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EDITOR'S INTRODUCTION

The Wagner Forum for Undergraduate Research is an interdisciplinary journal which provides an arena where students can publish their research. Papers are reviewed with respect to their intellectual merit and scope of contribution to a given field. To enhance readability the journal is typically subdivided into three sections entitled *The Natural Sciences*, *The Social Sciences* and *Critical Essays*. The first two of these sections are limited to papers and abstracts dealing with scientific investigations (experimental, theoretical and empirical). The third section is reserved for speculative papers based on the scholarly review and critical examination of previous works.

This issue is dedicated to Donald Marcus and the late Frank Sisino who have unselfishly provided affordable printing for this journal since its inception. Don and Frank were childhood friends. In 1984 they opened F&D Printing in the Midland Beach section of Staten Island. For 28 years they produced bulletins, sales promotions, advertisements, journals, etc. for local merchants, schools, and other organizations.

In late in 2001, I met Frank while stopping by F&D Printing for a quote on the newly conceived *Wagner College Forum for Undergraduate Research.* I gave him the budget and an idea of what we wanted and he made it work. For almost a decade I enjoyed chatting with Frank when dropping off a manuscript or picking up an order. Unfortunately, in 2012 Hurricane Sandy destroyed the shop and in 2013, after a courageous battle, Frank succumbed to cancer. Thankfully, his partner Don opened MJR Direct Mail, Inc. so that he could continue to work with some long-time accounts. When Don drives to Wagner to pick up an electronic copy or drop off the finished product we get a chance to talk. Just like Frank, he is quite knowledgeable and a good, decent, down-to-Earth person. I am fortunate to have had the pleasure of working with these two fine individuals.

Gregory J. Falabella, Ph.D.
Editor-in-Chief

Section I: Eastern Colleges Science Conference[1]

Abstracts

[1] Papers and posters presented at the 69th Annual Eastern Colleges Science Conference held in Niagara University, NY on April 18, 2015.

Section II: The Natural Sciences

Full Length Papers

Section III: The Social Sciences

Full Length Papers

Section IV: Critical Essays

Full Length Papers

Section I: Eastern Colleges Science Conference

The Effects of Diethyl Phthalate on the Development of *Drosophila melanogaster*

Johnathan Hinrichs (Biology) and Dr. Heather Cook (Biological Sciences)

Endocrine disrupters are ever prevalent in the world and have been shown to have a great effect on the growth, development, and sexual success of both wildlife and humans. Endocrine disrupting chemicals (EDC's) have been a hot topic of debate for research due to the wide variety of impacts that they can have on insects, the environment, and humans. This paper explores the impact of the endocrine disrupting chemical diethyl phthalate on the development of *Drosophila melanogaster*. The goal of this research is to make a definitive conclusion about the developmental effects of diethyl Phthalate on *D. Melanogaster*. Fruit flies are a great organism to use for this kind of research due to their small size, quick turnover rate, and their small sequenced genome. To assess the impacts 6 groups were used at the following concentrations 100 ppm, 1,000 ppm, 5,000 ppm, and 10,000 ppm as well as 2 control groups grown in water and in 0.3% dimethyl sulfoxide (DMSO). The flies were incubated in 60% humidity at 25ºC for 11days when pupal casings and pupa were counted. Over the next 4 days the flies were anesthetized sexed and counted to determine if there was a developmental effect. The initial statistical data shows that there is a significant difference among the groups though further analysis is needed to see where the differences lie.

Search for Safe Underground Water Through Observation of Tubewell Concrete Platform Color in Southern Bangladesh

Sanjita Dham (Microbiology), Sandra Minchala (Chemistry), and Dr. Mohammad Alauddin (Physical Sciences)

The search for arsenic (As) safe drinking water for people in this densely populated South Asian country remains a challenge for policymakers and non-government organizations. Even though the permissible level of As in groundwater in Bangladesh is 50µg/L, the vast population in the southern part of Bangladesh is exposed to As at levels close to 200-300µg/L. Various safe water options have been introduced in arsenic affected areas. The pace of installation of such options is not able to cope with the demand of safe water. The As and Fe rich groundwater develops a reddish-orange color with the silica of concrete while groundwater with low levels of As and Fe develops a diffuse ash color. We have investigated 200 tubewells with different degrees of platform color in Sharasti Upazila in

the Chandpur district of Bangladesh. Using inductively coupled plasma optical emission spectroscopy (ICP-OES), we have determined 28 trace elements in tubewells in two unions and six villages. In tubewells with reddish color platform, the correlation coefficients for As versus Fe were much higher than the corresponding coefficients for As versus Fe in tubewells with blackish to ash color platform. As and Sr correlated highly for both groups of platform colors. Screening of platform color for tubewells does indicate that the tubewells with blackish to ash color platform provide groundwater at a much lower level of arsenic. In absence of other safe water options, the screening of tubewells through platform color does offer a viable tool for searching for arsenic safe water.

The Search for MET or a MET Homolog Expressed by *Dugesia dorotocephala*

Najia Malik (Biopsychology) and Vincent Vitulli (Biology)

Regeneration of lost or injured planarian tissue is controlled by a litany of molecular cues that initiate prompt cytoskeletal reorganization, re-epithelialization and recruitment of neoblasts to the wound site. While few multi cellular eukaryotes share the restorative fidelity displayed by planaria, nearly all members of the animal kingdom rely upon epithelialization to reduce the likelihood of infection, minimize water loss/maintain tonicity and initiate recovery immediately following severe trauma. Unsurprisingly, many of the cellular hallmarks that facilitate reinstitution of epithelial continuity are conserved between species, despite massive variability within the repair scheme thereafter. A key contributor to this process in mammalian wound healing is the peptide ligand hepatocyte growth factor (HGF) and the receptor tyrosine kinase to which it binds- mesenchymal epithelial transition factor (MET). While initially described as a unique mitogen that participates in liver regeneration, it is now well accepted that the HGF-MET pathway contributes significantly to cellular proliferation, migration and morphogenesis in many organ systems. Considerable evidence illustrates the importance of HGF-MET signaling in development and cellular injury recovery; for example, abolishment of MET expression profoundly effects tissue remodeling and composition of hepatic stem cells and prevents re-epithelialization in epidermal wounds by keratinocytes. We suspect that MET or a MET-like protein plays a role in planarian regeneration, as it is a key mediator of cellular survival, growth and differentiation. To determine whether *D. dorotocephala*

express MET, standard immunohistochemistry and western blotting techniques were employed. Our preliminary findings suggest that *D. dorotocephala* express the MET receptor under normal physiological conditions.

