that begin in childhood and last into adulthood (Şimşek et al., 2015). In these studies, BDNF expression in the serum of peripheral blood was used as a presumed proxy, which animal studies (described below) support. Serum BDNF is an effective biomarker for changes in the CNS and approximates brain BDNF expression according to many studies (Boulle et al., 2012; Davies et al., 2012; Karege et al., 2002). In addition, BDNF is known to cross the blood-brain barrier, indicating that serum BDNF levels may correlate to brain BDNF levels. Upholding this hypothesis further, BDNF expression in serum and in the cerebral cortex are positively correlated during neurodevelopment in rats and positively associated in terms of N-acetyl aspartate levels, which mark neuronal integrity (Cattaneo et al., 2016).

Rats show similar profiles following ELS, but in brain BDNF levels specifically. In Roceri et al. (2004), rats were subjected to repeated maternal separation for 14 days postnatally for 3 hours, causing BDNF mRNA levels on postnatal day (PND) 17 to be increased in the PFC and HIP. However, after PND 90 (equivalent to adult age), PFC expression levels of BDNF were significantly lower, suggesting long-term effects of ELS on BDNF in the PFC (Roceri et al., 2004). Many studies have reported that the effects of ELS, especially the maternal separation paradigm, are age dependent (Cirulli et al., 2009). Thus, we

can conclude that the rat data mirrors human findings linking ELS with lower BDNF expression in adulthood. These findings support a hypothesis by Cirulli et al. (2011), where BDNF expression serves as a “coping response to stress,” suggesting that BDNF levels increase immediately following stressors early in life and decrease into adulthood (Cirulli et al., 2011). In another study conducted by Lippmann et al. (2007), the BDNF protein levels in rats experiencing maternal separation over prolonged periods were examined. After 180 minutes of daily separation between PND 2-14, BDNF protein levels were significantly decreased in the HIP compared to normal animal facility reared (AFR) controls. Partially attesting to the reliability of these results, mature BDNF protein was separated from its precursor form, pro-BDNF. For both forms, no changes were found in the protein levels of the cortex, nucleus accumbens, or amygdala. Changes in VTA mature BDNF and pro-BDNF expression were also significant and will be mentioned later (Lippmann et al., 2007).

Primate studies on the effects of ELS on BDNF expression are few at this stage, and those that exist are somewhat inconsistent with human and rat data. However, they are still an integral part of a holistic understanding as primates share similarities with humans in terms of behavior, brain structure, and physiology (Dettmer & Suomi, 2014). Studies on rhesus macaques use PR as a reliable and effective model of ELS. In PR, macaques are raised by an artificial surrogate in a nursery with the ability to interact with peers and humans, but not adult macaques (Dettmer & Suomi, 2014). A PR environment is known to result in a lack of social skills, low social status

within a group, and aggressive tendencies (Cirulli et al., 2011). Cirulli et al. (2009) compared serum BDNF levels between (control) maternally reared (MR) and PR rhesus macaques. Interestingly, females had increased serum BDNF levels starting on PND 30 into PND 60, which was associated with behavioral passivity following PR, while males saw no significant changes. These findings demonstrate the role of gender differences such as testosterone/estrogen levels and X and Y chromosomes in stress (Cirulli et al., 2009). In Cirulli et al. (2011), rhesus macaques underwent PR, control MR, and SPR, a more aggressive model of ELS, where macaques typically spend up to two hours daily out of their individual cages with similarly aged peers (Bauer & Baker, 2016). The results showed serum BDNF levels on PND 14 were higher in PR macaques but not in SPR macaques, as compared to controls (Cirulli et al., 2011). However, from PND 14 to PND 60, serum BDNF levels decreased regardless of rearing conditions. Cirulli et al. (2011) hypothesize that higher serum BDNF levels in PR macaques, who experience milder adversity, serve as a “coping response to stress.” SPR macaques, on the other hand, do not cope successfully due to reduced interaction with peers and more stressful rearing conditions, demonstrating that social relationships may serve as a buffer to ELS in macaques (Cirulli et al., 2011). These studies may indicate that not all types of early stress have the same effect on BDNF. One limitation of these studies, however, is that macaques are only studied during the first 60 days (equivalent to around 6 months of human life) and not during adulthood. This age difference may explain why these studies differ from human

studies, which focus mainly on a retrospective analysis of ELS in adult patients. In addition, we hypothesize that a study of PR macaques during adulthood would find significantly reduced serum BDNF levels, similar to humans.

In addition to the environmental effects of ELS on BDNF, genetics plays a considerable role. The Val66Met, also known as the rs6265 polymorphism or Met allele, is a single nucleotide polymorphism (SNP) where methionine is present at codon 66, rather than valine. Many studies use patients who are heterozygous for the Met allele (Val/Met), in comparison to those homozygous of the Val allele, due to the rarity (4% in Caucasians) of those homozygous for the Met allele (Met/Met). These Met allele carriers (compared against homozygous Val allele carriers) have shown to be more sensitive to depressive symptoms and have lower hippocampal gray matter (a measure of the number of neuronal cell bodies) (Bueller et al., 2006; Egan et al., 2003; Elzinga et al., 2011; Pezawas, 2004). Furthermore, patients who had experienced ELS with/without recent life stress and who were diagnosed with lifetime MDD were tested for differential serum BDNF levels. Carriers of the Met allele were shown to be more sensitive to ELS with reduced expression of BDNF (Elzinga et al., 2011). Compared to the Val allele, activity-dependent secretion and intracellular trafficking of the Met allele is lowered (Chen et al., 2008). The Val66Met polymorphism in rhesus macaques is similar to that of humans. Cirulli et al. (2011) studied a similar SNP at codon 46 in the BDNF pro-domain. PR rhesus macaques who were Met allele carriers (either homozygous or heterozygous) were found to have significantly

lower serum BDNF levels, analogous to the previously mentioned study by Elzinga et al. (2011) (Cirulli et al., 2011). These findings bolster the theory that those carrying the Met allele are more susceptible to early life stressors, as well as pathophysiology later in life.

Gene expression studies on mRNA and protein levels are a highly common medium through which BDNF has been studied following ELS. Epigenetics may help explain the changes in expression level and the later developmental effects. Epigenetics presents a mechanism that can either repress or promote gene expression. The epigenome consists of DNA modifications and the overall chromatin environment. *Epi* is defined in Greek as “upon,” signifying its purpose as above the genome. Epigenetics modifies DNA without directly changing the genetic code (Lewis & Olive, 2014). The main chromatin modifications that have been well studied are histone modifications, DNA methylation, and non-coding RNAs. Epigenetics also play an important role in the transcription of DNA into mRNA, mediating cell differentiation. These modifications strongly reflect gene-environment interactions as well (Naumova et al., 2012; Vaiserman, 2015). The epigenome can potentially be modified through environmental and pharmacological approaches (Mitchell et al., 2016).

DNA methylation occurs in dinucleotides of genetic code where cytosine is connected via phosphate to guanine to form areas known as CpG sites. These CpG sites cluster together in the genome to form CpG islands, which are usually located near gene promoters (Cecil et al., 2020). Cytosine is susceptible to modification through DNA

methyltransferases. A methyl group is attached to cytosine using S-adenosyl-methionine, a universal methyl donor (Miranda & Jones, 2007). This methylation facilitates a physical obstruction to the transcription factors' ability to bind to gene promoters (Cecil et al., 2020). The DNA methyltransferase enzymes (DNMTs), DNMT1, DNMT3a, and DNMT3b, catalyze the methylation. Due to the covalent nature of the reaction, methylation proves to be a stable and lasting chromatin modification that stays consistent throughout cell divisions. De novo DNA methyltransferases (dnDNMTs), DNMT3a and DNMT3b, methylate new cytosines, while maintenance DNMTs (mDNMTs) – namely DNMT1 – maintain methylation at the replication fork, helping to mitotically pass DNA methylation marks during cell divisions. Greater methylation is widely regarded as a stable indicator of reduced gene expression. In addition, DNA methylation, the most commonly studied chromatin modification, can occur at any of the 22 million CpG sites within the genetic code of every cell and around 70-80% of these CpGs are typically methylated in the genome (Cecil et al., 2020; Lutz & Turecki, 2014; Miranda & Jones, 2007). Studies in BDNF gene methylation following ELS across rats, humans, and primates are still in their infancy, and a more definitive investigation is required.

In human subjects, studies have measured differential BDNF gene methylation, which is associated with ELS. In Perroud et al. (2013), serum BDNF methylation of exons I and IV was considered in patients diagnosed with BPD. The study also featured psychotherapy of BPD through I-DBT (Intensive Dialectical Behavior Therapy).

Significantly higher levels of BDNF methylation were associated with childhood abuse before therapy, compared to the control patients. Following therapy, patients who did not respond showed greater serum BDNF methylation, while patients who did, experienced a decrease. The use of exon I and IV, according to Perroud et al. (2013), is valid given that BDNF levels came from peripheral blood and not the brain. This methylation was correlated to alterations of cognitive function as well (Perroud et al., 2013). Another study measured low maternal care against high maternal care using the Parental Bonding Instrument (PBI) test in adult patients. This self-reported retrospective test measures the development of the parent-child bond by each parent. Ideal results are low parental overprotection and high parental caring ("Parental Bonding," n.d.). Greater methylation of a targeted sequence of serum BDNF, a CpG island between exon VI and VII, was present in low maternal care as compared to high maternal care patients in childhood and adolescence (until 16 years of age) (Untermaehrer et al., 2015). In both studies, hypermethylation of serum BDNF concurs with previous studies mentioned in this paper that showed decreased serum BDNF expression levels, suggesting that methylation may have a role in decreasing serum BDNF expression. However, Wang et al. (2018) presented contrary findings. Using patients diagnosed with MDD, the study found that, at the baseline, lower levels of BDNF methylation associated with early life stressors using the Life Events Scale (LES) and CTQ tests (Wang et al., 2018). The LES is a test to detect likelihood of illness and disease. The test measures a person's

experience and resulting change from stressful life events in the previous 12 months (Firn, 2016). In addition, both Peng et al. (2018) and Smith et al. (2011) showed no difference in serum BDNF methylation. In Peng et al. (2018), three BDNF CpG sites saw hypermethylation due to a wide range of early life stressors, however, these were deemed null as they did not withstand multiple testing correction (Peng et al., 2018). In Smith et al. (2011), human subjects were from urban environments with low socioeconomic status (SES) and were divided into four groups: those diagnosed with post-traumatic stress disorder (PTSD) using the clinician-administered post-traumatic stress disorder scale (CAPS), those with/without a history of ELS measured by the CTQ, and control subjects with/without a history of ELS measured by the CTQ. PTSD is caused by a very traumatic life event that interferes with one's life through dissociative flashbacks and recollections (Fink, 2017). The results of the study showed overall global DNA methylation for subjects with PTSD notwithstanding their history of ELS. BDNF was only differentially methylated at CpG sites for patients with PTSD without a history of childhood trauma (Smith et al., 2011). Lack of significant change in methylation may be due to a variety of factors, including the cumulative impact of the early stress experienced by patients. The presence of PTSD was not mentioned in relation to serum BDNF methylation or expression in any other study reviewed, meaning this added variable could skew the results. The results from studies that lack significant methylation or that show decreased methylation of serum BDNF demonstrate the need for further investigation and streamlined paradigms. From current

literature, we can conclude that ELS equates to long-term methylation of serum BDNF.

No study has yet been published on DNA methylation changes in ELS with BDNF as a candidate gene in rhesus macaques. Instead, Provençal et al. (2012) studied system-wide and genome-wide PFC and T cell methylation, comparing MR macaques to SPR macaques. Greater methylation was found in both the PFC and T cells in SPR macaques, suggesting that, as previously shown in rat studies, BDNF expression levels in the PFC could play a role in the effects of ELS (Provençal et al., 2012).

Epigenetic effects of ELS on BDNF are better understood in rats. In a seminal study by Roth et al. (2009), infant rats were subjected to maternal abuse for one week following parturition. For 30 minutes daily, rats were exposed to stressed (and therefore abusive) mothers due to their unfamiliarity with the environment, as well as poor nesting resources. These abused rats were neglected and handled very roughly as they were stepped on and dragged by the stressed mother. In contrast, a cross-fostered control group experienced positive care as the mother was not subjected to a stressful condition and environment. This resulted in significantly higher BDNF methylation of exon IX in the PFC that persisted into adulthood. This methylation was coupled with decreased PFC BDNF exon IX expression as well (Roth et al., 2009). Furthermore, Kundakovic et al. (2013) found increased methylation at BDNF exon IX in the HIP using a 14-day maternal separation paradigm for 2 hours daily. During separation, mothers were exposed to unpredictable stress as well. BDNF protein expression in the HIP was also decreased (Kundakovic et al., 2013).

Studies in both gene expression and methylation of BDNF show similarities across humans, primates, and rats. In humans, serum BDNF levels are decreased and methylation, especially at exon I and IV, is increased. In rats, the PFC and HIP have decreased BDNF expression coupled with increased methylation, especially at exon IX. This consistent differential expression warrants an investigation into how BDNF affects neurons and processes in the brain that lead to the pathophysiology of psychiatric illness and mood disorders.

The BDNF gene has a very complex structure and functions similarly in rat and human DNA. The human BDNF gene has 11 exons, two of which rats do not have (exon Vh and VIIIh) (Pruunsild et al., 2007). The non-coding exons I-IX that lie on the 5' end, each preceding their own promoters, are alternatively spliced to the 3' coding exon IX with two alternative polyadenylation (poly A) sites that code for the mature BDNF protein (Cowansage et al., 2010; Roth et al., 2009). Exon IX also encodes the pro-BDNF protein (Cattaneo et al., 2016). mRNA transcripts of Exon I-III are present mainly in the brain while those from exon IV are mainly present in the heart and lungs (Binder & Scharfman, 2004). Exon IV is activity-based (stimulated by upstream factors) and responds to methylated CpG binding protein (MeCP2), cAMP response-element binding protein (CREB), and calcium-responsive transcription factor (Autry & Monteggia, 2012). When BDNF is methylated, MeCP2 becomes localized mainly to the promoters of exon I and IV, blocking transcription factors. Through these mechanisms, BDNF produces 34 alternative splicing

variants. These splicing variants translate into single pro-BDNF proteins, which are then cleaved into the mature form through various enzymes operating in and around cells such as plasmin (extracellular area), furin (endoplasmic reticulum), and proconvertase enzymes (secretory vesicles) (Ikegame et al., 2013). Pro-BDNF causes neuronal apoptosis and hippocampal long-term depression (LTD) after preferential binding to the p75^{ngfr} receptor. BDNF and other neurotrophins alike bind to the tropomyosin-related kinase (trk) receptors with BDNF specifically binding to trkB. When bound to the trkB receptor, tyrosine residues are phosphorylated, activating three signaling pathways that promote cell survival and migration, neurite outgrowth, and synaptic transmission and plasticity (Aid et al., 2007; Ikegame et al., 2013). The phospholipase C γ (PLC γ) pathway stimulates protein kinase C, involved in cellular responses, and leads to synaptic plasticity through the release of Ca²⁺ (by activation of inositol trisphosphate (IP3) receptor), which then amplifies calmodulin kinase (CamK) activity. The phosphatidylinositol 3-kinase (PI3K) pathway leads to cell survival via protein kinase B (AKT) stimulation. Finally, the mitogen-activated protein kinase (MAPK)/extracellular signal-related kinase (ERK) pathway is involved in various processes downstream, the most important of which: induction of cell differentiation and growth. In addition, BDNF is important in proper dopaminergic, GABAergic, cholinergic, and serotonergic neuron maintenance and development (Autry & Monteggia, 2012).

In the brain as a whole, BDNF is expressed ubiquitously (Ikegame et al., 2013).

The PFC is known to be a critical modulator of the HPA axis, which controls the primary stress response through cortisol release (Provençal et al., 2012). Furthermore, decreased BDNF expression has been shown to cause neuronal atrophy and degeneration in both PFC and HIP, lasting into adulthood. A study also found increased BDNF protein expression in the PFC results in improved stress resilience, which helps to mitigate stress-associated mental illness and mood disorders (Chang et al., 2018; Duman & Monteggia, 2006). Therefore, the long-term decreased expression in the PFC experienced by rats in ELS paradigms has deleterious effects on the CNS. The HIP is important in learning and memory through LTP, which strengthens synapses between neurons and may serve as a mechanism for learning and memory processes. Two types of LTP exist: early (E-LTP) and late (L-LTP; requiring protein synthesis). BDNF is important in facilitating the conversion of E-LTP to L-LTP and enhancing subthreshold activation (depolarizing the membrane), thus causing LTP (Autry & Monteggia, 2012). In addition to the decreased learning and memory processes due to decreased BDNF expression following ELS, BDNF in the HIP is also heavily involved in neurogenesis. Methylation (which usually causes reduced expression) of BDNF in the HIP is known to result in a decreased hippocampal volume, further explaining psychopathology later in life because HIP is so critical for regulating stress response (Grande et al., 2010).

ELS has been considered a strong risk factor for psychiatric illness later in life. The literature on schizophrenia, BPD, and MDD is saturated with studies on the role of the BDNF gene as a means of connection to ELS.

However, addiction research in regard to differential BDNF expression caused by opioids (clinically referred to as opioid use disorder) is far less prevalent. The opioid epidemic, however, has grown over the past decade, costing hundreds of thousands of lives and around \$78.5 billion a year due to prescription misuse in the U.S. alone. In 2018, on average 128 people died daily from opioid related overdose, necessitating intensive research in this field (*Opioid Overdose Crisis* 2020).

Opioids work by binding to the δ , κ , and μ endogenous opioid receptors that incite a release of dopamine and therefore produce strong pain relief (Autry & Monteggia, 2012). Opioids function through the mesolimbic dopamine or reward pathway that projects from the dopaminergic neurons in the VTA to the nucleus accumbens (NAc or ventral striatum) and frontal cortex in the limbic forebrain (Berton et al., 2006; Chu et al., 2007). Serum BDNF from humans and primates do not provide a reliable basis for studying opioids, as reduced expression is also seen in various other psychiatric disorders and does not reflect specific mesolimbic dopamine pathway function (Autry & Monteggia, 2012). Controlling the switch to opioid dependency from non-dependency, the VTA is largely important in this pathway (Vargas-Perez et al., 2009). During normal non-dependent opioid use, the neural reward is mesolimbic dopamine pathway independent, instead involving the brainstem tegmental pedunculo-pontine nucleus (TPP), involved in reward signaling linked to the VTA in function and anatomy (Laviolette & Kooy, 2004). A dopamine-dependent system is activated from opioid reward following chronic opioid exposure and

withdrawal. Studies have shown that the switch to dependency (addiction) is because of a switch in signaling state (excitatory to inhibitory) of the γ -aminobutyric acid type A (GABAA) receptor on VTA GABAergic neurons (Vargas-Perez et al., 2009). BDNF is important in this process as increased expression of the protein in the VTA has the ability to incite this switch in signaling state, therefore causing an addicted state (Vargas-Perez et al., 2014). BDNF is known to be active in the VTA, and its receptor, trkB, is present on both dopamine and GABA neurons in the brain region (Laviolette et al., 2004). Following this theory, Vargas-Perez et al. (2009) found an increase in the VTA in rats sixteen hours after withdrawal from 8-day daily exposure to heroin. This increase was 150% for the BDNF protein and 193% for BDNF mRNA levels. These findings suggest that chronic drugs of abuse including opioids increase BDNF expression levels in VTA neurons and significantly increase following withdrawal from opioids (Vargas-Perez et al., 2009). In addition, Zilkha et al. (2014) studied rats using daily heroin injections for 5 days and found a significant increase in BDNF expression in the prelimbic cortex, part of the PFC, and a significant decrease in the dorsal hippocampus (Zilkha et al., 2014).

These studies by Vargas-Perez et al. (2009) and Zilkha et al. (2014) suggest a potential connection to the harmful effects endured under early life stressors. In ELS, according to evidence mentioned previously by Lippmann et al. (2007), BDNF expression in the VTA is increased following the prolonged maternal separation of infant rats. This study also found decreased hippocampal BDNF expression. Furthermore, many studies have

shown increased dopamine transmission in the VTA due to stress in rats (Lippmann et al., 2007). This shows an important potential link between the harmful effects of ELS on BDNF and the risk of opioid addiction mainly through the VTA in the mesolimbic dopamine pathway.

However, in a study by Koo et al. (2012) and others, BDNF was shown to serve a different purpose. Koo et al. (2012) studied chronic morphine in rats, finding that VTA BDNF expression was instead reduced. In addition, researchers studied morphine-conditioned place preference (CPP). CPP measures drug reward indirectly by placing rats in a specialized three-compartment cage that allows them to express a preference for either vehicle-paired or drug-paired compartments. In successful CPP, rats spend the most time in the drug-paired compartment (Prus et al., 2009). Overall, BDNF in the VTA was shown to block opiate reward from morphine by reducing the activity of dopamine neurons projecting to the NAc and suppressing morphine place preferences (Koo et al., 2012). Chu et al. (2007) had similar findings of reduced BDNF expression in the VTA with chronic morphine use. This study also found significant and immediate increases following withdrawal from morphine, which was accompanied by a decrease during long-term withdrawal (Chu et al., 2007).

These contrasting theories suggest that more work is necessary to definitively determine the role of BDNF in the VTA and in other areas of the reward pathway. Current studies show a potential predisposition to opioid use, addiction, and withdrawal because of ELS. In our search, no studies researched methylation of BDNF in the VTA following

ELS, however, opioid addiction has been somewhat explored in this area (see Browne et al., 2020).

We posit that ELS puts children at risk for later addiction by epigenetically dysregulating the BDNF gene. If so, targeting epigenetics may help treat these disorders by eliminating the harmful effects of ELS. DNA methylation of the BDNF gene has been successfully reversed in rat models using HDACis and DNMTis, showing promise for its application on humans (Roth et al., 2009). DNA in each cell is wrapped around octamers of histone proteins, forming nucleosomes and condensing the DNA into chromatin (Eberhardter & Becker, 2002). The function of these histones can be altered by state change of amino-acid residues on the tail extending from these proteins. HDACis, an emerging class of drugs, inhibits histone deacetylases (HDACs), which allows chromatin condensation through transcriptional repression; therefore, by inducing transient histone acetylation, HDACis promote transcription through loosening of chromatin structure (Haberland et al., 2009). DNMTis, on the other hand, inhibit previously mentioned DNMTs, and thus prevent DNA methylation. HDACis and DNMTis are currently used to treat certain cancers (Gnyszka et al., 2013; Xu et al., 2007). Understanding how these inhibitors can reverse methylation of the BDNF gene in rats will help further therapeutic approaches to ELS in humans and primates. DNMTis, namely 5-aza-2-deoxycytidine, studied on a cellular level in mouse Neuro-2a cells showed the demethylation of BDNF promoter I, which caused subsequent BDNF upregulation (Ishimaru et al., 2010). In a study by Roth et al. (2009) mentioned

previously, another DNMTi, zebularine, was used to try and reverse the hypermethylation caused by maternal abuse. The study managed to completely reverse the hypermethylation in exon IV of BDNF. On control subjects, the zebularine produced no adverse effects, further supporting the use of zebularine as a DNMTi (Roth et al., 2009). Zebularine was also studied by Lubin et al. (2008). In this study, rats were injected with zebularine in the HIP CA1 region, resulting in the demethylation of the BDNF exon I, IV, and VI promoters and in a greater ability to amalgamate fear conditioning memory (Lubin et al., 2008). Finally, sodium butyrate, an HDACi, has shown promise in reversing BDNF impairment in the HIP and frontal cortex caused by BPD. Using ouabain, BPD was simulated in rats, resulting in lower BDNF expression compared to controls that were successfully reversed by sodium butyrate in both brain areas (Varela et al., 2015). Furthermore, the MeCP2 could be a potential target as it binds preferentially to BDNF promoter IV, enhancing methylation. Thus, inhibiting this protein may serve the same purpose as an HDACi or DNMTi (Boulle et al., 2012). All in all, these mechanisms show reversibility potential of ELS effects through epigenetics. Further studies should aim to develop potential applications in humans and primates following ELS.

Alternative Theories & Conflicting Data

Differential expression of the BDNF gene following ELS is not the sole contributor to neuronal and cerebral change as many other genes and processes, such as the HPA-axis, play equally important roles. We chose BDNF as a

candidate gene to understand specific long-term effects of ELS. Whole-genome/system-wide studies, on the other hand, can point to general pathways and provide less definitive data, but they are also an important component of the literature. Whole epigenome studies have also been criticized for lack of specificity: they often show direct changes in gene regulatory elements, but do not provide the true drivers of these changes: transcription factors, broader molecular processes, and neural systems. In addition, ELS is not the strongest predictor of opioid addiction, however, key scientists in the field have frequently alluded to how ELS shapes the epigenomic landscape to influence vulnerability to addiction (Nestler & Lüscher, 2019).

Conclusions

This study reviewed current data on ELS in humans, primates, and rats through the study of BDNF expression. We analyzed how these changes to BDNF vary by brain region and contribute to harmful effects on the brain. Epigenetics, specifically DNA methylation, help substantiate BDNF expression data and show the role of chromatin modifications in response to ELS. We used this data to show how BDNF is involved in opioid addiction and how ELS may influence susceptibility to this addiction. Finally, we explored the uses of HDACis and DNMTis to reverse methylation of BDNF and therefore the harmful effects of ELS. These results implicate BDNF as a strong and complex candidate gene in ELS, which is sadly a common experience for human children. At a critical time of development and growth, these stressful life experiences leave permanent

marks. In addition, the epidemic level effects of opioid addiction are actively devastating public health and the economy. Both ELS and opioid use disorder are complex multifactorial conditions involving interactions between varying genes and environment. Future studies into BDNF should build on this research of ELS in all three species, in DNA methylation and other chromatin modifications, and, most importantly, in the connection of ELS to opioid addiction through epigenetics and protein expression.

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Efficient Monocular Depth Estimation with Fully-Convolutional Neural Networks: Abstract

Adam Sun

Class of 2021

Depth estimation is a task that has been tackled with many different means. Technology ranging from stereo cameras to Lidar all serve the purpose of perceiving depth with good accuracy. However, these technologies may not be practical or cost-efficient to implement in everyday applications like robotics. Thus, a depth estimation system based on a single camera is proposed.

An encoder-decoder convolutional neural network architecture based on EfficientNetB0 was trained on DIODE, a dataset of thousands of RGB images of indoor and outdoor environments and their corresponding depth maps. The loss function consists of L1 point-wise and gradient loss, as well as a structural similarity term.

After training the model and minimizing the loss function, the output depth maps were qualitatively assessed for accuracy. Model performance was then assessed with the metrics of mean absolute error and root mean squared error. After being trained on DIODE, the model generalized very well to NYUv2, a popular depth dataset, demonstrating its applicability to everyday environments. The model performed up to par with the state of the art despite having less parameters. This model can potentially be a reliable depth estimator when integrated into a camera.



RGB Images taken from NYUv2 and Depth Maps predicted by the model

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Identifying a Possible Alternative Method to Diagnose ADHD through Saccades: Abstract

Kristine Ma and Raha Zaman

Class of 2022

ADHD, or Attention Deficit Hyperactivity Disorder, is a medical condition that affects one's attention and control. Symptoms include inattention, hyperactivity, and impulsivity. Despite its impact on numerous people, there is no single nor standardized test to diagnose ADHD; the majority of the process is through questioning and self-reporting to a specialist. Because ADHD diagnosis is currently made at the interpretation of the clinician and not with purely objective measures, there is a lot of room for error and inconsistency. Saccades, on the other hand, are involuntary, reflexive eye movements between two fixation points. Research has shown saccades are not suppressible. Thus, using information from saccades can reinforce and strengthen a medical diagnosis of ADHD. We hypothesized that if we give puzzles to people with ADHD and a control group, then people with ADHD have more frequent saccades and a longer time needed to complete the puzzles because they have difficulties in completing oculomotor tasks as well as uncontrolled eye movement.

To test this, we first prepared 9 different displays that contained various images that would test the participants' saccades. 3 of the displays contained a cluster of the letter "E" and a fixation point below. The following 2

displays showed "spot the difference" images, and the last 4 images were more complicated and similar to "Where's Waldo" puzzles. An eye tracking program was installed on the operating system and running during the experiment. Using the program, we measured how long it took for the participant to readjust their focus from the fixation point and the number of saccades that the participant personally required to complete the task. Further, we collected personal data about the participant's age and history of ADHD. The test subjects were not on medication, had no history of epilepsy, and had a professional diagnosis of the disorder.

After conducting the experiment, we averaged the time and frequency of the saccades for the male and female control groups as well as the time and frequency for the male and female groups with ADHD and found that in both groups, males tended to solve the puzzles faster and displayed less frequent and slower saccadic eye movements while doing so. For non-ADHD test subjects, saccade times ranged from 50 to 80 milliseconds, whereas for the ADHD group, saccade times ranged from about 170 to 210 milliseconds. To put comparative frequency of saccades into perspective, on puzzle 5, in which participants were asked to spot the difference between two pictures placed

side by side, male non-ADHD participants averaged 5 saccades per puzzle whereas their ADHD counterparts averaged 30 saccades per puzzle. In general, however, the control groups tended to have less frequent saccades and their saccades had a higher peak velocity than their ADHD counterparts, regardless of gender. Therefore, in relation to eye movement tasks, subjects with ADHD demonstrated more difficulty executing the planned movements and had more variable and impulsive responses.

People with ADHD show suppressed saccadic eye movements between fixation points. Using the data and trends we found, doctors could implement eye tracking and saccades to strengthen ADHD diagnosis, as saccades are involuntary. Participants with ADHD show lower response inhibition, which relates to the suppression of actions that obstruct goal-driven behavior. Response inhibition as well as oculomotor control is regulated by the frontal cortex and basal ganglia. These regions have been identified as impaired in people with ADHD and can be further explored by an EEG. We hope that our findings will help strengthen diagnoses of ADHD by improving the accuracy and standardizing the process. ■

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A non-invasive home monitoring test for early detection of breast cancer: Abstract

Natasha Asmi

Class of 2021

Diagnosing and treating breast cancer early is critical for patient survival. Here I present an early detection testing device that can be easily used and widely available. Tumor cells produce biomarkers that can be utilized to detect abnormalities much earlier than mammography can. I found a panel of four urinary exosomal microRNAs that could detect breast cancer with 98.6% specificity and 100% sensitivity. In contrast, mammography accurately detects breast cancer 70% of the time. The engineering goal of this project was to design a device capable of preparing a urine sample for simultaneous detection of the four miRNA targets from exosomes without user intervention. For the detection principle, I adapted conventional sandwich lateral flow assay protocol for nucleic acid detection, using gold nanoparticles as labels. Current clinical methods for detecting miRNA from exosomes require expensive equipment, trained lab personnel, and multiple days to complete. Instead, I designed a series of integrated microfluidic discs to quickly accomplish the functions of sample preparation and biomarker detection. To eliminate the need for active flow control, the centrifugal force is used as a pump to control the flow of fluid through the device. In this way the test can be accomplished passively, without user intervention. Many women skip mammograms because they can be painful and inconvenient. Once this device is optimized and clinically evaluated, it could provide a simple way for women to screen themselves for breast cancer at home. By helping prevent late stage diagnoses, this test could save thousands of lives.

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Wax Moth Polyethylene Digestion: Abstract

Sonya Zhang

Class of 2022

Since the late 60s, plastic pollution has become a large and growing concern in world affairs and the environment. Unlike most other pollutants, plastic can not be biodegraded like other organic wastes or easily reused like metals due to its molecular structure and synthetic nature. Most bacteria and natural decomposers are unable to break down synthetic plastic. However, there have been a couple of exceptions, mainly microbes. Recently, researchers discovered that when wax moth larvae (*Galleria mellonella*) were left alone with plastic bags, they created sizable holes -- indicating that they may have eaten and possibly fully digested the plastic. This experiment aims to explore the extent of the greater wax moth's ability to digest polyethylene plastic by analyzing its metabolic wastes for traces of microplastics through using Nile Red dye. For this experiment, data from the Nile Red fluorescence test needed to be collected. All of the data is qualitative because of resource and time restraints (partially due to COVID-19 restrictions); however, Nile Red dye is sufficient to prove if the wax moths digested the plastics or not since it is lipid specific. The relative fluorescence of the Nile Red dye on the samples should be able to accurately visualize if the plastics had broken down. The Nile Red dye test data on relative fluorescence was obtained by looking at hydrogen peroxide baked metabolic waste with a dilution of the Nile red fluorescent dye with a UV light and comparing it with the control waste (no plastic). Using the qualitative observations, one can conclude by comparing the samples if the moths digested the polyethylene.