The Effect of Five Plant Extracts on *Serratia marcescens* for Medicinal Significance[1]

Meghan Morrissey (Microbiology)

Antibiotic resistant bacteria have become a significant problem over the past few decades. These once antibiotic susceptible bacteria have become resistant through overuse of antibiotics. This is a problem because if a bacteria's susceptibility to antibiotics is severely decreased it is hard for doctors to treat bacterial infections in their patient. Recently, infections due to antibiotic resistant *Serratia marcescens* have increased and become a problem in hospital settings and immunocompromised individuals. Antibiotic resistant bacteria also have a negative effect on biological systems in our environment. It is important to find alternative methods to treat bacterial infections in order to treat already antibiotic resistant bacteria and prevent antibiotic resistance. In this study, five plant extracts (tannic acid, cinnamic acid, clove oil, eugenol, and tea tree oil) were tested to determine their antimicrobial activity against the gram-negative, *Serratia marcescens*. It was determined that clove oil (6.3 x 10–1 M) and eugenol (6.8×10^{-1} M, 6.8×10^{-2} M, 6.8×10^{-3} M) were able to inhibit the growth of *S. marcescens*. The cinnamic acid (7.5×10^{-2} M, 7.5×10^{-3} M, 7.5×10^{-4} M, 7.5×10^{-5} M), tannic acid (6.5×10^{-3} M, 6.5×10^{-4} M, 6.5×10^{-5} M, 6.5×10^{-6} M), and tea tree oil (7.2×10^{-1} M, 7.2×10^{-2} M, 7.2×10^{-3} M, 7.2×10^{-4} M) showed no antimicrobial activity against *S. marcescens*.

[1] Recipient of Excellence Award for manuscript.

Detection of a *Listeria monocytogenes* Infection in the Zebrafish Central Nervous System; Development of a Squashed Tissue Preparation for Immunofluorescence Labeling

Brandon Kocurek (Microbiology), Anthony Spano (Microbiology), and Dr. Christopher Corbo (Biological Sciences)

Listeria monocytogenes is a gram positive, food borne, intracellular bacterium, which is known to enter the central nervous system and cause a central nervous system infection. *L. Monocytogenes* is the causative agent of the infection listeriosis, which is normally cleared by a patient's immune system. However, the immuno-compromised, newborns, pregnant women, and the elderly are prone to a more serious infection, which can eventually lead to death in extreme cases. The goal of this study was to set up a central nervous system infection model in adult zebrafish, and cause a central nervous system response via injection into the iris of the eye. Results were obtained using immunhistochemical staining and laser scanning confocal microscopy. Being an intracellular pathogen, we have previously hypothesized and demonstrated that *L. Monocytogenes* would enter the optic tectum via the optic nerve. Each specimen was injected in the eye and brain extraction was performed at 24hr, 48hr, 98hr and 7 day post-injection. Once the brains were extracted, they were smashed onto slides and fixed using paraformaldehyde. After the immunohistochemical reaction, the slides were mounted. These slides were then imaged using confocal microscopy. During evaluation of the z-stacks, we found gram-positive cells representing *L. Monocytogenes* among then cells of the periventricular grey zone of the optic tectum. Evidence of *L. Monocytogenes* leaving the host cells was also present in the z-stacks.

Identification of *Listeria monocytogenes* in Adult Zebrafish Using the Gram Stain Reaction

Anthony Spano (Microbiology), Brandon Kocurek (Microbiology), and Dr. Christopher Corbo (Biological Sciences)

Listeria monocytogenes is a gram- positive, food born, intracellular bacterium that is the causative microbe for listeriosis, which can be fatal in the immunocompomised, the elderly, the very young, and those with a suppressed immune system. Infection in healthy individuals is very uncommon. *L. monocytogenes* is known to attack the central nervous

system. Our lab has set out to develop a model of a *L. monocytogenes* central nervous system infection. The goal of this study is to see if *L. monocytogenes* can be detected in the zebrafish brain tissue using the Gram Stain reaction. Using zebrafish as our model, each specimen was injected into the iris of the eye with approximately 2ul of a 24- hour culture of *L. monocytogenes*. Being an intracellular pathogen, we hypothesized that *Listeria* would travel through to the optic tectum of the brain via the optic nerve. We have previously demonstrated that *L. monocytogenes* reaches the optic tectum of the adult zebrafish when injected into the eye. At the time points of 1, 2, and 7 days post- injection, each fish's brain was extracted, squashed into a monolayer of cells and fixed using paraformaldehyde. After gram staining each sample, dehydrating the tissue and mounting with permount, they were examined using light microscopy. During examination, we found gram-positive cells present among the cells of the periventricular grey zone of the optic tectum. There were also gram- positive cells present with the cells of the central nervous system.

Isolation of Bacteriophages from Sewage that Infect *Escherichia coli* and *Pseudomonas aeruginosa*

Jacob Cohen (Microbiology)

This research serves the purpose of isolating the different kind/s if any of bacteriophages that will infect *Escherichia coli* and/or *Pseudomonas aeruginosa* that are taken from a sewage source. Once found, it can be then identified and isolated for further research. The bacteriophage/s found may serve as an alternative to taking antibiotics to cure an infection caused by *E.coli* or *P. aeruginosa*. Following the procedure stated in this paper, allowed the ability to isolate a bacteriophage taken from a sewage treatment plant known as the Joint Meeting Sewage Dispose in Elizabeth, NJ. It was found that only the *E. coli* tested positive in providing growth of bacteriophages taken from the collected sample of sewage water. The *P. aeruginosa* did not show any sign of plaque formation by a bacteriophage suggesting that the sewage may not have contained a virus specific to *P. aeruginosa*.

Exposure to Hexavalent Chromium from Tannery Wastes and Health Risks for Urban Population in Bangladesh

Sanjita Dham (Microbiology), Sandra Minchala (Chemistry), Nadia Asfar (Chemistry), Sarah Alauddin (Physical Sciences), Dr. Mohammad Alauddin (Physical Sciences), Sanjit Shaha[2], W. Hoque[2], and Russell Gerads[3]

About 277 small, medium and large size tanneries in the outskirts of Dhaka city in Bangladesh produce 2-3% of world's leather. These tanning industries process approximately 180 million square feet or 74,000 tons of raw hide annually and export about $400 million worth of leather and footwear. In the tanning process of raw hides these industries use a variety of chemicals, especially chromium salts. On a daily basis approximately 22,000 cubic meters of untreated liquid waste and 170 tons of solid waste are dumped in nearby canals and rivers. In addition to the population at the work place in these industries, the general population is exposed to chromium species through river water. Although Cr (III) is essential trace element, hexavalent chromium Cr (VI) is a known carcinogen. In addition to the exposure in river water, and polluted ambient air, residents in nearby slums often use discarded hides and shaving of hides as cooking fuel causing indoor air pollution. In the current investigation, water and air samples near the industrial discharge areas and in the downstream areas were analyzed for total chromium (Cr) and total Cr (VI). All the data for total Cr and Cr (VI) in water and air samples in these urban areas, along with their potential health risks, are discussed.

Presenting the Information Value of Different Resolutions in Digital Brain Images Using an Embryonic Rat Brain Section

Julie Roggeveen (Biology), Gabrielle Langella (Biopsychology), and Dr. Zoltan Fulop (Biological Sciences)

A region of embryonic rat brain was digitally photographed with an Olympus BX40 Microscope equipped with a 10MP (MU1000) video camera using four different objectives (4x, 10x, 20x,40x). The different objectives were used to analyze the value of different resolutions in balancing the amount of work needed to make the pictures with the worth (or information value) of the image when using Photoshop (version 12.0). The images captured were montaged and arranged into series. This information will be used

[2] Exonics Technology Center, Dhaka, 1212, Bangladesh
[3] Applied Speciation LLC, Bothell, WA 98011

in preparation of a digital microscopic atlas of different aged embryonic rat brains. This poster presents the pictures in printed versions while the digitalized images will be shown via laptop computer.