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Evaluating the environmental impacts of surfactants through nematodal analysis: Abstract

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Class of 2023

Pollution of our soil and water is a serious problem today, and it only continues to get worse. However, there are a multitude of possible solutions. One serious contender is the usage of aqueous micelles. To test this method, I collected soil samples and exposed them to a set amount of hydrophobic contaminant. I then added a different amount of micelle-forming surfactant to each sample. After a couple weeks, I extracted nematodes from the soil samples using a Baermann apparatus. I then analyzed the collected nematodes to figure out the population of each type of nematode in the sample. I used the population data for a given sample to compare soil health of different samples and treatments. Finally, I compared and analyzed the resulting data in order to come to a conclusion about the effectiveness of the micelles at decontaminating the soil. The purpose of this experiment was to determine the efficacy of certain surfactants at reducing the impact of hydrophobic pollutants (such as oil) in nature, specifically in the soil near rivers and other aquatic environments. I hypothesized that increased concentrations of decyl glucoside (my chosen surfactant) would more effectively remove the oil from the soil, and thus reduce its impact on the soil nematode population. I collected soil from the bank of the Rouge River. I put 50 grams of soil each into five cups, and

then I exposed each cup to two milliliters of oil and 20 milliliters of increasing concentrations of decyl glucoside solution. I let each sample sit for a week. Afterwards, I put each soil sample into a Baermann funnel. I let each apparatus sit for three days, after which I collected the water with the extracted nematodes. For each sample, I took three drops of water (one milliliter each) and counted the number of nematodes in each drop using a microscope. I repeated this entire process one more time in order to collect additional data. The collected data shows that adding decyl glucoside to the oil-contaminated sample appears to increase the number of nematodes extracted in the soil. Graphing the data reveals that the number of collected nematodes appears to be maximized between 0.05 and 0.08 milliliters of decyl glucoside per milliliters of total solution. Afterwards, the number of nematodes extracted begins to drop. A statistical analysis confirms that my results are significant ($p < 0.05$).

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HISTORY

Editorial

In a time filled with uncertainty and anxiety, much of the country has turned to conflict and tension rather than communication and cooperation. Despite living in a modern age with widespread technology and advancement, many still cling to centuries-old prejudices against minority groups. They seem to have lost the fundamental ideals of respect, thoughtfulness, and common courtesy. Rather than moving forward with blindness and aggression, it is more important than ever before to examine past historical events through a considerate and introspective lens. By analyzing past events, we can gain a comprehensive understanding of the perspective of both sides. As the world continues to move forward and new events unfold, we must use previous injustices as a point of reference to avoid making the same mistakes again, instead of using them as a reason for anger. Only then can we hope to move towards a world of peace and stability.

The historical articles presented in this issue examine past discriminations and how these conflicts led to resistance. Through these events, we can learn how these people stood up against these prejudices to gain social progress - eventually resulting in peace and large-scale reform.

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Phillis Wheatley: Poet & Symbol

Eva Niederhofer

Class of 2021

Phillis Wheatley, a once-enslaved African American woman, claimed international fame as a poet in the 1770s. The following essay, "Phillis Wheatley: Poet & Symbol", explores how Wheatley fought discriminatory behavior in America through her writing. The essay first establishes the racist and sexist culture of America at the time, and then – with consideration of the aforementioned culture – rhetorically analyzes Wheatley's poetry. Finally, the essay delves into the public's response to Wheatley's work (particularly the response of nationally prominent white males) and concludes that Wheatley successfully symbolized and persuaded the nation of black and female equality to white people and men.

The American Revolution is known as the struggle for independence from the repressive British government; however, even after Thomas Jefferson declared "liberty" as an "unalienable [right]" in the Declaration of Independence,¹ American women and African Americans people remained subject to the domination of a white, male social elite. As Benjamin Franklin satirically portrayed in "Silence Dogood, No. 5," the male populace considered flaws such as "Idleness, Ignorance and Folly" as "more peculiar to [women] than to [men]."² Women's status as the inferior sex commonly limited or prohibited them from ever receiving an education.³ Meanwhile, African Americans were "people defined as

property" by whites⁴; the white populace acknowledged blacks as useful servants, but not as people, much less as intellectuals.

Phillis Wheatley proved herself to be an exception to this stereotype. Wheatley was born with the promise of an oppressed life, as she was both a woman and an African American. However, her owner, Susanna Wheatley, was awed by the young girl's intelligence and made sure she properly learned to read and write.⁵ Wheatley grew up in a Christian community in Boston, where she was inspired to include Christian elements in her writing.⁶ With the support of her wealthy slaveholders,⁷ Wheatley had gained international fame as a gifted poet by the time she was a late teen.⁸ Through her writing, Phillis Wheatley broke sexist and racist barriers

¹ Thomas Jefferson. "A Declaration by the Representatives of the United States of America, in General Congress Assembled." *The Norton Anthology of American Literature: Beginnings to 1865*. Edited by Robert S. Levine. Shorter Ninth ed. Norton & Company. P. 356. 2 vols.

² Benjamin Franklin. "Silence Dogood, No. 5, 28 May 1722." *Founders Online*. National Archives. Accessed September 29, 2019. <https://founders.archives.gov>.

³ "Phillis Wheatley." *The Norton Anthology of American Literature: Beginnings to 1865*. Edited by Robert S. Levine. Shorter Ninth ed. Norton & Company. P. 420. 2 vols.

⁴ Cassandra Pybus. "Mary Perth, Harry Washington, and Moses Wilkinson: Black Methodists Who Escaped from Slavery and Founded a Nation." *Revolutionary Founders*. Edited by Alfred F. Young et al. Vintage Books. 2012. P. 156.

⁵ "Phillis Wheatley." *The Norton Anthology of American Literature: Beginnings to 1865*. Edited by Robert S. Levine. Shorter Ninth ed. Norton & Company. P. 420. 2 vols.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid 421.

by representing the intellectual capability of both women and African Americans.

Wheatley's writing asserted that she was just as politically astute as any white man of her time. Her poem, "On the Death of Mr. Snider Murder'd by Richardson,"⁹ details the 1770 Christopher Snider scandal, in which Ebenezer Richardson shot and killed young patriot Snider for protesting against the importation of British goods.¹⁰ Not only did Wheatley reveal her political awareness in this poem by accurately describing how "Richardson" inflicted a "fatal wound" upon "Snider" and caused him his "Death,"¹¹ but she also demonstrated her rhetorical genius.

The poet utilized language to heroize Snider and vilify loyalists, thus promoting her patriotic stance. Wheatley deliberately did not mention any boisterous or offensive behavior that Snider may have demonstrated in his protest against Richardson. Instead, she called Snider an innocent "victim," a courageous advocate "for the common good," and the "first martyr" of the patriotic cause.¹² The poet took her argument a step further by maligning loyalists. She declared her specific frustration with loyalist murderer Richardson by writing "Be Richardson for ever banish'd here"; then, she brilliantly extended that frustration to all loyalists, labeling them as "freedom's foes" who could not "forbear" a "martial genius" such as

Snider.¹³ In this poem, despite being a woman of color, Wheatley demonstrated her political awareness, natural acuity, and effective rhetorical strategy. The intellect Wheatley revealed in this poem alone validates the intellect that all women and people of color are capable of obtaining.

Phillis Wheatley's political influence did not stop at her "On the Death of Mr. Snider" poem. She had also written patriotic poems such as "On the Affray in King Street, on the Evening of the Fifth of March," which commemorated the Boston Massacre.¹⁴ Additionally, her activist poem, "On Being Brought from Africa to America," argued that through Christian education, blacks could achieve moral enlightenment equivalent to that of white Christians.¹⁵

Phillis Wheatley understood the relationship between religion and politics, and wisely used that relationship to her advantage. In her "On Being Brought from Africa" poem, Wheatley called on white Christians and intellectuals to recognize black potential. Wheatley was well-aware of the populace's racist orientation toward black people; she acknowledged that if she were ever to make strides toward racial equality, she would have to limit her radicalism. To appeal to a wider white audience, Wheatley concurred in her poem that she had a "diabolic" complexion and a "benighted" soul¹⁶ Once she gained her white

⁹ Phillis Wheatley. "On the Death of Mr. Snider Murder'd by Richardson." 1770. *America in Class*, www.americainclass.org. Accessed 19 Feb. 2020.

¹⁰ "First Martyr: The Shooting of Christopher Seider." *The Boston Gazette* [Boston], 26 Feb. 1770. *America in Class*, www.americainclass.org. Accessed 19 Feb. 2020.

¹¹ Phillis Wheatley. "On the Death of Mr. Snider Murder'd by Richardson." 1770. *America in Class*, www.americainclass.org. Accessed 19 Feb. 2020.

¹² Ibid.

¹³ Ibid.

¹⁴ Phillis Wheatley. "On the Death of Mr. Snider Murder'd by Richardson." 1770. *America in Class*, www.americainclass.org. Accessed 19 Feb. 2020.

¹⁵ Phillis Wheatley. "On Being Brought from Africa to America." *The Norton Anthology of American Literature: Beginnings to 1865*. Edited by Robert S. Levine. Shorter Ninth ed. Norton & Company. P. 422. 2 vols.

¹⁶ Ibid.

readers' consideration, Wheatley blamed her impurity and ignorance on the "pagan land" she came from and suggested that African American people like herself could be "refined" by learning "God."¹⁷

Wheatley managed to attract her white readers with racist conceptions, and then completely change her stance by bringing in another white appeal: Christianity. Historically, Christians have believed that all people are descendants of Eve, the Earth's first sinner, and thus are born with "original sin" that can be cleansed through baptism.¹⁸ Wheatley's depiction of her "benighted soul" seeking "redemption" alluded to the contaminated soul that every white Christian is born with and seeks to remove.¹⁹ This reference called on Christians to understand that blacks may also be cleansed of their contamination, if only they were given the chance. The poet cleverly used her understanding of America's racial and religious culture to support her anti-racist stance. Wheatley's deft rhetoric consistently served as evidence of female and black potential.

Wheatley may have been a rhetorical mastermind, but in order to prove that her brilliance broke any discriminatory barriers, there needed to be some positive public response to her writing; indeed, there was. In 1773, when Wheatley published her book *Poems on Various Subjects, Religious and Moral*,²⁰

internationally published accolades acknowledged the writer's brilliance and criticized the enslavement of "people like Wheatley."²¹ The poet's writing was impressive enough to her readers to convince them of black capability, sway them towards abolitionism, and inspire them to outwardly protest against enslavement. By serving as a symbol of what an enslaved woman could become if given an opportunity for success, Wheatley aided the abolitionist movement and – although more discreetly – the feminist movement.



An engraving of Phillis Wheatley (1773).²²

¹⁷ Ibid.

¹⁸ *The Holy Bible: Authorized King James Version*. Nashville, Tennessee, Holman Bible publishers, 2008.

¹⁹ Phillis Wheatley. "On Being Brought from Africa to America." *The Norton Anthology of American Literature: Beginnings to 1865*. Edited by Robert S. Levine. Shorter Ninth ed. Norton & Company. P. 422. 2 vols.

²⁰ David Waldstreicher. "Phillis Wheatley: The Poet Who Challenged the American Revolutionaries." *Revolutionary*

Founders. Edited by Alfred F. Young et al. Vintage Books. 2012. P. 105.

²¹ Ibid 106.

²² "Phillis Wheatley." 1773. National Portrait Gallery, Smithsonian Institution, ngp.si.edu. Accessed 11 Apr. 2020.

Admittedly, Wheatley's observers were less focused on her gender and more intrigued by how her talent disproved racial biases. However, the lack of focus readers had on Wheatley's womanhood actually implanted gender equality into her readers' subconscious: people more easily accepted that Wheatley was an accomplished woman because they were too puzzled by how she was an accomplished black person. By neglecting the stereotypical limitations of Wheatley's gender, the readers silently conceded that womanhood did not create any obstacle or boundary between a person and their capabilities.

The response Wheatley received from politically prominent white men strongly implies that this group recognized Wheatley as, at the very least, their intellectual equals. Patriot Benjamin Rush argued in one of his pamphlets that Wheatley's "genius" thwarted any justification of slavery.²³ George Washington invited Wheatley to meet with him and also commented on her "poetical genius."²⁴ The president helped Wheatley publish one of her poems in two significant papers: Thomas Paine's *Pennsylvania Magazine* and *The Virginia Gazette*.²⁵ Wheatley's own slaveholders were so "proud" of her aptitude for and success in literature that they freed her.²⁶

Neither Phillis Wheatley's gender nor her race prevented her from becoming one of the most famous American poets in history. Although she directly addresses racism in her

writing, if Wheatley was not a bright person or a skillful writer, she would not have been well-received by her critics; thus, neither her personal success nor her strides toward social justice would have ever been achieved. The brilliantly rhetorical Wheatley wrote herself into the American Revolution's narrative as a symbol of female and African American excellence, and as a manifestation of the intellectual equality between men and women and between white and black people. ■

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²⁴ Ibid 109.

²⁵ Ibid.

²⁶ Ibid 107.

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Otto von Bismarck: Master of Manipulation

Arthur Gayden

Class of 2023

"Otto Von Bismarck: Master of Manipulation" investigates Prussian statesman Otto Von Bismarck's manipulation of communication to achieve German Unification, and preserve the German state. Bismarck's deceptive press releases, treaties, and strategic foreign relations were analyzed in order to reach a conclusion. Otto Von Bismarck fanned the flames of the growing sense of German nationalism in the 1860s in order to engineer the Franco-Prussian War, setting the stage for German Unification, which he preserved with strong international alliances. Ultimately, it was determined that Bismarck's manipulation of communication was instrumental in bringing together the many German states, and ensuring their continued unification.

In 1865, when Otto Von Bismarck had just recently come to power as Prussian Minister of Foreign Affairs, modern-day German borders were nothing more than a pipe dream for deluded German statesmen. Bismarck's Prussia did not control most of the modern German states such as Bavaria, Hanover, or Schleswig-Holstein.²⁷



Map of the allegiances of the major German states

from the period when Otto Von Bismarck first came to power to when they joined the German Empire.²⁸

Neighboring France was led by a weak Napoleon III, the nephew of Napoleon Bonaparte, who needed a public relations victory to keep the support of the French aristocracy. Otto Von Bismarck cleverly incited a war between German states and the French Empire to unite the German states against one common enemy. After the Germans won, Bismarck was able to corral the allies into a confederation of German states. In order to protect his new country, Bismarck made backhand deals and reassurances to surrounding countries in order to ensure his state's future safety. Otto Von Bismarck's manipulation of communication allowed him to further his own political goals by setting the stage for German unification, unifying the German states, and maintaining a unified Germany. After the Germans won, Bismarck was able

²⁷ "German Unification, 1865–1871." In World History: The Modern Era, ABC-CLIO, 2020. Map. Accessed December 21, 2020.
<https://worldhistory.abc-clio.com/Search/Display/311441>.

²⁸ "German Unification, 1865–1871."

to corral the allies into a confederation of German states. In order to protect his new country, Bismarck made backhand deals and reassurances to surrounding countries in order to ensure his state's future safety. Otto Von Bismarck's manipulation of communication allowed him to further his own political goals by setting the stage for German unification, unifying the German states, and maintaining a unified Germany.

When Bismarck came to power in the 1860s, he found himself surrounded by powerful states, all of whose leaders wished to exert their influence on Prussia.²⁹ The Austrians wanted Germany to accept Hapsburg rule, while the French wanted the Prussians to ally against the Austrians.³⁰ In 1864, Bismarck allied with the Austrians during the Second Schleswig War to claim territory against France's wishes.³¹ Afterward, Bismarck met with French Emperor Napoleon III at the French town of Biarritz, where France promised not to stop Prussian expansion in the aftermath of an Austro-Prussian War.³² Through his backroom communications with both countries, Bismarck was able to get exactly what he wanted: more territory for Prussia, as well as the promise that France would not interfere with future Prussian land acquisitions.

Prussia's victory in the Austro-Prussian War made waves all over Europe as Prussian general Helmuth von Moltke led the formerly small and insignificant state of Prussia to victory against the great Hapsburg Empire at

the 1866 Battle of Königgrätz.³³ In gaping astonishment, Napoleon III's advisors told the Emperor that a strong Prussia would make France look weak in comparison, and that France, too, needed a major foreign policy victory.³⁴ At the behest of his advisors, Napoleon III attempted this by requesting Prussian support for a return to the "borders of 1814," which included the purchase of Luxembourg, an ancestral German territory.³⁵ This left Bismarck in a sticky situation, for he could not reject the demand and risk a war with France yet, for Prussia was unprepared; nor could Bismarck enrage the German people by supporting such a proposition.³⁶ Bismarck at first supported the French territorial claim, while simultaneously ordering his massive press apparatus to portray the land grab as a French assault on ancestral German land.³⁷ Without Prussian support, France was forced to back down.³⁸ Although she was humiliated, France did not declare war on Prussia afterwards.³⁹ Bismarck's crafty communication during the conflict began to increase the sense of nationalistic fervor in Germany, which set the stage for his ultimate goal of German unification.

Following Prussia's victory in the Austro-Prussian war with Italian aid, and France's annexation of Nice and Savoy (Italian territories), the Italians appeared eager to help their new Prussian allies in a war against

²⁹ Geoffrey Wawro, *The Franco-Prussian War: The German Conquest of France in 1870-1871*, (Cambridge: Cambridge Univ. Press, 2007).

³⁰ Wawro.

³¹ Wawro.

³² Wawro.

³³ Wawro.

³⁴ Wawro.

³⁵ Wawro.

³⁶ Wawro.

³⁷ Wawro; Robert H. Keyserlingk, *Media Manipulation: The Press and Bismarck in Imperial Germany*, (Canada: International Publishers Representatives Canada, 1977).

³⁸ Wawro.

³⁹ Wawro.

France.⁴⁰ Knowing that it would raise tensions, Bismarck publicly supported this idea, and leaked rumors of it to the press.⁴¹ In conjunction, he sponsored the construction of a railroad through Switzerland's St. Gotthard Pass that allowed transportation between the two supposedly allied countries, making the French even more nervous.⁴² Bismarck described Prussia's "strategic interest" in the railway in an intentionally vague speech meant to provoke war-minded advisors of the French Emperor.⁴³ The ambiguity in Bismarck's speech convinced France that in order to survive, a preemptive strike against Germany had to be made before it became too powerful. This French aggression wound up playing right into Bismarck's hands during the Franco-Prussian War.

The Franco-Prussian was Bismarck's biggest instrument of German unification. Both the Germans and the French wanted a war, for each thought it would unite their own country under a common cause.⁴⁴ However, they both needed a reason to start one. Luckily for Bismarck, just such an opportunity arose in Spain. After the Spanish ousted their Bourbon ruler in 1868, they began looking for a new ruler, and in 1869, they set their eyes on the Prussian Prince Leopold.⁴⁵ When Bismarck heard about this, he played the issue down, treating it with little importance to conceal his plans.⁴⁶ Bismarck knew that if a Prussian prince was placed on the Spanish throne before France could react, France would be surrounded by

states loyal to Prussia, and the war was as good as won.

When the French Foreign Minister, the Duc de Gramont, found out about the Prussian aspirations for the Spanish throne, he was outraged. He instructed the French ambassador to Prussia, Count Benedetti, to force Prussian king Wilhelm I to sign a document pledging both to renounce the throne of Spain, and never to put up a candidate for the throne ever again.⁴⁷ After a recount of this encounter was telegraphed to Bismarck, he edited it in order to make it more inflammatory.⁴⁸

II Original and Edited Versions of the Ems Dispatch *

THE ABEKEN TEXT

Ems, July 13, 1870.

To the Federal Chancellor,
Count Bismarck, No. 27, No. 61
eod. 3:10 P.M. (Station Ems:
Rush!)

His Majesty the King writes to me:

"M. Benedetti intercepted me on the Promenade in order to demand of me most insistently that I should authorize him to telegraph immediately to Paris that I shall obligate myself for all future time never again to give my approval to the candidacy of the Hohenzollerns should it be renewed. I refused to agree to this, the last time somewhat severely, informing him that one dare not and cannot assume such obligations *à tout jamais*. Naturally, I informed him that I had received no news as yet, and since he had been informed earlier than I by way of Paris and Madrid, he could easily understand why my government was once again out of the matter."

Since then His Majesty has received a dispatch from the Prince [Charles Anthony]. As His Majesty has informed Count Benedetti that he was expecting news from the Prince, His Majesty himself, in view of the above-mentioned demand and in consonance with the advice of Count

BISMARCK'S EDITED VERSION

After the reports of the renunciation by the hereditary Prince of Hohenzollern had been officially transmitted by the Royal Government of Spain to the Imperial Government of France, the French Ambassador presented to His Majesty the King at Ems the demand to authorize him to telegraph to Paris that His Majesty the King would obligate himself for all future time never again to give his approval to the candidacy of the Hohenzollerns should it be renewed.

* *Propyläen Weltgeschichte* (Berlin, 1930), VIII, 248 Heinrich Abeken was German Counselor of Legation at Paris

⁴⁰ Wawro.

⁴¹ Wawro.

⁴² Wawro.

⁴³ Wawro.

⁴⁴ Wawro.

⁴⁵ Wawro.

⁴⁶ Wawro.

⁴⁷ Wawro.

⁴⁸ Louis L. Snyder, *Documents of German History* (Rutgers UP, 1958).

THE ABEKEN TEXT
Eulenburg and myself, decided not to receive the French envoy again but to inform him through an adjutant that His Majesty had now received from the Prince confirmation of the news which Benedetti had already received from Paris, and that he had nothing further to say to the Ambassador. His Majesty leaves it to the judgment of Your Excellency whether or not to communicate at once the new demand by Benedetti and its rejection to our ambassadors and to the press.
[Signed] A[beken] 13.7.70

BISMARCK'S EDITED VERSION
His Majesty the King thereupon refused to receive the French envoy again and informed him through an adjutant that His Majesty had nothing further to say to the Ambassador.

*Translated transcript of the original text of the Ems Dispatch sent to Chancellor Otto Von Bismarck.*⁴⁹

After reading the edited message, Prussian general Helmuth Von Moltke remarked, "Now it has a quite different ring."⁵⁰ In its original form it sounded like a parley. Now it is like a flourish of trumpets in answer two a challenge."⁵¹ After Bismarck released the dispatch to the press, both the French and Germans were outraged, and both believed it to be insulting to their national pride.⁵² After some deliberation and opposition from the French Republicans, war was declared in 1870 by Napoleon III's government.⁵³ Troops from the German regions of Nassau, Hanover, Schleswig-Holstein, and Mecklenburg rushed to the aid of the well trained Prussian troops, forming armies too large for the French to fight.⁵⁴ Bismarck's cunning manipulation of the Ems Dispatch to make it more provocative secured him the war that he so desperately needed. Bismarck knew that the best way to unite the German states was to present a

practical reason for doing so, in this case, the external threat of a French invasion.

German nationalistic fervor, stoked for years by Bismarck's propaganda, was at an all time high. A journalist in Kassel described the "spirit of revolution in Germany" as being "towards national unification at any price."⁵⁵ Volunteers from the South German states closest to France joined the Prussian Third Army.⁵⁶



*Bavarian Infantry getting ready to fight in the Franco-Prussian War after Emperor Napoleon III's declaration of war.*⁵⁷

The war brought back old memories of Napoleon Bonaparte's invasions, and even though Napoleon III's invasion lacked nearly all of the original vigor, the sentiment remained.⁵⁸ Bismarck's genius in engineering the Ems Dispatch helped bring about just the nationalistic war that Germany required in order to unify.

Once German unification had been achieved, Bismarck had to reconcile and ally with surrounding powerful countries in order

⁴⁹ Snyder.

⁵⁰ Snyder.

⁵¹ Snyder.

⁵² Wawro.

⁵³ A.J.P. Taylor, *Bismarck: The Man and the Statesman* (Vintage Books, 1967).

⁵⁴ Wawro.

⁵⁵ Wawro.

⁵⁶ Wawro.

⁵⁷ Wawro.

⁵⁸ Wawro.

to keep Germany intact. In 1882, Bismarck brought Italy into the existing Austro-German Partnership.⁵⁹ The most obvious country that Germany had to reconcile with was, naturally, France. Bismarck told the French ambassador years after the war, "I have had *one* aim in regard to France... to get her to forget the war... I want you to forgive Sedan as you have forgiven Waterloo."⁶⁰ By forming new, good relationships with the other European countries, Bismarck was able to secure Germany's safety and security in Europe.

In 1879, a new issue arose in that Austria began to eye the Balkan peninsula as a potential front on which to fight Russia.⁶¹ Bismarck did not want to risk being dragged into an Austro-Russian war, for all possible outcomes would have been bad for Germany.⁶² Instead, Bismarck moved to make a good treaty with Russia, a goal which Bismarck once claimed to be the "secret to politics."⁶³ This came to fruition in the League of the Three Emperors, signed in 1881.⁶⁴ The League had everything Bismarck wanted: He did not have to choose between which country to ally with (Austria or Russia), for he was now allied with both. Also, he no longer had to defend Germany's eastern border.⁶⁵ Bismarck's engineering of the treaty showcased his clever communication in taking the best of both worlds. Through the League of the Three Emperors, Bismarck ensured Germany's continued growth and prosperity without the prospect of war.

⁵⁹ Taylor.

⁶⁰ Taylor.

⁶¹ Taylor.

⁶² Taylor.

⁶³ Taylor.

⁶⁴ Taylor.

⁶⁵ Taylor.

The Russians, however, never liked the League of the Three Emperors, since it suggested that they could not attack their new ally Austria.⁶⁶ Realizing his chance to make a stronger treaty with Russia, Bismarck secretly signed the Reinsurance Treaty with Russia in 1887.⁶⁷ The treaty guaranteed that Germany would stay neutral if Russia attacked Austria, and that Russia would stay neutral if Germany attacked France.⁶⁸ Since Germany had no intentions to attack France again, Bismarck's secret communications with Russia further ensured that no matter what happened in the European continent, Germany would be able to stay neutral, securing peace.

Otto Von Bismarck's used expert communication to set the stage for German Unification, unify Germany, and ensure Germany's security afterwards. He will always be remembered for unifying the German states for the first time in modern history, and for his unparalleled mastery of manipulating communications. However, his actions had mixed outcomes down the road. Bismarck's treaties, which he negotiated to ensure Germany's safety, eventually dragged Germany along with the rest of Europe into World War I, one of the bloodiest conflicts in history. His use of the press and other communication to spread ideas were used by misguided people like Joseph Goebbels in order to spread hateful propaganda. Regardless of its ultimate unforeseen outcomes, Otto Von Bismarck's manipulation of communication forever shaped the politics and geography of the European continent. ■

⁶⁶ Taylor.

⁶⁷ Taylor.

⁶⁸ Taylor.

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The Foundations of 20th Century Anti-Semitism

Sabrina Warner

Class of 2023

"The Foundations of 20th Century Anti-Semitism" investigates Houston Stewart Chamberlain's best-selling work and its influence on German Anti-Semitism at the turn of the 20th Century. Analyses of Chamberlain's language are combined with primary and secondary source information on the German historical setting to demonstrate the implications of Chamberlain's racial theories. The time period after World War I was especially evaluated to present how Chamberlain facilitated a violent turning point in German Anti-Semitism. From this investigation, it was determined that The Foundations of the 19th Century popularized Anti-Semitism and inspired the core of the Nazi ideology, which later justified hate crimes against Jews with Chamberlain's arguments to protect the 'fatherland.'

Swiss composer Ernest Bloch described *The Foundations of the 19th Century*, written by Houston Stewart Chamberlain, as a "great book. But when it falls on smaller minds, and has to be put into vulgarization and practice, like everything else, it becomes a terrible weapon."⁶⁹ This German text heavily promoted anti-Semitism and the supremacy of the Teutonic race - Northern European, specifically German. These ideas were already circulating throughout Germany at the turn of the century, especially in the books *The Inequality of Races* and *The Aryan: His Social Role*, written by Arthur de Gobineau and Georges Vacher de Lapouge, respectively. Both authors' views of Teutonic superiority resonated with the anti-Semitic Wagnerian cults, of which Chamberlain was an active participant.⁷⁰ These

books directly inspired Chamberlain's racial theories and prompted him to impart his own anti-Semitic views to an even wider audience through *Foundations of the Nineteenth Century*, published in 1899. Although influenced by Gobineau's ideas, Chamberlain adopted a more aggressive stance against Jews than his predecessor. Chamberlain's easy-to-read but intentionally vague manner of writing and watering-down of radical ideas in *Foundations* made anti-Semitism palatable to a larger European audience throughout Europe. The book rose to an almost biblical status for the *Völkischs*, members of the Twentieth Century German ethnic and national movement characterized by anti-Semitism.⁷¹ Chamberlain's *Foundations* soon became adopted as the standard view within Germany due to acceptance by the populace. Thus, his core ideas greatly directed the next generation's opinion of Jews, influencing the German viewpoint of the Nazi party. Houston Stewart Chamberlain's best-selling work, *Foundations of the Nineteenth*

⁶⁹ Klara Moricz, "Sensuous Pagans and Righteous Jews: Changing Concepts of Jewish Identity in Ernest Bloch's *Jezabel* and *Schelomo*," *Journal of the American Musicological Society*, vol. 54, no. 3, Fall 2001, p. 439+, *Gale Academic OneFile*, link.gale.com/apps/doc/A86048826/AONE?u=lom_detroitcdv1&sid=AONE&xid=76a273a3, Accessed 23 Nov. 2020.

⁷⁰ Geoffrey G. Field, *Evangelist of Race: The Germanic Vision of Houston Stewart Chamberlain*, Columbia UP, 1981, 189.

⁷¹ Field, 225.

Century, communicated and popularized anti-Semitism in Germany by igniting German pride and establishing a common national enemy. With these ideas made accessible, *Foundations* reached an audience of unprecedented size and directly inspired the core of Nazi ideology.

Although an Englishman by birth, Houston Stewart Chamberlain developed his love of Germany in his youth. He traveled Europe with his Prussian tutor, Herr Otto Kuntze, who taught Chamberlain German and introduced him to German history and culture. After years under Kuntze's tutelage, Chamberlain enrolled in the University of Geneva and continued his studies under the race typologist Carl Vogt. Here Chamberlain's mind was opened to the idea of racial inferiority, and he began further exploring these theories. In his search, he discovered the works of German Richard Wagner, a popular composer and strong Anti-Semite. Completely invested in Wagner's philosophies, Chamberlain wrote to him often and joined Wagnerist cults dedicated to the composer's racial theories. Eventually, their correspondence led to Chamberlain's membership in Wagner's exclusive 'Bayreuth Circle,' composed of many notable German nationalist intellectuals. Here, Chamberlain was introduced to the works of de Lapouge and Gobineau and fully developed his national and racial theories, which he detailed in his book *Foundations of the Nineteenth Century*.⁷²

Foundations of the Nineteenth Century strengthened existing German feelings to support and promote the eminence of the

Teutonic race and to oppose Jews. Though prejudice against Jews had been present in Germany for centuries due to religious and cultural differences, with the conservative party's official alignment with anti-Semitism in 1892, the policy entered into public debate, spreading anti-Semitism to an even wider audience.⁷³ These conservative upper classes correlated the mass migration of Jews from the East in the 1880s to the development of liberalism in Germany, which emancipated Jews and provided more opportunities for Jewish involvement in government.⁷⁴ Threatened by the new social structure proposed by liberal socialism, elite Germans formulated theories that the rise of socialism was a Jewish conspiracy to undermine the Germans' superior culture.⁷⁵ Many of these elites were involved with Wagnerian cults, which Chamberlain drew inspiration from for his ideas. This new focus on anti-Semitism directly inspired Chamberlain to write his book to popularize these ideas further. Chamberlain included the conspiracies in *Foundations*, communicating the idea beyond the group of elites that started it. This further united the public's general dissatisfaction towards Jews with the Wagnerians' more aggressive anti-Semitic ideology.⁷⁶ Between the conservative position and *Foundations'* publication at the turn of the century, nationalism and anti-Semitism were more integrated into everyday German conversation.