Differences in Photophysiology of Adult Female *Daphnia magna* Obtained from Different Biological Supply Houses

Yan-Yee Cheung (Biology), Dr. Donald Stearns (Biological Sciences), and Dr. Jonathan Blaize (Biological Sciences)

This research used behavioral responses to light to compare the photophysiologies of *Daphnia magna* from three supply companies (Carolina Biological Supply Company, Connecticut Valley Biological Supply Company, Ward's Science). For each treatment, each of 10 test organisms was exposed five times to the same light stimulus (1.6 μEm-2s-1 of 410-nm light) and compared with dark controls for location in the test chamber after 15-30 s light exposure. Analysis of variance comparisons allowed for pooling for each treatment (10 x 5 = 50) and allowed additional pooling of 15-s and 30-s exposures, further increasing sample size. In addition to the three company treatments, the Carolina and Connecticut clones were tested before and after rinsing with spring water containing no fish chemicals. While rinsing of Connecticut specimens made no significant difference in photobehavior, rinsing did affect photoresponses of Carolina organisms, indicating an environmental effect. Pooled data showed much more variability in photoresponses for Carolina organisms compared with specimens from the other two companies, as well as significant ($p < 0.05$) phototactic differences, suggesting a genetic effect as well. Restriction digests were prepared and electrophoresed to look for genetic differences to which variation in phototactic response may be attributed.

Single Nucleotide Polymorphisms (SNPs) in the Human *IL10* Promoter Affect Gene Expression in Macrophages

Alexa Viniotis (Microbiology), Adam Leibold[4], Dr. Pali Shah[4], Dr. Djeneba Dabitao[4], and Dr. Jay Bream[4]

One of the greatest challenges in the post-genomic era is to interpret the functional consequences of human genetic variation on disease outcomes. Genetic variation, such as

[4] Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21205

single nucleotide polymorphisms (SNPs), are common, occurring ~ every 500-1000bp. It has long been recognized that some SNPs are associated with susceptibility to disease. Although the number of SNPs associated with complex disease continues to rise, there are few tools available to determine that these SNPs functionally contribute to disease or are merely disease markers. To move beyond disease association studies, the Bream Lab established a mouse model to directly test the effects of human genetic variation on gene expression and disease susceptibility, using the anti-inflammatory gene *IL10* as a proof of-concept. They found that 2 common human *IL10* promoter SNP alleles, previously associated with disease, encode for high or low IL-10 expression in CD4+ T cells (Helper T cells). Importantly, allele-specific hIL-10 production in T lymphocytes leads to differential susceptibility to *Leishmania donovani* infection. For this project, we sought to determine if these *IL10* alleles also control differential induction of IL-10 in macrophages. Stimulation of bone marrow derived macrophages (BMM) with LPS (a TLR4 agonist) but not Pam3CSK4 (a TLR1/2 agonist) resulted in allele-specific human *IL-10* expression. These data suggest that human *IL10* promoter SNPs operate in a cell type- and receptor-specific manner to fine-tune IL-10 levels to control inflammation.

Molecular Dynamics Simulations to Understand the Role of Human Cystatin C in Alzheimer's Disease

Joseph Persichetti (Chemistry) and Dr. Arunkumar Sharma (Physical Sciences)

Alzheimer's disease (AD) is characterized by neuronal degeneration as well as the presence of neurofibrillary tangles and amyloid plaques. Despite the recent popularity in AD research, there is no known effective therapeutic treatment for the disease. One of the characteristics of AD is the formation of Amyloid plaques, of which Amyloid- β (Aβ) is a major component. The role of Human Cystatin C (HCC) in the advancement of AD has yet to be determined as agonistic or antagonistic. In order to better understand the interaction between Aβ and HCC, we have used computational methods to quantify the stability of the protein complex. Initial docking between these proteins has been obtained using the Z-DOCK server. We have run fully atomistic molecular dynamics simulations at physiological pH and temperature for the best docking poses. The simulation, run through the YASARA software package, identifies the binding region of the complex as well as the molecular pathway taken by the ligand. Our analysis uses hydrogen bonds, root square mean deviation and fluctuation of each protein, and binding energy of the

complex to establish stability of the complex. This investigation will lead to a better understanding of the docking and stability of HCC to Amyloid-β. This can be immensely useful in understanding the role of HCC in the aggregation or reduction of Aβ plaques in Alzheimer's patients. Ultimately, this knowledge can provide vital clues to a cure for the disease.

The Effect of Marinades on *Salmonella typhi* on Raw Chicken

Arielle Dorfman (Microbiology)

Salmonella is one of the most recognized species of bacterium known in a household. The most acknowledged presence of the species is found in packages of raw chicken found at your local butcher, market and even in contamination of water. The research interest in the bacteria is to explain the effect of marinade on *Salmonella typhi* concentrations on raw chicken. In this research study different marinades were tested and analyzed to discover if each edible condiment causes a distinct effect on the *Salmonella typhi* colony count and cell death. The results obtained in this experiment are inconclusive.

Isolation of Bacteriophage for *Listeria monocytogenes*

Brandon Hart (Microbiology), Anthony Gonzalez (Microbiology), Dr. Kathleen Bobbitt (Biological Sciences), and Dr. Christopher Corbo (Biological Sciences)

Listeria monocytogenes is a facultative, motile diphtheroid gram-positive organism. *L. monocytogenes* is the cause of listeriosis, which results from consumption of contaminated meats, vegetables, fish, poultry, and dairy products. The lethality of *L. monocytogenes* poses threat in the immunocompromised, young, elderly, and pregnant populations. Bacteriophages are a group of viruses which use bacterial cells as their host. They are highly specific; only infecting one or certain types of bacteria. Bacteriophages ultimately lead to the destruction of the bacterial cell it infects. Being that *Listeria* is commonly isolated from soil and water samples we hypothesized that bacteriophage are present in raw sewage. *Listeria* is believed to be present from runoff and waste in sewage and therefore this is why we selected this source to obtain phage isolates. Sewage samples were added to nutrient broth and incubated overnight and then incubated in the

presence of a 48 hour *L. monocytogenes* culture. Phage elution buffer was used to extract the phage from the bacterial cells. Phage were diluted out using water blanks. Lysate was serially diluted and enriched in brain heart infusion agar and plated on soft top agar. Plaques were identified and counted. The isolated phage were analyzed using electron microscopy (EM). EM identified tailless phage which we are currently in the process of the phage identification. This research is important because it investigates new potential ways to prevent food from being contaminated by *Listeria*.

Mathematics Instruction in a Special Education Setting

Daniela DiMeglio (Mathematics)

Description of how mathematics is taught in a self- contained setting. This self contained setting includes one teacher, one student teaching four paraprofessionals and ten students. Students were grouped by ability, and through the use of differentiated math stations students received various tasks.

The Effect of Different Alcohol Concentrations on Zebrafish (*Danio rerio*) Species Recognition

Mayar Mussa (Biopsychology)

The zebrafish (*Danio rerio*) is a model organism that has been utilized for many scientific experiments in many different areas of biology. Species recognition occurs when members of the same species can identify one another and has many benefits for social, reproductive, and antipredator behavior. There have been many experiments conducted on the effect of ethanol (EtOH) on zebrafish, which has allowed us to better understand the behavioral and physiological effects of alcohol. The purpose of this experiment is to determine if different low levels of ethanol can impair the zebrafish's ability to recognize members of the same species. Five concentrations of EtOH water were used in this experiment: 0.00% (control), 0.125%, 0.25%, 0.5%, and 1%. The zebrafish were tested based on how long they spent near another zebrafish or near a member of a similarly sized species, the neon tetra (*Paracheirodon innesi*). Statistically significant preference for the same species was observed in the control group and with the fish in the 0.125% EtOH levels. With the 0.25%, 0.5%, and 1% treatments, the fish did not discriminate among species and spent significantly less time near the zebrafish than in the control and

0.125% treatment. The results of this experiment show that higher levels of EtOH disrupt species recognition in zebrafish.

Three-Dimensional Reconstruction of Planarian Micrographs in Search of Human Proto-Oncogene Orthologs[5]

Michael Cataldo (Biology) and James Ducey (Biology)

The mechanisms controlling morphallactic regeneration are among the most complex and well studied of all biological processes. Since the 18th century planaria have served as a model organism for the study of regeneration due to their immense developmental plasticity, simple body plan and relative abundance. In our investigation, fresh water brown planaria supplied by Carolina Biological Sciences (*Dugesia dorotocephala* or *tigrin*) were employed to determine whether a variant of human mesenchymal epithelial transition factor (MET), a key contributor to liver regeneration, could be detected through use of electron microscopy. While our initial experimentation suggested that a MET ortholog was expressed by these species, results from subsequent experiments have been inconsistent. We conclude that while a MET variant is likely absent from the planarian genome, proteins that contribute to tissue repair in a similar fashion are undoubtedly present. In a concurrent study, light and electron micrographs were augmented by image analysis software to create novel, three-dimensional depictions of the aforementioned flatworms. The inclusion of this open-source program revealed ultrastructural information that would remain hidden otherwise and provides a reliable method for quantitation of immunological markers.

Ultrastructural Analysis of the Zebrafish Visual System Infected with *Listeria monocytogenes*

Timothy Mendez (Biology) and Dr. Christopher Corbo (Biological Sciences)

Listeria monocytogenes is a gram-positive bacterium that invades host cells causing listeriosis in immunocompromised patients and may cause death. In severe cases, this pathogen has been shown to invade the central nervous system (CNS). *Listeria monocytogenes* grows well at low temperatures allowing it to colonize on refrigerated foods. Our lab has begun to describe this mode of infection and is in the process of establishing this as a successful model to study a *L. monocytogenes* CNS infection in a

[5] Recipient of Best Presentation Award for poster.

vertebrate organism. This project has set out to characterize the cellular pathology at the ultrastructural level. Infected zebrafish brains and retinas which had previously been infected with *L. monocytogenes* were fixed with glutaraldehyde and osmium tetroxide at specific time points, dehydrated through an increasing ethanol concentration, and dried for scanning electron microscopy or embedded and sectioned for light and transmission electron microscopy. At the light microscopic level, cells of the periventricular grey zone (PVGZ) were seen to be unhealthy in appearance. Transmission electron microscopy revealed the presence of *Listeria* in the optic tectum of the zebrafish brain. Specifically residing in and among the cells of the PVGZ. This region of the brain is the direct input of the optic nerve and the major visual processing cortex of the zebrafish. *Listeria* cells can be seen between the cell bodies of the PVGZ. The cells of this region were also, in some cases damaged, appearing as if a hole was punched into the side of cells.

The Effect of Salinity Levels on Activity and Respiration of the *Mummichog Fundulus Heteroclitus*

Cody Carpenter (Biology) and Dr. Donald Stearns (Biological Sciences)

This research tested for salinity effects on the activity and respiration levels of *Fundulus heteroclitus*. The test organisms were acclimated at room temperature (~ 24°C) for approximately four weeks, to three different salinities: < 1.0 ppt (near freshwater), 21 ppt (estuarine), 31 ppt (near oceanic). Fish activity was recorded as number of grid lines crossed per minute per videotaped fish (n = 25-27 fish), each averaged from three separate counts. For respiration, each test organism (n = 25 fish) was placed inside an air-tight, 250 ml container of test water at room temperature (~ 24°C). Initial dissolved oxygen was recorded, and respiration level was quantified as the amount of dissolved oxygen consumed per gram of fish (ppm O2 g-1) during each 10-minute test period. Analysis of variance showed that fish acclimated to 31 ppt had significantly ($p < 0.001$) higher activity levels compared with the other two salinity treatments. Fish acclimated to near-freshwater and estuarine salinities trended ($p < 0.067$) towards higher gram-specific respiration rates compared with fish acclimated to near-oceanic salinities. These results suggest that, like many estuarine species, the mummichog appears to require more energy for osmoregulation in estuarine waters than in more oceanic waters, with subsequently less energy available for active swimming.

Effects of Olfactory Stimulation on Captive Amur Leopards

Maria Papaioannou (Biology), Marc Valitutto[6], Dr. Brian Palestis (Biological Sciences), and Dr. Christopher Corbo (Biological Sciences)

Amur leopards (*Panthera pardus orientalis*) are a critically endangered species that is native to southeastern Russia and northeastern China. Species which are critically endangered are often housed by zoological facilities world –wide to enhance public awareness and continue captive breeding programs to ensure the survival of this species. In order for zoo animals to be properly stimulated on a daily basis, research into proper animal enrichment is necessary. This study was conducted on two captive male Amur leopards located at the Staten Island Zoo. These individuals were exposed to three different scents in order to provide environmental enrichment and to observe their activity and behavioral diversity. The scents used to determine Amur leopard behavior were nutmeg oil, scent of a prey-klipspringer (*Oreotragus oreotragus*) feces, female Amur leopard urine, and a scent of a predator- cougar (*Puma concolor*) urine. Each scent was freshly sprayed on a cardboard box for three consecutive days within four consecutive weeks. Overall, the scents provided in this study resulted in an increase in behavioral diversity. Among the four scents, the leopards were most interested in the nutmeg and female Amur leopard urine followed by the klipspringer feces and cougar urine. Introducing novel scents into the leopard's environment essentially increased the spatial use in their exhibit along with physiological and mental stimulation.