Foundations spread widely among the common people, as well as German elites, due

⁷² Field, 51-73.

⁷³ Field, 268.

⁷⁴ Field, 211.

⁷⁵ Field, 271.

⁷⁶ Nikolaus Bacht, editor, *Music, Theater, and Politics in Germany: 1848 to the Third Reich*, Ashgate, 2006, 86.

to the existing opinion in German society at the time. The book perfectly captured the German feeling, synthesizing the new interest in racial ideology with existing prejudice, and focused on German Aryans specifically to conform with nineteenth-century nationalism.⁷⁷ Chamberlain analyzed the history of Europe through a specifically *völkisch* perspective. His first two chapters described a strong Aryan race in antiquity responsible for the creation of Western culture. Belief in Aryan superiority was already well-established by the nineteenth century. However, Chamberlain further argued that European cultural achievements were specifically German by declaring that northern Germanic tribes colonized Southern Europe and established the great civilization.⁷⁸ This argument supported the nationalist pride of Germans in the 1800s and assertions that Germany was superior to other European nations. The position gained further traction in society due to new pseudo-scientific theories such as social Darwinism, which argued that some races were fitter than others. Chamberlain's historical view suggested this; German society thrived while other civilizations, including the Jewish race, did not. Chamberlain stated that during the successes of the Aryans, Jews were constantly wandering or battling non-Jews and never developed a strong civilization of their own.⁷⁹ He especially emphasized the supposed materialistic and imperialistic mindset of the Jews in contrast to

the complex imagination that the Teutons possessed.⁸⁰ Utilizing comparison of Jews versus other ancient cultures, *Foundations* justified the nationalist feelings of Germans and offered historical reasoning for widespread beliefs of Jewish inferiority.

Claiming German Teutonic civilization as the victor of European culture, Chamberlain now described Jews as the opposite of Aryans, especially dramatizing his points with abstract language.⁸¹ While he used words associated with enlightenment and knowledge for the Aryans such as "pure" and "gifted", he instead utilized the terms "miserable," "degenerates," and the "enemy" when referring to Jews.^{82,83} He even declared that the integration of Jews in German society was "an alien ingredient that was forced into it during a former age, [which] has not yet been eradicated and is still circulating in our blood like a disease-causing agent."⁸⁴ His language communicated a hatred for anything Jewish, classing Jewish culture as opposing everything the superior German culture embodied.⁸⁵ Chamberlain highlighted this difference further by using imagery of a "struggle between the German and the anti-German [most commonly the Jew],"⁸⁶ in which the former struggled to maintain their inborn characteristics and protect the

⁷⁷ Field, 214.

⁷⁸ Johann Chapoutot, "From Humanism to Nazism: Antiquity in the Work of Houston Stewart Chamberlain," *Antique Bodies in Nineteenth-Century British Literature and Culture*, journals.openedition.org/, Accessed 23 Nov. 2020.

⁷⁹ Houston Stewart Chamberlain, *Foundations of the Nineteenth Century*, Translated by John Lees, 4th ed., London, Bodley Head, 1913, 364-367.

⁸⁰ Jeffery Corwin Hart, *The Rhetoric of Anti-Semitism*, University Microfilms, 1979, 28.

⁸¹ Hart, 22.

⁸² Chamberlain, 332, 323.

⁸³ Felicity Rash, "Images of the Self and the Other in the Nationalist Writing of Houston Stewart Chamberlain," *Studies in Ethnicity and Nationalism*, vol. 12, no. 2, Oct. 2012, pp. 344-62, EBSCOhost, web.b.ebscohost.com/, Accessed 29 Nov. 2020.

⁸⁴ Chamberlain, 725.

⁸⁵ Chamberlain, 212, 243, 405.

⁸⁶ Chamberlain, 520.

“fatherland.”⁸⁷ Middle-class readers, already committed to German nationalism, found their spirits further kindled by *Foundations* due to the strong call to defend their nation from the plague of Jewish influence.⁸⁸ These readers devoured Chamberlain’s ideas, and began, unintentionally or not, glorifying Aryans and associating Jews with the violent “disease” they read in *Foundations*.

Chamberlain’s *Foundations* attracted a massive audience and influenced the next generation of Germans. *Foundations* sold 60,000 copies in its first ten years after publication and 100,000 copies by the beginning of World War I.⁸⁹ Even citizens who did not read the book directly were inundated with its contents through popular newspapers and brochures. Conservative reviews praised Chamberlain and liberalist papers refuted him, though many agreed with the writer of *Kunstwart*, who stated that *Foundations* was “a book that everyone should read who needs to know the foundations on which the spiritual and material culture of the present day is built, that is to say, every educated person.”⁹⁰ This editorial further expanded the readership of *Foundations*. The popularity of *Foundations* also made anti-Semitism more mainstream and socially acceptable. Additional anti-Semitic developments quickly followed, notably the exclusion of Jews from government and academic offices, the military, and law, all of which reinforced the new acceptance of anti-Semitic feelings by the majority of German adults.⁹¹

As adults became more aggressive against Jews, they influenced their children’s views, continuing a cycle of anti-Semitism. *Foundations’* influence on the youth was also increased due to the efforts of Chamberlain’s patron, Kaiser Wilhelm II, who supported Chamberlain’s beliefs. In a letter, Kaiser declared that:

God [sent *Foundations*] to the German people and [Chamberlain] to me... The German sleepy-head is waking up, and that is a good thing, then he will be on the lookout and will achieve something, and once he has begun to work he will achieve more than anyone else.⁹²

To achieve his desire for future German excellence, the Kaiser distributed *Foundations* throughout Germany to libraries and schools and made it standard reading, passing nationalism and anti-Semitism on to the next generation of Germans.⁹³ Schoolchildren were too young to intelligently refute his arguments; they took Chamberlain’s bias as textbook-fact. Students on college campuses were also involved in discussing *Foundation’s* ideas. Both groups were especially vulnerable to Chamberlain’s persuasive language and conviction, and eagerly adopted his hopeful ideologies of a better German nation after its Aryan “purification.”⁹⁴ This mass audience of young readers, prejudiced against Jews, later established and supported anti-Semitic parties, such as the Nazis.

Chamberlain’s ideas in *Foundations* formed the core of the Nazi ideology in the

⁸⁷ Rash.

⁸⁸ Field, 276.

⁸⁹ Field, 225.

⁹⁰ Field, 229.

⁹¹ Field, 244.

⁹² Friedrich Wilhelm II, Letter to Houston Stewart Chamberlain, 31 Dec. 1901, Roderick Stackelberg and Sally A. Winkle, compilers, *The Nazi Germany Sourcebook: an Anthology of texts*, Routledge, 2002, 18-19.

⁹³ Field, 232.

⁹⁴ Chamberlain, 576.

twentieth century. After World War I, numerous anti-Semitic movements swept across the nation.⁹⁵ German adherents to the anti-Semitic philosophy channeled their hate for Jews and established them as a scapegoat for Germany's loss in the war.⁹⁶ Elite Germans had always wanted a party that supported German nationalism and took a strong stance against Jews. After *Foundations'* publication, common citizens held similar desires.⁹⁷ The Nazi party fulfilled this wish, attracting those who agreed with Chamberlain's writings. The party's basic dogma and traditions all derived from *Völkisch* theories during the late 1800s, which were most popularly accessed through *Foundations*. Chamberlain's writing became the standard for most Nazi anti-Semitic arguments and history, as noted in citations of the German worldview before 1933.⁹⁸ One popularized idea was the racial struggle between Aryans and Jews, which was included in *Mein Kampf* and numerous Nazi newspapers.⁹⁹ Chamberlain's opinions had a tremendous impact on his adherents' political positions and organizations.

Chamberlain's direct endorsement of the Nazi party led to its widespread popularity in Germany. The writer was highly impressed with Hitler and immediately wrote to him after their meeting in 1923. Chamberlain declared that Hitler was Germany's "salvation" "in the hour of her greatest need," and that he had a

newfound hope for his country's future.¹⁰⁰ With this letter, Chamberlain became the first famous writer on a national or international level who endorsed the Nazi movement.¹⁰¹ *Foundations'* followers were more inclined to support Hitler and the Nazi party due to Chamberlain's advocacy. In response to the writer's support, Hitler placed *Foundations* in the new Nazi schools and named a street after Chamberlain in Berlin,¹⁰² building popularity for the anti-Semitic book while increasing his own following from Chamberlain's adherents.

Among Chamberlain's wide following, one Nazi individual became the torch-bearer for his ideas: Alfred Rosenberg. This writer sought to continue Chamberlain's work in a new book titled *The Myth of the 20th Century*, which addressed anti-Semitism and nationalism in the twentieth century. The name itself clearly pays homage to Chamberlain's own *Foundations of the 19th Century*.¹⁰³ Rosenberg first read *Foundations* as a seventeen-year-old, and agreed with all of its assertions, saying "to everything I assented inwardly- again and yet again."¹⁰⁴ He additionally claimed that the book was the beginning of his education and that he became highly invested in other racial theories and the political scene at the time. Chamberlain's ideas started Rosenberg down the path of life-long anti-Semitism and German nationalism, which he carried into *Myth*.¹⁰⁵ Rosenberg worked to

⁹⁵ Field, 410-412.

⁹⁶ John Milfull, editor, *Why Germany? National Socialist Anti-Semitism and the European Context*, Berg Publishers, 1993, 14.

⁹⁷ Field, 413.

⁹⁸ Field, 451.

⁹⁹ Milfull, 33.

¹⁰⁰ Houston Stewart Chamberlain, Letter to Adolf Hitler, 7 Oct. 1923, *Wayback Machine*, Internet Archive, web.archive.org, Accessed 7 Dec. 2020.

¹⁰¹ Field, 444.

¹⁰² Hart, 7.

¹⁰³ Dorothy Matilda Figueira, *Aryans, Jews, Brahmins: Theorizing Authority through Myths of Identity*, State U of New York P, 2002, 81.

¹⁰⁴ Field, 232.

¹⁰⁵ Field, 232.

reach an even wider audience than his predecessor, adapting some details to his own decade but still promoting the ideas of *Foundations*. Similar to Chamberlain's book, anti-Semitism spread to more young children when *Myth* became standard education in all schools under Nazi rule. New book reviews and coverage of the book had the same effect; it continued the cycle of ingraining anti-Semitism into German society.

The Foundations of the 19th Century's ideas of German superiority and anti-Semitism achieved a massive audience across decades, popularizing these views and laying the groundwork for Nazi ideals. Chamberlain was only able to reach such unrivaled success by building on the existing nationalism and prejudice against Jews in Germany. Even in his time, no other European country had quite so strong a history of anti-Semitism or an accepting audience for *Foundations'* arguments, unlike Germany, which already had years of brewing resentment toward Jews. Chamberlain's writing may have never risen to mainstream media if not for the political background in Germany. Certainly, if published today in America, our more liberal populace would not cling so closely to *Foundations'* ideals as conservative Germans did in the early twentieth century. *Foundations*, with its deep biases and anti-Semitism, was truly a product of the nineteenth century and the bridge to Naziism. Its writer, drawing readers in with its conviction and idealism, was, as Anti-Nazi German author Konrad Heiden put it, "one of the most astonishing talents in the history of

the German mind, a mine of knowledge and profound ideas."¹⁰⁶ ■

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¹⁰⁶ Field, 2.

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The Misconception of Lincoln's Emancipation Proclamation

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Class of 2022

"The Misconception of Lincoln's Emancipation Proclamation" examines Abraham Lincoln during the peak of the Civil War and determines the true purpose and background of his famous Emancipation Proclamation. A majority of public opinion believes that the Emancipation Proclamation was done to free the slaves, but the complex truth lies much deeper than at initial thought. To reach a conclusion, primary and secondary sources surrounding Lincoln and the circumstances around this Civil War time are analyzed to gain a holistic overview of the Emancipation Proclamation and its multifaceted purpose. Through this research, it was determined that Abraham Lincoln used the Emancipation Proclamation as a political war tool to preserve the unity of the country.

As Abraham Lincoln rose to the presidency of the United States, he presided over a nation deeply divided from decades of disagreement and conflict over the concept of slavery. From the moment he took office, he was determined to "free the slaves"¹⁰⁷. While personally opposed to slavery, Lincoln wanted to prevent "the disintegration of the American union" no matter what¹⁰⁸. Wary of Lincoln's plan to end slavery, the Southern states slowly but surely seceded from the Union¹⁰⁹. Faced with the task of preserving the Union, Lincoln would later invoke the "law of war" and pass the

Emancipation Proclamation¹¹⁰. Lincoln's Emancipation Proclamation was in practice done to free the slaves, but Lincoln intended to preserve the unity of the nation, as seen through his moral values, his early plans and responses to other leaders and abolitionists, and his use of it as a political war tool.

At a personal level, Lincoln's moral values caused him to "deplore slavery"¹¹¹. During his terms as a Senator, he publicly denounced slavery in October 1854 during the passing of the Kansas-Nebraska Act¹¹². Furthermore, Lincoln embraced the Declaration of Independence's idea that "all men are created equal" in the famous Lincoln-Douglas debates¹¹³. However, he thought of the concept of equality as "the

¹⁰⁷ Brewster, Todd. Lincoln's Gamble: The Tumultuous Six Months That Gave America the Emancipation Proclamation and Changed the Course of the Civil War. New York, Scribner, 2015.

¹⁰⁸ Schwartz, Barry. "The Emancipation Proclamation: Lincoln's Many Second Thoughts." Society, vol. 52, no. 6, 2015, p. 590+. Gale Academic OneFile, <https://link.gale.com>.

¹⁰⁹ Brewster, 40-41.

¹¹⁰ Carnahan, Burrus M. Act of Justice: Lincoln's Emancipation Proclamation and the Law of War. Lexington, UP of Kentucky, 2007.

¹¹¹ Schwartz.

¹¹² Schwartz.

¹¹³ Brewster, 50.

freedom to do as one pleases and to reap the harvest of one's own rewards" ¹¹⁴. To Lincoln, slavery was unjust not because blacks were inferior to whites but rather because slaves were forced to work for "unrewarded toils" ¹¹⁵. Rather than treating blacks as equals, he pitied them as "poor creatures":

"I have never been in favor of bringing about in any way the social and political equality of the white and black races ... there is a physical difference between [them]" ¹¹⁶.

Throughout his political career, he took no crucial stance to abolish slavery: as a Senator, he said that he hated to see slaves "hunted down and caught," yet he would "bite [his] lip and keep quiet" ¹¹⁷. Even as president, he claimed "no interested in disturbing the practice of slavery" ¹¹⁸. Thus, Lincoln's moral values indicate how the Emancipation Proclamation's purpose was not to free the slaves.

At his first Inaugural Address, he stated that union, not emancipation, was his end goal. Emancipation was simply an "instrument" to the restoration of the Union. To Lincoln, emancipation and reunification were one and the same: they were never independent of each other¹¹⁹. Lincoln originally intended to bring the South back "with slavery intact," as he saw no reason to disrupt the practice¹²⁰. Later, in his first Annual Message to Congress, Lincoln proposed three constitutional amendments to bridge the gap between the North and the South. The first amendment entailed the

permanent freeing of slaves who enjoyed freedom by chance of war, meaning those, who by their own effort or by accident, made it to freedom. However, this amendment did not guarantee blacks civil rights nor cover the slaves who were later freed under the Emancipation Proclamation¹²¹. The second amendment proposed a deal to Southern states: states who opted for a gradual emancipation would receive federal compensation¹²². Lincoln hoped that border states would accept this remunerative emancipation and slowly allow the rest of the Confederate states to reenter the Union through this method¹²³. The final amendment was an emigration plan that encouraged free blacks to leave the United States and settle in other countries, such as Liberia in Western Africa and Central America ¹²⁴. So, Lincoln planned to end fighting then, keep slavery legal but phase it out over the next hundred years, and encourage all the freed slaves to leave the country and keep the United States as white-only. Thus, as seen from Lincoln's initial plans and thoughts regarding slavery and emancipation, it is clear that Lincoln later passed the Emancipation Proclamation mainly to unify the nation, not free the slaves.