[6] Staten Island Zoo, Staten Island, NY 10310

Section II:
The Natural Sciences

The Effect of Five Plant Extracts on *Serratia marcescens* for Medicinal Significance[1]

Meghan Marie Morrissey (Microbiology)[2]

Antibiotic resistant bacteria have become a significant problem over the past few decades. These once antibiotic susceptible bacteria have become resistant through overuse of antibiotics in clinical settings. This is a problem because if a bacteria's susceptibility to antibiotics is severely decreased it is hard for doctors to treat the bacterial infection in their patient. Recently, infections due to antibiotic resistant *Serratia marcescens* have increased and become a problem in hospital settings and immunocompromised individuals. Antibiotic resistant bacteria also have a negative effect on biological systems in our environment. It is important to find alternative methods to treat bacterial infections in order to treat already antibiotic resistant bacteria and prevent antibiotic resistance. In this study, five plant extracts (tannic acid, cinnamic acid, clove oil, eugenol, and tea tree oil) were tested to determine their antimicrobial activity against the gram-negative, *Serratia marcescens*. It was determined that clove oil (6.3×10^{-1} M) and eugenol (6.8×10^{-1} M, 6.8×10^{-2} M, 6.8×10^{-3} M) were able to inhibit the growth of *S. marcescens*. The cinnamic acid (7.5×10^{-2} M, 7.5×10^{-3} M, 7.5×10^{-4} M, 7.5×10^{-5} M), tannic acid (6.5×10^{-3} M, 6.5×10^{-4} M, 6.5×10^{-5} M, 6.5×10^{-6} M), and tea tree oil (7.2×10^{-1} M, 7.2×10^{-2} M, 7.2×10^{-3} M, 7.2×10^{-4} M) showed no antimicrobial activity against *S. marcescens*. At all four concentrations no inhibition occurred.

I. Introduction

Serratia marcescens

Serratia marcescens (further referred to as *S. marcescens*) is a gram-negative bacillus and a member of the *Enterobacteriacae*. *Enterobacteriacae* are a large family of gram-negative bacteria, including many harmless symbiotic bacteria and many bacteria known to be pathogenic to humans. *Serratia* species are most commonly found in soil,

[1] This paper received an Excellence Award at the 69th Eastern Colleges Science Conference held in Niagara University, NY on April 18, 2015.

[2] Research conducted under the direction of Dr. Kathleen Bobbitt in partial fulfillment of the Senior Program requirements.

water, air, plants and animals. They are also found in many food products especially foods high in starch, due to an excellent growth environment. *S. marcescens* was originally thought to be a non-pathogenic water organism. It was used as a biological marker because it is easily recognized due to its red colonies. However, in 1896, it was found that *S. marcescens* lead to more deaths than many pathogenic bacteria (Hejazi and Falkiner, 1997).

Organism Identification and Culture

The potential of *Serratia* species to utilize a wide variety of nutrients aids in its survival in extreme conditions; *Serratia sp.* is also known to be able to survive in disinfectants, antiseptics and double distilled water. Antiseptics are chemical agents used on the skin or other living tissue to inhibit or eliminate microbes. Disinfectants are physical and chemical procedures that inhibit or destroy microbes, bacterial spores, viruses, fungi and mycobacteria. There are different levels of disinfectants, high level, intermediate level and low-level disinfectants (Murray et al., 2013). All bacteria grow at different rates and have different optimal growth requirements. Optimal pH, temperature and nutrients needed for growth all differ between each bacterium and can even be different within a bacterial species. *Serratia* species are known to be able to survive in aerobic (in the presence of oxygen), semi-anaerobic (small levels of oxygen) and anaerobic (no oxygen present) conditions. In a study conducted by Hejazi and Falkiner (1997), the survival and growth of *S. marcescens* isolated from hospital blood bags, at different oxygen concentrations in de-ionized water containing materials derived from the blood bags, it was found that the rate of survival was highest in anaerobic conditions. The cultures tested under aerobic and semi-anaerobic conditions, did not promote the growth of *Serratia*. These results showed a toxic effect of oxygen on *Serratia* in low nutrient conditions. This showed that when whole-blood units become contaminated there is a high risk of rapid growth in red blood cells and platelets. This indicates that human immunological mechanisms, such as complement killing and phagocytosis are not effective against *S. marcesens*. The ability to multiply in blood components varies between bacterial species and plays a role in infection (Hejazi and Falkiner, 1997).

Serratia marcescens was found to be an oxidase-negative gram-negative bacteria. An oxidase negative bacterium does not produce certain cytochrome c oxidases (Hejazi and Falkiner, 1997). *Serratia* is able to produce deoxyribonuclease (DNAse), an enzyme that catalyzes the breakage of phosphodiester linkages, the backbone of DNA. This leads to the degradation of DNA into smaller fragments and facilitates the spread of

the bacterium (Murray et al., 2013). In clinical laboratories, the main system used to identify *Serratia* species is the API 20E system, which is widely used to differentiate and identify gram-negative bacteria. The API is a strip of 20 small reaction tubes with a different substrate in each. Before performing an API, it must be confirmed that the bacteria in question is gram-negative and a member of the *Enterobacteriaceae*. A Gram stain can be used to confirm the bacteria is gram-negative and an oxidase test can be performed to confirm the bacteria is a member of *Enterobacteriacae*, most *Enterobacteriaceae* are oxidase negative. Under normal conditions *S. marcencens* is unable to ferment arabinose and *Serratia liquefaciens* is arabinose-positive. However, in the API20E system, *S. marcescens* can oxidase arabinose, giving a false-positive reaction. This misidentification as *S. liquefaciens* can be dangerous to patients (Hejazi and Falkiner, 1997).

Serratia marcescens can usually be identified by the reddish color of the colonies. The red pigment is caused by prodigiosin, however, the function of this pigment remains unclear because clinical isolates are rarely pigmented. Prodigiosin biosynthesis in *S. marcescens* depends on growth conditions. Normally in clinical specimens, the colonies appear unpigmented, but in a natural setting the colonies are pigmented. The pigment has a role in respiration and has antibiotic properties by serving as a protective barrier when conditions are not favorable for growth. Synthesis of this pigment depends on temperature, ions and available amino acids. Failure of *S. marcescens* to produce pigment in clinical specimens makes it difficult to distinguish from other organisms (Hejazi and Falkiner, 1997).

Pathogenicity and Virulence

Serratia marcescens often causes infection in immuno-compromised patients and neonates. These infections are usually hospital acquired and are rare in immuonocompetent individuals (Murray et al., 2013). People classified as immunocompromised have an immune response that does not function as well as someone who is immunocompetent. Immunodeficiency may result from genetic disorders, drug induced immunosuppression, cancer or disease (ex. AIDS). Also, immunodeficiency naturally occurs in neonates and pregnant women (Murray et al., 2013). There are two types of pathogens, strict pathogens and opportunistic pathogens. Strict pathogens are organisms that are always associated with human disease and opportunistic pathogens are organisms that are typically members of a person's normal microbial flora. Opportunistic pathogens do not usually cause disease in their normal

setting but they become problematic when introduced to normally sterile body sites, such as blood and tissues. If an individual's immune system is compromised they are more susceptible to infections from opportunistic pathogens. *Serratia marcescens* is an opportunistic pathogen with many virulence factors that help it invade and infect humans (Murray et al., 2013).