Lincoln was "absolutely serious about colonization" and his concern was to convince all blacks to leave the country¹²⁵. In an attempt to popularize his plans, Lincoln met with five black leaders from churches in the District of Columbia. In his statement to these free blacks, Lincoln said:

¹¹⁴ Brewster, 56.

¹¹⁵ Brewster, 46.

¹¹⁶ Brewster, 56.

¹¹⁷ Brewster, 46.

¹¹⁸ Brewster, 51.

¹¹⁹ Schwartz.

¹²⁰ Brewster, 41

¹²¹ Brewster, 211.

¹²² Brewster, 211.

¹²³ Brewster, 216.

¹²⁴ Brewster, 116.

¹²⁵ Schwartz.

"You and we are different races ... even when you cease to be slaves, you are yet far removed from being placed on an equality with the white race ... it is better for us both, therefore, to be separated"¹²⁶.

Furthermore, Lincoln stated that blacks' presence in a white society was the root cause of the civil war, not slavery or Southern succession¹²⁷. In response, abolitionists, radical republicans, and black leaders all regarded his plan as "disgraceful and absurd"¹²⁸. None of them believed that separation of the races through colonization would solve the race problem¹²⁹. These leaders all considered slaves "as much the natives of the country as any of their oppressors"¹³⁰. In particular, Frederick Douglass, a former slave and prominent voice for abolition, strongly spoke out against Lincoln. Although Douglass supported Lincoln for the Senate, he found Lincoln, as president, a "disappointment"¹³¹. Douglass blasted Lincoln for the emigration plan and the claim that slaves were responsible for the war, saying that Lincoln has "pride for [whites] ... contempt for [blacks] and ... canting hypocrisy"¹³². In the *New York Tribune*, Horace Greeley also spoke out against Lincoln and implored him to change course. Lincoln responded two days later, saying that he would save the Union by either freeing no slaves, some of the slaves, or all of the slaves; unity of the nation was his only goal¹³³. Thus, his response to abolitionists such as

Frederick Douglass and Horace Greeley shows that the Emancipation Proclamation was meant to unify the nation, not free the slaves.

Abraham Lincoln used the Emancipation Proclamation as a political war tool to embrace unity and threaten the South. Lincoln limited the scope of the Emancipation Proclamation in several ways. The general understanding is that the Emancipation Proclamation declared that all slaves in the rebellious states henceforward should be free. However, to win the war, Lincoln knew that he needed the border states for a Union victory. He feared that full emancipation could "permanently divide North from South," lose him the border states and extend the war¹³⁴. To do so, Lincoln drew on his military power to justify the act as a "war measure"¹³⁵. So, he made the Emancipation Proclamation only apply to states seceded from the Union: loyal border states lay untouched, and parts of the Confederacy already under Northern control were exempted¹³⁶. In other words, the Emancipation Proclamation "emancipated slaves where [the Union] [could] not reach," and enslaved others "where [the Union could] set them free"¹³⁷. Only "200,000" slaves were freed, while "3 million" remained in the Confederacy and "800 thousand" in the slave states¹³⁸. Though, again, Lincoln's main task was not to free the slaves; he was willing to reunify the nation regardless of any amount of emancipation. Additionally, the freed black

¹²⁶ Brewster, 105.

¹²⁷ Brewster, 105.

¹²⁸ Brewster, 106.

¹²⁹ Buccola, Nicholas, editor. *Abraham Lincoln and Liberal Democracy*. University Press of Kansas, 2016. JSTOR, www.jstor.org.

¹³⁰ Brewster, 108.

¹³¹ Brewster, 131.

¹³² Brewster, 131.

¹³³ Brewster, 135.

¹³⁴ Brewster, 247.

¹³⁵ Buccola, 90.

¹³⁶ "The Emancipation Proclamation." National Archives, 27 Apr. 2019, www.archives.gov.

¹³⁷ Sale, Kirkpatrick. *Emancipation Hell: The Tragedy Wrought by Lincoln's Emancipation Proclamation*. Shotwell Publishing, 2015.

¹³⁸ Schwartz.

slaves provided a considerable boost to the Northern Army and were pivotal to the Union's victory over the Confederacy. The Northern free states provided "37,723 colored troops" and "93,542" were previously enslaved in Confederate states¹³⁹. These freed slaves "sapped the Confederacy's labor supply" and served as handy replacements for "demoralized white Union soldiers"¹⁴⁰. At the end of it all, the Emancipation Proclamation was simply a political war tool for Lincoln to gain an advantage over the Confederacy.

"The [Emancipation Proclamation] that [Lincoln] had so ambivalently approached and then retreated from, that was the target of critics on both sides before and after he signed it, was larger than one man, even a man of the stature of Abraham Lincoln. The Emancipation Proclamation brought conclusion to a war that Lincoln had never wanted and to a vile human institution he despised but that he had expected would survive his presidency and beyond. It led to the establishment of "equality"—a notion that Lincoln had resisted, at least in its full-blown form—as an American value on a par with "liberty" and made America officially a biracial country, which he had seen as an unrealistic and unsustainable dream"¹⁴¹.

Through the passage of the Emancipation Proclamation, Lincoln never truly intended to free the slaves; he simply wanted to preserve the unity of the nation, as seen through his moral values, his exchanges with other leaders and abolitionists, and his use of the Proclamation as a political war tool. At his heart, Lincoln was against slavery. While he

did not view blacks and whites as equal, he despised the horrible bondage of the slaves in the South. As president, his only goal was unity between the North and the South. To Lincoln, emancipation was simply a useful tool to get to that end goal. He expected slavery to gradually ease out over the next hundred years, and he never believed that blacks and whites could co-exist peacefully in the same country. Although he was assassinated before he could witness the aftermath of the war, Lincoln left a lasting legacy on slavery and African-Americans, a group of people Lincoln never cared too much about. Largely because of his efforts, slavery would be abolished through the 13th amendment of 1865. His wariness of a biracial America was also spot-on; African-Americans struggled with racial injustice and unequal rights until the 20th century and are prejudiced against even today, with large movements such as Black Lives Matter still fighting for justice. ■

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¹³⁹ Brewster, 243.

¹⁴⁰ Brewster, 243.

¹⁴¹ Brewster, 246.

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An Examination of U.S. Peacebuilding through the Good Friday Agreement

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This paper analyzes the changing role of the United States in its post-Cold-War intervention with the conflict between Northern Ireland and the Republic of Ireland. Specifically, the Good Friday Agreement made as a result of the “Troubles” marked U.S. willingness to promote lasting peace in the area. Through research from primary sources — including many of the documents surrounding the creation of the Good Friday Agreement — and secondary sources on the conflict, the paper concludes that the Good Friday Agreement marks a success of U.S. foreign intervention and peace-building efforts, especially through the role of mediation.

Prior to the Clinton administration, the United States Foreign Service played a minimal role in the Northern Irish Peace Process. The Cold War had necessitated a strong, political alliance with the British, meaning that U.S. intervention in Northern Ireland was never “sustained or effective,” and in order to maintain that relationship the U.S. regarded the violence in Ireland as domestic conflict to be dealt with by the United Kingdom.¹⁴² This is evident through the fact that the United States rejected for a neutral Ireland to join NATO in 1949. Additionally, since the Republic of Ireland qualified as a “communist-free zone,” intervening did not help progress the U.S.’s goal of promoting democracy either.¹⁴³ However, this philosophy changed during the onset of the Clinton administration; in an effort to reform American foreign policy in the “aftermath of

the Cold War,” Bill Clinton grandiosely claimed that he would “take interest” in Northern Ireland. Hereafter, the Foreign Service began to play the role of “facilitator,” extending U.S. global commitments and seeking positive involvement.¹⁴⁴ Thus, the success of U.S. foreign policy can be evaluated on its ability to put an end to direct violence and lay out of framework to promote future peace. Mediated by the U.S., the Good Friday Agreement, put an end to “the Troubles” in Ireland, a violent conflict lasting from 1968 to 1998 driven by Irish nationalists who refused to accept the partition of Ireland in the Anglo-Irish Treaty of 1921.¹⁴⁵ Evaluating United States foreign policy through the example of the Good Friday Agreement demonstrates that the success of the U.S. peacebuilding efforts is dependent on the

¹⁴² Roger MacGinty, “American Influences on the Northern Ireland Peace Process,” *Journal of Conflict Studies* 17, no. 2 (1997), journals.lib.unb.ca/index.php/jcs/article/view/11750/12521.

¹⁴³ MacGinty, “American Influences on.”

¹⁴⁴ MacGinty, “American Influences on.”

¹⁴⁵ James Steinberg, “The Good Friday Agreement: Ending War and Ending Conflict in Northern Ireland,” *Texas National Security Review* 2, no. 3 (2019), 80, repositories.lib.utexas.edu/bitstream/handle/2152/75824/TNSRVol2Iss3_Steinberg.pdf?sequence=2&isAllowed=y.

efforts of mediators to establish steadfast negative peacebuilding policies that emphasize ceasefire, resolve constitutional issues through structural approaches, and cooperate with organizations at the grassroots level to address community relations.

U.S efforts to push for a ceasefire in Northern Ireland illustrates the importance of negative peacebuilding policies to the success of American foreign policy. The violence caused by the Troubles resulted in the loss of thousands of lives over three decades. Specifically, on 30 January 1972, during a protest march in Derry, Northern Ireland, 27 unarmed civilians were shot by the British military, with 13 of them dying as a result: this event came to be known as the Bogside Massacre.¹⁴⁶ From that point, violence continued to ensue, pushed by the Irish Republican Army (IRA) in order to “force British withdrawal from Ireland”; by the 1990s, a majority of Irish-Americans began to push for the concept of Irish unification, a number of whom supported Bill Clinton in his election campaign.¹⁴⁷ As a result, Clinton promised to give a visa to Gerry Adams, the leader of the Sinn Féin (the political wing of the IRA); Adam’s visit to the United States would both strengthen his standing both internationally and with the IRA, helping convince the republicans within Ireland of the benefits of a ceasefire and constitutional legitimacy.¹⁴⁸ This promise was fulfilled in 1994 at the urging of National Security Adviser Anthony Lake and

National Security Council staff director Nancy Soderberg when Adams was granted a 48-hour visa to the U.S. Adam’s visit garnered tremendous attention internationally, and, on 31 August 1994, the IRA Army Council called a ceasefire on the British.¹⁴⁹ Additionally, the U.S formed the International Body on Arms Decommissioning and nominated Senator George Mitchell as the head.¹⁵⁰ In 1996, this group published the “Mitchell Principles”, which parties were forced to accept in order to proceed with negotiations. The Principles advocated for “the public embracement of democracy and non-violence,” enforcing the “total disarmament of parliamentary organizations” and parties to “renounce the use of force to influence the outcome of all-party negotiations.”¹⁵¹ These policies aimed at negative peacebuilding were eventually accepted by the Sinn Féin. The positive developments thereafter resulted in the successful construction of the Good Friday Agreement, and put an end to direct violence within Northern Ireland. Therefore, it is evident that negative peacebuilding policies are crucial to the success of American foreign policy.

In addition to negative peacebuilding, the U.S. Foreign Service also uses structural approaches to resolve constitutional issues and promote lasting peace. With respect to the violent outbursts during the Troubles, the Good Friday Agreement set forth a “commitment to civil and human rights and equal opportunity” by affirming numerous freedoms: freedom of expression, religion, and

¹⁴⁶ “The Good Friday Agreement – an Overview,” Democratic Progress Institute, June 2013, 13, www.democraticprogress.org/wp-content/uploads/2013/07/The-Good-Friday-Agreement-An-Overview.pdf.

¹⁴⁷ MacGinty, “American Influences on.”

¹⁴⁸ James Steinberg, “The Good Friday Agreement,” 89.

¹⁴⁹ MacGinty, “American Influences on.”

¹⁵⁰ “The Good Friday Agreement – an Overview,” 24.

¹⁵¹ “The Good Friday Agreement – an Overview,” 25.

freedom from sectarian harassment.¹⁵² The agreement also incorporated the European Convention on Human Rights (ECHR) into Northern Ireland law to protect the aforementioned rights. This group specifically protects the Irish people from “stake killings and shoot-to-kill policies” that were common during the past decades.¹⁵³ It also provides for the procedural rights to “be informed [for] the reasons [of] one’s arrest” and for the right to a fair trial “within reasonable time.”¹⁵⁴ Through the Good Friday agreement, the United States also mediated the creation of the Northern Ireland Human Rights Commission (NIHRC), which protected Irish language and identity. Together, the NIHRC and ECHR “compromise a Bill of Rights for Northern Ireland,” and their promotion of human rights increased the “probabilities for a long-lasting peace.”¹⁵⁵ Additionally, the Good Friday Agreement reformed the police force in Northern Ireland, creating the Patten Commission. The Patten Commission reviewed the “overwhelmingly Protestant” Royal Ulster Constabulary and created provisions to aid in the creation of a new police service.¹⁵⁶ One of these provisions dictated the use of “positive discrimination measures” until 2011 in order to “ensure even

religious composition of the police force.”¹⁵⁷ Although the source of conflict in Northern Ireland had been primarily political, it was also incited by differences in religious ideology. The more “industrialized and prosperous counties of Ulster” in the north were primarily protestant and instituted religious discrimination against Catholics, therefore creating tension and driving conflicts to extremes.¹⁵⁸ By reforming the police force to be more religiously inclusive, the Good Friday Agreement helped placate these tensions, thus, once again, laying framework for lasting peace. Therefore, both the reform of human rights and the police force in Northern Ireland demonstrate the importance of resolving constitutional issues in U.S. peacebuilding.

Finally, U.S. peacebuilding efforts are contingent upon their cooperation with organizations at the grassroots level to address community relations. Non-governmental organizations, such as the Peace and Reconciliation Group (PRG), were essential to intervening in conflict and “lessening tensions” in Northern Ireland by creating “cross-communal” meetings and “improving the everyday lives” of citizens.¹⁵⁹ During the negotiations prior to the agreement, the U.S. diplomats pushed for a renewal of the International Fund for Ireland (IFA), which was created by President Reagan in 1986 specifically to support non-governmental organizations that worked towards “social and economic

¹⁵² Lynn Wartchow, “Civil and Human Rights Violations in Northern Ireland: Effects and Shortcomings of the Good Friday Agreement in Guaranteeing Protections”, *Northwestern Journal of International Human Rights* 3, no. 1 (2005), scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1012&context=njihr.

¹⁵³ Lynn Wartchow, “Civil and Human Rights.”

¹⁵⁴ Lynn Wartchow, “Civil and Human Rights.”

¹⁵⁵ Lynn Wartchow, “Civil and Human Rights.”

¹⁵⁶ “Northern Ireland Good Friday Agreement,” University of Notre Dame, Kroc Institute for International Peace Studies, 2020, peaceaccords.nd.edu/accord/northern-ireland-good-friday-agreement.

¹⁵⁷ “The Good Friday Agreement – an Overview,” 42.

¹⁵⁸ James Steinberg, “The Good Friday Agreement,” 80.

¹⁵⁹ Landon Hancock, “The Northern Irish Peace Process: From Top to Bottom,” *International Studies Review* 10, (2008), 223, https://www.researchgate.net/profile/Landon_Hancock/publication/228056900_The_Northern_Irish_Peace_Process_From_Top_to_Bottom/links/5fa0abe2a6fdccfd7b978110/The-Northern-Irish-Peace-Process-From-Top-to-Bottom.pdf

development” in Northern Ireland.^{160 161} These funds, along with the provisions of the “Good Friday Agreement and paramilitary ceasefires,” allowed the PRG to shift its efforts from just the Protestant community to “long-term engagement with both communities,” causing them to find more success in grassroots-level prevention of violent conflict and promote a peaceful future.¹⁶²

The Good Friday Agreement and the events leading towards it demonstrate the importance of directly stopping violence and implementing structures that build the groundwork for peace in U.S. foreign policy. Although the success of the agreement was short-lived, with tensions having again risen in the early 21st century, the strong implementations of the reforms by the United States on all social levels have allowed the ceasefire to hold for over two decades.¹⁶³ Additionally, the structures have provided the foundation for further deliberations to reconcile peace and promote the political development of Northern Ireland. Thus, the U.S. must continue to implement these strategies. ■

¹⁶⁰ Commission of the European Communities, “Proposal for a Council Regulation (EC) on Community Financial Contributions to the International Fund for Ireland,” 25 March 1997, 7,

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:51997PC0130&rid=6>.

¹⁶¹ “Fact Sheet: U.S. Support for Northern Ireland Peace and Prosperity,” The White House President Obama, 17 June 2013, <https://obamawhitehouse.archives.gov/the-press-office/2013/06/17/fact-sheet-us-support-northern-ireland-peace-and-prosperity>.

¹⁶² Landon Hancock, “The Northern Irish Peace Process: From Top to Bottom,” 223.

¹⁶³ “Northern Ireland Good.”

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LITERATURE AND PHILOSOPHY

Editorial

Throughout this past year, isolated and distant from friends, many of us have taken time for introspection, confronting who we are and what our place is in the world. The study of literature, though wide-ranging in topic, is ultimately focused on introspection and one's relation to others: an author's own perception of their past influences the words on the page as they weave together a theme, just as a critic's pen and perspective when finding the meaning of a work is driven by their previous experiences. It is therefore vital to continue thoughtful engagement with literature as our society shifts more towards introspection; by analyzing the experiences of characters, we not only gain closure and catharsis, but ask ourselves the same questions about life and humanity that protagonists are confronted with throughout the narrative. Similarly, philosophy takes a direct approach to introspection. From ancient times, many have recognized that the greatest knowledge is to "know thyself," *gnothi se auton*, as inscribed on the Temple of Apollo at Delphi.

The philosophical and literary articles presented in this issue focus around knowledge of self: identity, role, potential for good or evil, one's relationship to the divine, and the roots of one's own knowledge. By focusing on these different aspects that together make up the self, we gain valuable insight on who we are and how we are influenced by the world we live in.

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Averting Tragedy: the Restoration of Logos in *Antigone* and *Oedipus Rex*

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This article serves as a comparative analysis of ancient Greek tragedian Sophocles' works Antigone and Oedipus Rex, specifically examining the role of the tragic protagonist in both plays. A close reading of the language in Antigone's resistance against Creon and Oedipus' discussion with Creon reveals that in both situations, the characters struggle with the choice between having an active or passive role in their fate; the paper reveals that any active part of the tragic character's role is to remove themselves from the narrative.

In times of crisis, there is much talk of “averting tragedy.” Although measures to dispel disaster are effective in real life, what form do they take in the genre of tragedy itself? Sophocles’ tragedies *Antigone* and *Oedipus Rex* provide a unique answer to this question. Two passages stand out in the description of the measures the tragic protagonists believe they must take in order to resolve their conflict. In lines 509 - 525 of *Antigone*, Antigone, the young protagonist, stands up to the king and her uncle Creon’s order to leave her brother unburied. Previously, Antigone buried the body, even though Creon decreed that the penalty was death; now she defends her decision before Creon. In lines 1575-1598 of *Oedipus Rex*, Oedipus, the former king of Thebes, discusses his future with Creon, who will be the new king since Oedipus’ crimes have come to light in a search spurred by a citywide plague sent by the gods to punish Oedipus. Rather than committing suicide like his mother Jocasta, Oedipus blinded himself, choosing to live in exile for his misdeeds of killing his father

and marrying his mother. While the passages differ in the tragic universe’s interactions with each protagonist’s conflict and the ways in which Antigone and Oedipus decide to separate themselves from society, they ultimately prove similar because of Oedipus’ and Antigone’s active roles in their separation from society -- despite the passive nature of exile, death, and destiny. These similarities and differences suggest that the tragic protagonist’s role is to remove themselves from the narrative in order to restore logos.

While Antigone’s conflict is personal, regarding only her fight against Creon about her family, Oedipus’ struggle involves the whole city of Thebes. For the majority of her monologue, Antigone uses singular references like “I” and “you.” She rejects “some man’s [Creon’s]” pride, calls Creon a “fool,” speaks the words “I” or “my” twelve times, and the words “you” or “yours” three times (*Antigone* 510-524). “Gods,” the only plural reference in her speech, occurs just once (*Antigone* 511). The dominance of singular pronouns

represents the nature of Antigone's conflict -- one person against one other. Additionally, Antigone says that her submission to Creon "would have been an agony" (Antigone 522). The word "agony" denotes struggle, and comes from the Greek word *agon*, a term used in Dionysian rituals (the precedent of tragedy) to represent a struggle for victory between two wrestlers ("agony, n."). This choice of words casts Antigone's conflict with Creon as a sort of dueling match -- although spectators, like the "gods" and the rest of Thebes, may watch, the victor of the match ultimately has to overcome only one other person. In contrast, Oedipus' conflict involves many members of his family and all of Thebes. When talking about what to do in the aftermath of his blinding, Oedipus refers to "[Creon's] own" sister, connecting both Creon and Jocasta; Oedipus' "mother and father;" "my fathers," all of his ancestors; and their "city" (Oedipus Rex 1586-7, 1591). None of these references are singular. "Oedipus' familial ties span both his immediate family and reach back to the founding of the city, encompassing all citizens of Thebes; his ultimate fate, discussed in the passage, is relevant to all of these people. Even Apollo's decree against Oedipus calls him a "father-killer;" Oedipus merits "death" not because of Laius' position as king of Thebes, but because Laius is Oedipus' "father" and Oedipus broke that familial bond (Oedipus Rex 1576). Oedipus' conflict is intimately entangled in his relationships to many other people. He is against those who perpetuate the social order: his family and the people of Thebes. This difference in the nature of Oedipus' and Antigone's conflicts results in their different methods of separation from their antagonists --

death and exile respectively. Creon's internal "wounded pride" motivates him to insist on Antigone's death; Antigone's death is not a cosmic or social decree, but a "doom of [Creon's]" alone (Antigone 519). Antigone risks her life knowingly and voluntarily, resolving the personal conflict with the personal matter of her death. Because Oedipus is against society, it is necessary for him to be separated from the city, the social unit; death inside the city would not suffice, as Oedipus would still be a part of Thebes, but when Oedipus is exiled from Thebes, he is removed from the social order, ending his conflict and his entanglement of fates with those inside Thebes. Whether the conflict is personal or societal, the tragic protagonist is permanently separated from the antagonist of the conflict and leaves the setting of the play in some manner.

Oedipus and Antigone both take active roles in separating themselves from their antagonists, even though both protagonists acknowledge that death, exile, and destiny are usually passive processes. Antigone has "known it all [her] life" that she "must" die, since no one is immortal, least of all her late parents and siblings (Antigone 512). However, Antigone acts to ensure her death rather than let that fate come to her. She will "die before her time;" Antigone's "time" is both the "time" of old age when most people die and the "time" that the gods have ordained for her, but by "[dying] before" that time, Antigone takes control of both the natural course of life and the will of the gods (Antigone 515). Oedipus uses passive voice verbs to describe how he chose life and exile over death, stating he "would never have been saved from death" and "[has] been saved" for another purpose. In the following sentence,

"[Oedipus'] destiny," the subject, "take[s]" Oedipus, the direct object, denoting his purportedly subordinate role (Oedipus Rex 1598). However, Oedipus' actions directly contradict his destiny as decreed by Apollo. Even though Oedipus himself calls Apollo's "command...clear," understanding and repeating that it condemns him to death, Oedipus pleads with Creon to "let [him] live on the mountains" and emphasizes that "nothing can" destroy him, not even death (Oedipus Rex 1589, 1595). The destiny given to Oedipus by the gods is meaningless in the face of Oedipus' initiative to stay alive. His references to "destiny" and "[having] been saved" mask his true control over shaping his future. Both tragic protagonists use this control over their fate to remove themselves from the narrative. Antigone's agency ensures her death, and Oedipus' desire for life results in his removal from Theban society. The conflicts Oedipus and Antigone are countering require their removal from society for resolution. Therefore, Oedipus and Antigone act as agents of logos in removing themselves to resolve their conflicts. Both characters enact the "destiny" that the plays require for the resolution of conflict and restoration of logos but flout that "destiny" which the gods put forth. The similarity of Oedipus and Antigone in this role proves that a tragic character must actively choose to remove themselves, furthering their development and resolving the conflict; they cannot passively allow fate to do the job for them.

In the novel *Things Fall Apart*, Okonkwo likewise fulfills this role of the tragic protagonist. Okonkwo faces conflict due to both external and internal forces. Externally, due to the British colonisation of Nigeria, fights break out between the British and the indigenous Igbo people; Okonkwo is even briefly imprisoned along with other members of the Umuofia clan. Internally, Okonkwo clashes with his son over his son's

adoption of Western religion and Okonkwo's own adherence to Igbo tradition. These conflicts cause chaos in both Okonkwo's family and throughout his clan. At the close of the novel, Okonkwo commits suicide, removing himself from a world where Western society is becoming dominant. Okonkwo does not submit to the British colonizers, nor does he accept his son's different; he removes himself, the combatant, from the conflict. Okonkwo thus plays an active role in both his death, which might have happened anyway due to colonial violence, and his removal from society, which would have passively occurred due to culture's continuous deviation from tradition over time. His development leads him to ensure an end to his conflicts, bringing about logos and therefore completing the tragedy of *Things Fall Apart*. Okonkwo's fulfillment of the role of the tragic protagonist evidenced in Sophocles' two plays further fortifies the idea that in tragedy, regardless of author or time written, the tragic protagonist must become aware of the fact that their conflict is causing chaos, and they must therefore remove themselves from the conflict to restore logos. ■

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Knowledge: Where the Majority is Not the Rule

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This article explores the idea of knowledge influenced by the majority by looking at multiple events in history. By examining these historical events, one can conclude that the number of people who adhere to a certain idea does not determine the quality of that idea.

The quality of knowledge is assessed differently depending on the area of knowledge being explored. Most statements cannot be stated with certainty, as it takes only one example to contradict it. Nevertheless, the quality of a professed idea or concept increases if it utilizes appropriate reasoning and has sufficient evidence to support it. Though at times the number of people subscribing to a certain knowledge is the majority, it certainly is not an accurate measure of the quality of that knowledge. This essay will explore the areas of natural sciences and history in order to assert this claim.

Natural science has presented ideas that the majority of the human population once believed; however, those were later proven wrong, hence defying their apparent quality. Knowledge pertaining to the natural sciences is constructed through observations, theorization, and empirical data, and is accepted through multiple validations. Though it is still prone to contradiction and might not be accepted by many, the quality of that knowledge increases with more supporting evidence. For instance, around 100 A.D., ancient Greek philosophers such as Ptolemy originally believed that the Earth was located at the center of the universe

and that all planets and stars revolved around it (geocentric theory). Many societies and religious groups accepted these concepts at face value for a thousand years, including the Roman Catholic Church, which made a few references to this theory in the Bible. However, in 1543, after many years of investigation and research, Polish astronomer Nicolaus Copernicus proved this theory wrong with mathematical calculation and replaced it with the modern-day heliocentric theory – that it is the Sun that is located at the center of the universe (Fitzpatrick). He was followed by Italian astronomer Galileo Galilei, who confirmed Copernicus' theory through his own experiments and calculations; however, the majority was not ready to accept the new concept, and the Church considered Galilei a heretic and placed him under house arrest until his death in 1642 (Wolf).

This reflects that the quantity of supporters of an idea is not reflective of the quality of the knowledge. But as time progressed, the number of believers of the heliocentric theory increased, thus increasing the legitimacy of that theory. Unlike the people of past centuries, most people in recent centuries believe in the heliocentric theory.

This is due to satellite imagery and other modern technology that provided the supporting evidence. In fact, today, one would typically be ridiculed for contradicting the heliocentric theory. As a result, the current theory is taught in schools as the correct representation of the universe.

Similar to the natural sciences, the quality of an idea in a historical context improves with supporting evidence and reasoning. Despite the evidence and reasoning, many people may not be convinced enough to accept the idea; this does not compromise the quality of the idea. The American Civil Rights Movement is a notable example. During the Civil Rights Movement, many black freedom fighters narrated (through television, speeches, etc.) the atrocities of racial terrorism that they lived through (Smith), providing evidence against racial discrimination. But a Gallup Poll taken at the end of the movement in 1963 found that 78% of white people still did not conform to the idea of racial equality, stating that they would leave their neighborhood if many black families moved in (Public Opinion on Civil Rights). Despite the freedom fighters' attempt to provide innumerable evidence of inhumane acts against the black community (thus increasing the validity of their claim), the majority of white citizens still had not accepted this as a fact at that time.

However, with the progress of time and additional evidences, ideas/knowledge have become more widespread and acceptable. For example, attitudes have shifted towards racial discrimination since the Civil Rights Movement. Legislation banning various forms of discrimination (e.g., the Civil Rights Act of 1964 and the Voting Rights Act of 1965) and

citizens' direct witness of police brutality led to a shift in racial attitudes since the 1960s, with the majority in support of racial equality. Though racism still exists, the majority of people are against it in the United States today (Smith). Scientific evidence has shown that race and superiority are not related, and the immorality of racial discrimination furthers the assertion of equality. Thus, through reasoning and intuition, the quality of knowledge is increased which in turn is supported by the evidence that the majority of people have now accepted this idea.

Thus, at times, the number of people adhering to a knowledge might be in majority, but it is in no way a measure of quality of that knowledge. The recognition of this assertion is paramount in avoiding mob mentality. Many times, people judge the validity of knowledge by determining other people's acceptance rather than evaluating the evidence in an unbiased way for themselves. Also, the quality of knowledge is defined by evidence and reasoning; as the quality increases, the number of followers of that theory also increases. However, ideas evolve with evidence, and perspectives of followers will tend to shift. ■

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Naturally Free From Men, or Not: An Analysis of *Frankenstein*

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Patriarchal ideas run rampant in society, and feminism seeks to support gender equality. Many books convey ideas about gender, whether they do it subconsciously or intentionally. An analysis of the book Frankenstein by Mary Shelley reveals that while the book expresses feminist ideas at first, ultimately its ideas about women fall back into the patriarchal standard.

Feminism has the goal of understanding how women face oppression with the goal of encouraging people of all genders to reach their “full potential” regardless of “patriarchal” definitions (Tyson 139). Important terms to interpret literature through a critical feminist lens thus begin with patriarchy and sexism. In a patriarchy, men hold most all of societal power. This power stems from the promotion of traditional gender roles: men as “rational, strong protectors” and women as “weak, nurturing, and submissive” (Tyson 142). Based on women’s respective adherence or deviation from gender roles, sexists idealize them as a “pure” and “angelic” “good girl” or denounce them as a “bad girl” (Tyson 142). Calling women “girl[s]” and categorizing them as “good” versus “bad” diminishes their adult person to a child. Regardless of any positive or negative classification, feminist theory draws attention to how either interpretation “objectifies” women in terms of their usefulness to patriarchal men (Tyson 142). *Frankenstein* by Mary Shelley illustrates

patriarchal ideology by showing what patriarchal beliefs look like through the terms defined above. Systems of beliefs like feminist and patriarchal ideology propagate from intergenerational teachings, such as the instruction between Safie and her mother. An analysis of Safie’s mother and her relationship with Safie initially seems to support the feminist agenda but ultimately supports patriarchal ideology.

The fact that the “higher powers of intellect” and “independence of spirit” Safie’s mother teaches to her daughter “[are] forbidden” to “female[s]” establishes the society they belong to as sexist. In limiting the “intellect” of women and discouraging “independence” from men, patriarchal societal norms prohibit women from reaching the full potential of their intellectual and personal identities.