Serratia marcescens was once thought to only cause infection in patients with chronic debilitating disorders. However, *S. marcescens* has now been found as the etiological agent in every conceivable kind of body site. These infections include respiratory tract infections, urinary tract infections, septicemia, meningitis and wound infections. It is known to cause infective endocarditis in cardiac surgery patients. In contrast to other gram-negative bacteria, *S. marcescens* usually infects the left side of the heart. Recently, *S. marcescens* was shown to be fully pathogenic in heroin addicts and hospitalized patients (Hejazi and Falkiner, 1997).

Serratia marcescens strains are known to have many virulence factors that aid it during infection. It possesses both mannose-resistant (MR) pili and mannose-sensitive (MS) pili, which aid in the adherence to host epithelial surfaces. The ability of a bacterium to attach itself to the surface of host epithelial cell surfaces is a determinant of microbial virulence. *S. marcescens* pili is able to attach to uroepithelial cells and cause nosocomial urinary tract infections. A nosocomial infection is an infection that a patient acquires while in a hospital setting. The hydrophobicity of *S. marcescens's* surface allows it to easily pass into and out of human host cells. This hydrophobicity also allows the bacterium to adhere to solid plastic surfaces such as catheters, which can often lead to infection. In contrast to gram- positive bacteria, all gram negative bacteria have lipopolysaccharide (LPS) located in their outer membrane. This layer of LPS allows the bacteria to survive an attack by antibodies in the host. The components of the bacterial surface of pathogenic bacteria are the primary factors in determining their pathogenicity. Gram-negative bacteria are surrounded by an outer-membrane, which protects them from toxins and blocks access to their target sites during infection. Lipopolysaccharide is comprised of lipid A, the O-antigen and the core. The presence of an O-side chain transfers resistance to serum cells. *S. marcescens* possesses many extracellular enzymes and is one of the most efficient bacteria in the degradation of chitin. Chitin is the major component of fungal cells walls. Since *S. marcescens* produces chitinolytic enzymes, enzymes capable of degrading chitin, it is believed that parts of the bacterium can be used as natural anti-fungal agents (Hejazi and Falkiner, 1997).

Antibiotics and Antibiotic Susceptibility

History on antibiotics

Before antibiotics were discovered antiseptics were applied topically to prevent the growth of microorganisms. However, these antiseptics were ineffective against systemic bacterial infections. In 1935, scientists found that compounds produced by microorganisms were able to inhibit the growth of other microorganisms. Alexander Fleming was the first to realize that the mold *Penicillium* inhibited the growth of *Staphylococci*. Shortly after the discovery of the antibiotic Penicillin, Streptomycin and the Tetracyclines were developed. The discovery of antibiotics did not stop bacterial infections from occurring, it was merely a weapon against infectious diseases. As time goes on and scientists develop new and more powerful antibiotics, bacteria also develop resistance to many of these antibiotics (Murray et al., 2013).

Antibiotics work by interfering with a structure or some process within the bacterium. Most antibiotics work by disrupting the synthesis of the bacterial cell wall. The three other modes of action of antibiotics are inhibition of protein synthesis, inhibition of nucleic acid synthesis and, competitive inhibition (antimetabolite) (Murray et al., 2013).

Antibiotic resistant strains of S. marcescens

Infections caused by *S. marcescens* have become increasingly difficult to treat because many strains have become antibiotic resistant. Recent studies found strains of *S. marcescens* resistant to ampicillin, first and second-generation cephalosporins, B-lactam, and aminoglycosides. Beta-lacatamase resistance among *Enterobacteriacae* is rare, however, recent clinical isolates of *S. marcescens* have shown resistance. It was found that the presence of the O-side chain, a repetitive glycan polymer, in the LPS layer decreased the permeability of the membrane to Beta- lactam antibiotics. Bacterial resistance to aminoglycosides occurs by the bacterium preventing the drug from reaching the target site on the ribosome. The bacterium also alters its cell envelope, preventing the uptake of the drug, causing the drug to be modified by inactivating enzymes. *S. marcescens* contains an enzyme acetyltransferase (AAC(3)-I) which inactivates the drug and is mediated by plasmids. Since this is mediated by plasmids, this resistance is often transferrable from one bacterium to another (Hejazi and Falkiner, 1997).

Biological cost of antibiotic resistance

Fitness, the ability to survive and reproduce, is an important tool to study the evolution of a species. The fitness of a pathogen depends on rates at which they reproduce and die in an infected host and environment, how they are transmitted between hosts, and how they are cleared from infected hosts. In the environment there is an ongoing competition between antibiotic sensitive and resistant bacteria. If in a population of bacteria, the antibiotic resistant strain of bacteria has increased fitness, the fitness of the antibiotic sensitive strain will decrease. It is important to understand the fitness of a species of bacteria, because if antibiotic resistant bacteria prevail over antibiotic sensitive bacteria, it is unknown if this can ever be reversed. There are cases of "no cost" antibiotic resistance, where this resistance does not affect the overall fitness of itself and others in the community, however, the increasing appearance of antibiotic resistant bacteria can have a detrimental effect on other species fitness in the community.

It has been proven that the evolution and spread of resistance is directly correlated to the use and overuse of antibiotics. This increasing resistance depends on various factors that we may be able to control and factors that are out of our control. The first step in controlling resistance would be to control the rate and pattern of antibiotic use. Another solution would be to find an alternative way to treating bacterial infections. To date, certain bacterial infections have become almost untreatable with antibiotics. The frequency of these untreatable bacterial infections will only increase if changes in the use of antibiotics are not made. If the population of antibiotic resistant bacteria is at a high level in a community, is it likely to remain there for a long time (Andersson I. Dan, 2003 & Andersson I. Dan and Levin R. Bruce, 1999).

Antibiotics and commensal bacteria

More than 1000 species of commensal bacteria live inside the human intestines. These commensal bacteria form a symbiotic relationship with its host, known as mutualism. A symbiotic relationship is one in which one organism benefits causing little or no harm to the other organism. The normal microbiota in humans continues to evolve and these bacteria play important roles in maintaining one's health. These commensal bacteria also help in preventing pathogenic bacteria from invading and colonizing certain parts of the body. The commensal bacteria do this by directly competing with the pathogenic bacteria for nutrients and space, and some commensals can inhibit signaling pathways necessary for invasion by pathogenic bacteria.

The protective mechanism of commensal bacteria is drastically affected by the use of broad-spectrum antibiotics. These broad-spectrum antibiotics can kill large numbers of commensal bacteria. This then creates opportunities for pathogenic bacteria to occupy niches in the body, normally filled with harmless commensal bacteria, causing infection (Janeway et al., 2012).

Plant Extracts

History and usage of plant extracts

Plant extracts and oils have been used for various different things for thousands of years. They have been used in perfumes, flavoring in drinks and crop preservation. The antimicrobial activity of plant extracts has been used for raw and processed food preservation, pharmaceuticals and alternative medicine (Hammer et al., 1999).

Even though the number of new antibiotics has been increasing in the past three decades, resistance to these drugs by microorganisms has increased rapidly. Bacteria have the ability to generate and transmit this resistance to pharmaceutical drugs. Due to new bacterial strains, which are multi-resistant, patients in hospitals with weakened immune systems have increased chances of mortality. The problem of antibiotic resistance will only continue to increase if patients are not presented with an alternative option. In order to prevent bacteria from becoming resistant, the genetic mechanisms of resistance must be researched and prescribing physicians must control the distribution of antibiotics.

Natural phytochemicals, organic compounds found naturally occurring in plants have been used to help cure individuals with infections long before antibiotic therapy was introduced. They can be a source of antioxidants and aid in immune response against bacteria. Some of these plant extracts have been proven to be a good alternative to synthetic chemicals, such as many antibiotics produced today (Nascimento et al., 2000).

Eugenol

Eugenol (4-allyl-2-methoxyphenol) is a pale liquid usually extracted from clove oil, nutmeg, basil, bay leaves, and cinnamon. Eugenol has aseptic and anesthetic properties, therefore, it is often used for prosthodontic applications in dentistry. It is used to calm the nerve inside the tooth during deep nerve extraction techniques (Alma et al., 2007), (Ody, 1993), (Wade, 2010).

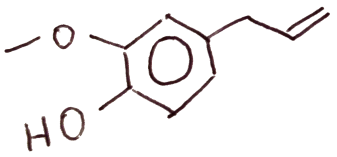

Figure 1: Eugenol (Wade, 2010)

Tea tree oil

Tea tree oil (terpinen-4-ol) is taken from the leaves of *Melaleuca alternifolia*. The properties of tea tree oil can make it toxic if taken by mouth so it is often used in products that are rubbed on the skin. However, tea tree oil be an irritant and cause allergic reactions to some people when applied on the skin. Tea tree oil has been known to have antiseptic and anti-inflammatory properties and has promising effects in a clinical setting. In nature, tea tree oil is mostly bactericidal and at some concentrations bacteriostatic (Carson et al., 2006).

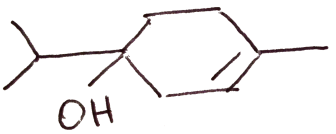

Figure 2: Tea tree oil (Wade, 2010)

Clove oil

Clove oil is an essential oil from the clove plant, *Syzygium aromaticum*. It has aseptic and anesthetic properties and is often used in dentistry to relieve minor dental pain. In foreign counties it is often used as medicinal herbs for therapy for many infections. It is used in aromatherapy and included in the diets of many European and Asian countries (Alma et al., 2007), (Ody, 1993).

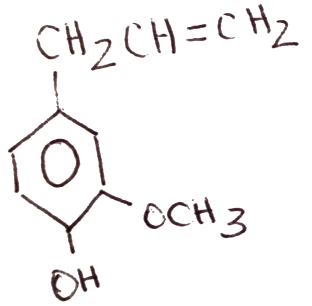

Figure 3: Clove oil (Wade, 2010)

Tannic acid

Tannins, present in tannic acid, belong to a group of plant produced polyphenolic compounds which are known to have antimicrobial properties. These plant produced polyphenolic compounds are present in many soil types. Tannins are produced in leaves, roots, bark, galls, fruits and the buds of many plants. It is believed that tannins have antimicrobial properties due to their ability to disrupt the membranes of microorganisms (Lim et al., 2003).

Cinnamic acid

Cinnamic acid (3-phenyl acrylic acid) is naturally found in the oil of cinnamon. Cinnamic acid and its derivatives are found in many plants and fruits. Therefore, they provide a natural protection against various invading pathogenic microorganisms. Many aromatic antimicrobial agents, have been used as preservatives in the food industry. Research has also proven that it has properties capable of preventing the growth of yeast (Chambel et al., 1999).

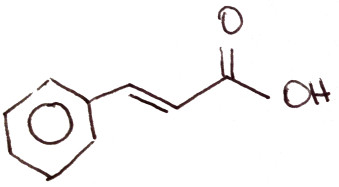

Figure 4: Cinnamic Acid (Wade, 2010)

Plant extracts as antimicrobial agents

Since the emergence of antibiotics in the 1950's, the use of plant derivatives as antimicrobials has been rarely seen. Until recently, scientists and doctors mainly focused on developing drugs from bacterial and fungal spores, due to their antimicrobial properties. However, scientists are now realizing that the life span of any antibiotic developed is limited, due antibiotic resistance. Many people are becoming aware of the misuse and over prescription of traditional antibiotic drugs. In addition, many of these people are interested in treating their ailments with a more natural product. Some of these natural plant extracts are already available to the public at over the counter herbal suppliers, and natural food stores. Many individuals are even starting to self-medicate with these substances.

Additionally, over the last decade, increased research into antimicrobial properties of plant derivatives is due to the increasing population of HIV positive patients in underdeveloped countries. These plant derivatives found in the environment, may be effective to patients in nations who cannot afford expensive Western medicine (Cowan, 1999).

II. Objectives

The purpose of this experiment was to test the effect of naturally occurring plant extracts on the growth of *S. marcescens*. The effect of the five plant extracts on the growth of *S. marcescens* was tested at four different concentrations of the extract. By making different dilutions, it could be determined whether the extract has better anti-microbial properties at high or low concentrations. Finding alternatives to antibiotics is very important given the increasing populations of antibiotic resistant bacteria. Antibiotic resistant bacteria make it difficult for doctors to treat patients with these types of infections. This experiment allowed us to see which plant extract had the greatest effect on the growth of *S. marcescens* and at which concentration inhibition of growth was greatest. Finding a naturally occurring plant extract that can combat antibiotic resistant bacteria could potentially lead to a better prognosis for patients infected with these types of bacterial infections.

III. Material and Methods

Preparation of Medium

Carolina Biological Supply Co. MacConkey Agar (catalog No. 784481, Lot No. L13-18) was used to plate out the bacteria. Fifty grams of the medium powder was mixed with 1000mL of distilled water in a 2000mL Erlenmeyer flask, a stir bar was placed inside the flask and was placed on a hot plate. The mixture was then left on the hot plate to dissolve completely and come to a boil, this took about fifteen minutes. After the mixture was brought to a boil it was placed in the autoclave at 121°C at 15 psi for fifteen minutes. When the autoclave completed a cycle the mixture was allowed to cool for three minutes. After cooling the mixture it was carefully poured into petri dishes and left to solidify overnight.

New 9mL water blanks were used for each trial of the experiment. One hundred and forty test tubes were placed in a metal rack and 9mL of distilled water was pipetted into each tube using a 5mL pipette. Five mL of distilled water was pipetted into each tube and then 4mL of distilled water was pipetted into each tube, giving a total of 9mL of distilled water in each test tube. Test tube caps were then placed on each test tube, allowing air to still pass in and out of the test tubes to prevent them from bursting inside the autoclave. The metal rack containing the water blank test tubes were then placed inside the autoclave and autoclaved for fifteen minutes.

Difco nutrient broth purchased from Carolina Biologicals was used to grow the bacteria. Eight grams of powder per 1000mL of distilled water were mixed in a 2000mL Erlenmeyer flask. The mixture was then placed on a hot plate and allowed to come to a boil for two minutes. Twenty test tubes were placed on a metal rack and 7mL of nutrient broth was pipetted into each test tube. The caps were gently placed on each test tube, allowing air to be released during the sterilization process. The metal test tube rack was then autoclaved at 121°C for fifteen minutes.