One could form the interpretation that Safie’s mother’s main role in raising her child condemns her to a antifeminist characterization of a “nurturing” woman who stays in the home (Tyson 142). However,

feminists reject the common misconception that their theory “oppose[s] family values,” instead claiming that feminists lead the struggle for better policies, especially for mothers and children. By nurturing her daughter’s “intellect” and “independence,” Safie’s mother empowers the next female generation with the knowledge needed to form her own opinions. In this way, Safie’s mother violates gender norms by taking on the traditionally male “protector” role, protecting her daughter from the patriarchal views with which their sexist society would otherwise indoctrinate her (Tyson 142). Safie’s mother does not fully fit into the generalized “submissive” female stereotype, as she manages to pass on nonconforming feminist ideas of female empowerment to Safie. In this action, Safie’s mother partially sheds the role of the “helpless female”; she may not have the agency to change the sexism of her society or escape, but she makes an attempt to give another woman the chance to subvert patriarchal power through information in spite of her own helplessness (Tyson 144).

Still, Safie’s mother still cannot fully resist the authority of the patriarchal society in which she resides. She “was...seized” and “made [into] a slave”; the passivity of Safie’s mother receiving these actions by the presumably male Turks portrays her in the sexist cultural tradition of “submission” to men (Shelley 92) (Tyson 142). Furthermore, the father of Safie marries her mother because she “[is] recommended by her beauty” (Shelley 92). Safie’s mother as a person “is” passively second to her “beauty,” reducing the woman’s status to

a “sex object” for the visual pleasure of men (Tyson 142).

The mixed nature of feminist and patriarchal portrayals regarding Safie’s mother gives her an unsatisfactory feminist ending as seen through Safie. Thus far, *Frankenstein* has mostly “illustrate[d]” patriarchal ideology. However, an examination of the diction regarding Safie’s reaction to the feminist ideas taught to her by her mother suggest a final endorsement of sexist thought. Now “accustomed” to the outrageously “grand” ideas of staying in a country where men allow women to have any kind of societal rank and independence, Safie strays dangerously away from the patriarchal ideals of masculine superiority and rightness to rule. The fantastical language of “enchant[ment]” with “grand” and “noble ideas” gives the text a tone of sarcastic exaggeration, not only demeaning Safie into the traditional gender role of a naturally hysterical or “emotional” woman with a “temper”, but suggesting that female power is a chimerical “idea” (Shelley 92). Furthermore, “accustomed” implies that women do not naturally possess the virtues of “rank”; this directly contrasts and negates any earlier feminist ideas from Safie’s mother that women “[are] born” in “freedom” and thus naturally and rightly “free” from men (Shelley 92). ■

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God's Manifestations: Absolute Sovereignty in Puritan Poetry

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The paper analyzes the significance of the garden motif in Puritan poet Edward Taylor's work "Upon Wedlock, and Death of Children," exploring how Taylor utilizes the motif to express the Puritan principle of God's absolute sovereignty. An extended metaphor comparing Taylor's children to the flowers in God's garden reveals the Puritans' interpretation of their individual relationships with God as well as God's role in human life; the paper concludes that Puritans viewed God as omnipotent and themselves as earthly agents of God's will.

The recurrent theme of God's absolute sovereignty predominates in Puritan poetry, and Puritan poets often depict prior situations in which this theme influenced their lives. In Edward Taylor's "Upon Wedlock, and Death of Children," Taylor narrates the traumatic experience of the death of two of his children and explains the role of God in this event. Through his garden motif, Taylor conveys that all people and events are manifestations of God's will.

The garden motif exhibits the correlation between Taylor's children and the flowers in the Garden of Eden. Taylor opens the poem by mentioning the "Knot God made," referring to the Garden of Eden and illustrates his relationship to God's garden saying he planted his "Stock" in the "Knot" (Taylor l. 1, 13). This planting of the "Stock" represents the stalk of a plant and conveys that Taylor has invested a part of himself in the Garden of Eden. Taylor writes of the first product of the garden when his "Stock" was

"knotted" and a "flower [broke] out" (l. 14). Through the use of the word "knotted," Taylor imparts that his "Stock" has connected with God's "Knot," and that any flowers produced for Taylor from this knotting are a result of God's providence. This metaphor commences the series of metaphors in which Taylor refers to his children as flowers in God's garden. Taylor believes that the creation of his children occurs in the garden under God's constant supervision and control; thus, the garden motif showcases God's omnipotence over humans.

God's interference in the birth of Taylor's children left Taylor contemplating his role in God's plan. Adhering to his Puritan principles, Taylor seeks an understanding of God's message and interprets the message positively. Taylor presumes that God, "having Choice" over all the flowers to crop from his garden, chose Taylor's flower specifically (l. 27). Taylor feels honored and thanks God for selecting his child, under the notion that "part

of me (Taylor)" rests "glorified with thee(God)"(l. 29, 30). Taylor uses the garden motif to express his realization of his role as the gardener of God's garden, writing that he will joyfully "sweet flowers" for "glory breed," regardless of whether God "[gets] them green" or "lets them seed"(l. 42, 43). The devotion that Taylor displays willing to produce children just so that God can take them away demonstrates the magnitude of God's dominion over people and events. ■

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The Failure of Modern Psychology and the Pervasiveness of Gender Stereotypes

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Through this article, the author relates and analyzes the results of a survey they conducted on the population of Detroit Country Day Upper School students, focusing on students' perceptions of gender and gender roles through an investigative lens. The analysis includes a discussion of how certain trends tie to developments in the field of psychology as well as excerpts of interviews with current students; the author concludes that many harmful beliefs from previous schools of psychology remain ingrained in common belief today.

This article has been edited so as to anonymize those surveyed (removing names).

Gender is a social construct that has been around since the beginning of time. It refers to the characteristics of men, women, and those in-between that are socially constructed, as well as norms, behaviors, and roles associated with those genders. As a social construct, it varies from society to society, and changes over time. Gender stereotypes have also existed for a long time - before, varying from culture to culture, but with globalization, modern gender stereotypes are more global and similar across different cultures. However, psychological-based gender stereotypes (brain size, connectivity, etc.) were influenced mostly by European society. Europeans, at the time of the foundation of early psychology, where theories of gendered brains started being created, had always had a binary, patriarchal societal system, imparted upon them from years of leadership based on

Christianity. Only rich young men could afford to study psychology, and these were young men who had money because their families had been able to thrive in the binary, patriarchal society that they lived in, one which they had benefited from. Now, we know that biases can impact even the most objective of things. So, either unconsciously or consciously, the early study of gender in the human brain was highly influenced by binary and patriarchal societal standards, which has led to modern gender stereotypes that continue to affect people to this day.

But how much do those stereotypes still persist today? And do people still believe them? I decided to survey the student body at my high school about those very questions, and received 165 responses. The survey was completely anonymous - I had no idea who responded in what way. I wanted to do that in case it would encourage people to be more

honest - there were no consequences attached to what they said. To start off, I simply asked the respondents about their gender identity. 49.7%, or 79 of the respondents, identified as men, and 47.9%, or 73 of the respondents, identified as women. 7 of the respondents (only 4.2%) said they were nonbinary, and the rest elected to type in their gender identity, an option that I offered in case a respondent didn't believe they fit in one of the other categories. One respondent said they were genderqueer, and another said they didn't know. There were also some curious responses - one respondent said that their gender was 'Ahhhhhhh' and another said they identified as a 'Military Attack Helicopter' (a common transphobic response to people saying they support non-binary identities - 'oh? You identify as nonbinary? Well then I identify as a military attack helicopter!'). A particularly curious response was 'i go by a rhino on Sunday but a butterfly on the weekdays'. I found this one particularly curious because not only are different species not gender identities (species and gender identities are totally different identifiers), but the respondent does not include what they 'go by' on Saturdays. I have found myself wondering what they would have said they 'go by' if they missed that critical flaw in their response.

At the end of the survey, I asked the respondents, regardless of gender identity, if they'd ever experienced sexism or gender stereotypes. If they said yes, I asked them if they would like to be interviewed on those experiences. 11 people responded saying they would like to be interviewed. 3 were men, 6 were women, and 2 were nonbinary. In the

end, I only was able to interview 5 people - 1 man, 3 women, and 1 nonbinary person. The rest of the people who responded saying they would like to be interviewed never responded to my emails.

Now, the first and most common brain-related gender stereotype (and also the one most easily disproved) is the subject of brain size. The male and female brains are slightly different in size - male brains are slightly larger, and female brains are slightly smaller. Psychologists aren't responsible for this one, per say, but it did lay the groundwork for many biased psychological 'findings' attempting to prove that women were psychologically inferior to men in any way. For topics that involved both male and female stereotypes on the same topic, I had separate questions for the specific male stereotype and female stereotype. So the size of the female brain and its connection to intelligence was in a separate question to the size of the male brain. When the respondents were asked if they ever heard the stereotype that women had smaller brains and were, therefore, less intelligent, 50.3% (83) said no; 49.7% (82) said yes. So it was pretty even on whether or not people had ever heard it. When asked if they believed it, 93.3% of respondents, or 152 of the 165, said no, 2.5%, or 4, said maybe, and 4.3%, or 7 respondents, said yes. Like I suspected on this question, the majority of respondents did not believe the stereotype that just flat-out said women were less intelligent than men. When asked if they ever heard the stereotype that men had larger brains and were, therefore, more intelligent, 59.4% (98) said no; 40.6% (67) said yes. But even though the questions are similar, one

just focusing on the female side of it, and one on the male, the answer slightly shifted when the respondents were asked if they believed it: the same 93.3% (152) said no, but this time 1.8% (3) said maybe and 4.9% (8) said yes. One of the previous 'maybe's switched to a 'yes'.

A. B., a senior and a close friend of mine who has dealt with gender stereotypes internationally and domestically, comments on the subject: "I've always heard [...] those myths that women's brains are smaller and that men are better at math and all that, I've always heard those around school." She thinks the reason that they continue to exist is not only because they are continuously taught through generations, but because "they are myths that aren't typically disproven." School curriculum, she believes, doesn't do a good enough job of teaching us not to believe them. She says there's a reason for it, however - those stereotypes benefit men, and because men typically hold power, they don't want to educate people about how gender stereotypes aren't true.

I wasn't surprised by most of the answers. The only real surprise was that so many people had not heard of that stereotype - I thought it was incredibly common. I, at least in my lifetime, have heard it a lot. And most of the people I interviewed had heard it before. My guess is that the majority of the respondents who said no likely didn't hear the stereotype as directly, instead, it was camouflaged as something less direct - that women shouldn't do harder mentally challenging tasks, because it would be too difficult for them, or something along those lines.

The origin of these reasons why women should have less mentally challenging tasks and men could handle more challenging tasks is from a theory developed by Simon Baron-Cohen. He called the difference between women and men the difference of "empathizer" and "systemizer" traits. The traits are apparently rooted in our ancient past, and somehow still affects who does what in our modern society. As "empathizers", empathizing helped our female ancestors set up better childcare networks to ensure the survival of future generations, allowed them to form gossip groups to ensure they got access to potentially useful information, and helped them get along with in-laws, or non-genetically related relatives. Based on this, Baron-Cohen recommends that nowadays women should be counselors, primary school teachers, nurses, or social workers. Male "systemizers", historically, were good at fastening axe blades, animal tracking, and figuring out the laws of social ranking systems in order to get as high as possible in them. In today's society, they would be great scientists, engineers, mechanics, programmers, or lawyers (Rippon 50). When the respondents were asked if people had heard the stereotype about women being "empathizers" or being better counselors, nurses, etc, 68.3% (112) said yes; and 31.7% (52) said no. When asked if they believed it, 77.9% (127) said no, 14.1% (23) said maybe, and 8% (13) said yes. When asked if people had heard the stereotype about men being better scientists, engineers, etc, 65.2% (107) said yes; and 34.8% (57) said no. Again, as what gender the question asks about shifts, the amount of people who believe it shifts.

When asked if they believed it: 79.8% (130) said no, 9.8% (16) said maybe, and 10.4% (17) said yes.

The stereotype that women are better suited for more people-focused careers, and that men should focus on the more intense, project-based ones, unfortunately, is very common. C. D., a senior and a friend of mine, has dealt with this stereotype a lot. When she was younger, at a career day in 3rd grade, “I said I wanted to be the President, and all the guys started snickering and laughing. [...] And then I was told to choose a job better suited for me.” Even in third grade, these stereotypes already present in our day-to-day lives. And it wasn’t the only time Sarah was told that she wasn’t suited for a career due to her gender. When she expressed interest in being a doctor years later, around middle school, she was told that perhaps she should be a nurse instead, as being a doctor would be harder and had longer hours. But she says that she’s grateful that her father raised her to not accept those gender stereotypes. He let her do anything she wanted to do - he treated her and her brother the same way.

At this point, I had realized the trend that when asking the masculine versions of the stereotypes, the number of people who agreed with them went up. I found it interesting - perhaps more people were okay saying that they believed that men were in some way smarter than saying women were in some way dumber because it was easier to say? Because it didn’t sound as negative? Because it is easier to say something positive about one group while simultaneously devaluing another rather than saying something negative to the other group?

Another common stereotype is that men are more logical in their thinking, while women are more emotional. Again, I separated the question into two sections - one about men, and one about women. When I asked if the respondents had ever heard the stereotype that women were more emotional than men, 99.4% (164) said yes; and 0.6% (1) said no. That seemed normal to me - it was a very common stereotype. But the second part absolutely baffled me. When I asked if they believed it, 33.5% (55) said no, 39% (64) said yes, and 27.4% (45) said maybe. The majority of the respondents said yes, they believed that women were more emotional than men. I did not think that was going to happen - I thought that the percentages were going to be more in-line with the previous questions, albeit I predicted that they would be a little higher. But not too high that they would be the majority. When asked if they had ever heard the stereotype that men were more logical than women, 73.2% (120) said yes; 26.8% (44) said no. When asked if they believed it, 77.3% (126) said no, 9.8% (16) said maybe, and 12.9% (21) said yes. Those results were more like what I was expecting. But why did so many people think women were more emotional than men?

E. F., a senior and a fellow classmate in my rhetoric class, has actually dealt with that stereotype himself. He says that “I’ve been called a woman [in a way] which was meant to be an insult.” He’s been teasingly asked if he was “on his period” when he was being emotional or bossy. But he thinks it’s not really gender-based - “it’s just a reflection of their own insecurities, and then they’re going to find some bullshit-ass excuse to be the

backbone of those [comments], and they'll point them back in the direction of something like gender." He thinks because men are often taught that they have to act a certain way, that anything that doesn't reside within what they've been taught will be shamed and called a 'feminine trait' to discourage that behavior. He thinks that it all ties into how boys and girls are raised as children. Boys are taught to act a certain way, and girls are taught to act a certain way, so specific behavioral traits are imparted on us as a certain gender's trait when we are younger, so when we grow up, people displaying that trait are categorized as acting 'femininely' or 'masculinely'.

I can confirm that the idea of women being more emotional than men is something that comes from upbringing, not from biology. The female 'emotion center' of the brain is no more larger than male's. The current accepted standard in psychology is that brains are perhaps a mix of 'male' and 'female' parts. Another 2015 study, this time from Daphna Joel from Tel Aviv University, did an investigation of 1,400 brain scans and examined the gray matter volumes of 116 regions in each brain. From a subset of their scans, ten features were identified that showed the largest difference between male and female brains. The features that were most consistently larger in women were called "female-end" and those most consistently larger in men were called "male-end". When they mapped these color-coded features onto another subset of their original data, the brains of 169 females and 112 males, it became clear that our brains are composed of a mosaic of both male-end and female-end features, as well as many

intermediate ones. Less than six percent of the sample were consistently 'male' or 'female' (Rippon 334).

So overall, due to biased scientific research of early psychologists - manipulating results to explain why women were inferior, or imparting bias on questionnaires, among other examples, many harmful gender stereotypes still remain and affect people in society today. And, unfortunately, some people still believe them. To combat this, not only do psychologists need to start disproving more and more of the biased results, but educators in schools and even parents of children need to start teaching children not to believe them. While they will most likely still exist within society, we can lower the percentages of people who end up believing them. ■

References

Rippon, Gina. *Gender and Our Brains: How New Neuroscience Explodes the Myths of the Male and Female Minds*. Vintage Books, 2020.