Preparation of Live Bacteria

Serratia marcescens

Remel 19-308, ATTC # 33077, Lot # 203866

The night before completing each trial of this experiment, a frozen pellet containing *S. marcescens* was added to a test tube containing nutrient broth and placed in an incubator at 37°C overnight. To ensure that the organism used in the study was *Serratia marcescens* numerous biochemical tests were performed. Lactose fermentation was

observed on MacConkey agar plates. The organism tested was oxidase and methyl red negative. It was observed to be gelatinase and lysine decarboxylase positive. The indole test was negative, the voges-proskauer test was positive and the citrate test was positive.

Methods

Cinnamic acid, tannic acid, eugenol, menthol, clove oil, and tea tree oil were used as the plant extracts to see the effect they had on the bacteria. All plant extracts were obtained from Sigma Chemical Company, St. Louis, Missouri. Cinnamic acid and tannic acid were in the form of a powder and eugenol, menthol, clove oil and tea tree oil were in the form of liquid oil. The sterile test tubes containing 9mL of distilled water were used for making the dilutions. Sterile 1mL pipettes were also used when making the dilutions.

After successfully growing the bacteria in nutrient broth, four test tubes containing 9mL of distilled water in each tube were placed in a metal test tube rack on the bench top. 1 mL of Eugenol was added to the first test tube, labeled original, and inverted upside down twice. Three tenfold dilutions were then made 1:10, 1:100, and 1:1000, inverting and shaking the test tubes before each dilution to ensure proper mixture of the liquid from the previous dilution. After labeling all the tubes, 0.5mL of nutrient broth containing *S. marcescens* was added to each of the four test tubes, again gently inverting each of them a few times. The test tubes were allowed to sit at room temperature for thirty minutes before they were plated out on four separate MacConkey agar plates. The same procedure was performed for tea tree oil, clove oil, cinnamic acid and tannic acid. Since cinnamic acid and tannic acid were in powder form, 100 mg of the powder was weighed out on the scale and the powder was added to the first test tube. The rest of the procedure for these two extracts were the same as the other three. After allowing the twenty test tubes filled with *S. marcescens* and the various diluted and non-diluted extracts to sit at room temperature for thirty minutes, they were then plated out with a metal flaming loop on twenty separate MacConkey agar plates. To prevent cross contamination, between streaking each plate the loop was placed in a flame for five seconds. Before streaking the next plate, the loop was placed on side of the agar plate to cool the flamed loop to ensure the heat from the flamed loop did not kill any bacteria in the test tubes, leading to false results. Each plate was labeled with the date, the type of extract, and either original or type dilution it was. The twenty plates were then stacked and left on the bench top at room temperature for forty-eight hours. This exact procedure was done seven times, trying to keep the conditions for growth and the amount of extract/bacteria added to the

dilutions the same each time. After each trial, *S. marcescens* was regrown in nutrient broth for at least twenty-four hours prior to the start of each experiment.

Recording of Data

Forty-eight hours after each trial, the plates were examined to see if there was growth or not. The number of colonies present was then counted and recorded. If the colony count was larger than 150, it was labeled as TNC (too numerous to count). After recording the data, the plates were discarded and the test tubes were sterilized in the autoclave. For each trial new water blank tubes, new sterile pipettes and new MacConkey agar plates were used. By making the three dilutions, 1:10, 1:100, and 1:1000, this slowly decreased the concentration of the extract.

Unit Conversion

In order to compare data, the units in this experiment were all converted to molar concentration, molarity. The molar concentration is defined as moles divided by volume. First, the number of moles of solute present was calculated then the number of liters of solution present was calculated. To find molarity, the number of moles of solute was divided by the number of liters of solution.

IV. Results

Colony Count via. Tables

As seen in Table 1, the first trial of this experiment showed that tannic acid at concentrations of 6.5×10^{-3} M and 6.5×10^{-4} M had an effect on the growth of *S. marcescens*, but at concentrations 6.5×10^{-5} M and 6.5×10^{-6} M, it had no effect on the growth, the growth recorded was too numerous to count. At 100mg concentration, cinnamic acid showed to completely inhibit all growth of *S. marcescens*, however, at 10mg and 1mg concentrations 59 and 96 colonies were counted respectively. At 0.1mg concentration, cinnamic acid showed to have no effect on the growth of *S. marcescens*. At 6.8×10^{-1} M, 6.8×10^{-2} M and 6.8×10^{-4} M concentrations, Eugenol was found to completely inhibit all growth. Both tea tree oil and clove oil were shown to inhibit all growth at their highest molar concentration used in this experiment. At the lowest molar concentration used, both tea tree oil and clove oil were found to reduce the growth of *S. marcescens*, but not completely inhibit growth.

Table 1: The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #1)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	3	107	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	NG	59	96	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	NG	5
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	NG	NG	43	51
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	NG	15	21
Performed: 2/26/2014	**Results read: 2/28/2014**			

TNC = Too numerous to count, NG = No growth

Table 2 showed that at 6.5 x 10^{-5} M and 6.5 x 10^{-6} M concentrations of tannic acid there was no effect on the growth of *S. marcescens*. However, at the 6.5 x 10^{-3} M concentration, seven colonies did grow. Ten mg of tannic acid showed little effect on the growth of *S. marcescens*, but nothing substantial. In comparison to tannic acid, 7.5 x 10^{-5} M of cinnamic acid showed no effect on growth and 7.5 x 10^{-4} M concentration showed only a small effect on growth. At a concentration of 7.5 x 10^{-2} M cinnamic acid was shown to inhibit all growth of *S. marcescens*, and 7.5 x 10^{-3} M again showed only a small effect on growth. Eugenol was shown to inhibit all growth at 6.8 x 10^{-1} M, 6.8 x 10^{-2} M, and 6.8 x 10^{-3} M concentrations and only one colony was found on the petri dish with 6.8 x 10^{-4} M concentration of eugenol. Both tea tree oil and clove oil were shown to inhibit all growth at 7.2 x 10^{-1} M, 7.2 x 10^{-2} M (tea tree oil) and 6.3 x 10^{-1} M, 6.3 x 10^{-2} M (clove oil) concentrations. At 7.2 x 10^{-3} M and 7.2 x 10^{-4} M concentrations of tea tree oil it was shown to partially inhibit

growth with twenty-four and thirty-eight colonies counted, respectively. At 6.3 x 10^{-3} M and 6.3 x 10^{-4} M concentrations of clove oil it was found to almost completely inhibit the growth of *S. marcescens*, with only seven and eleven colonies counted, respectively.

Table 2:The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #2)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	7	106	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	NG	78	104	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	NG	1
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	NG	NG	24	38
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	NG	7	11
Performed: 3/5/2014	**Results read: 3/7/2014**			

TNC = Too numerous to count, NG = No growth

The third trial of this experiment (see Table 3) indicated no effect on growth at 6.5 x 10^{-5} M and 6.5 x 10^{-6} M concentrations of tannic acid, and 7.5 x 10^{-3} M, 7.5 x 10^{-4} M, 7.5 x 10^{-5} M of cinnamic acid. At 6.5 x 10^{-3} M of tannic acid, only one colony grew on the petri dish and at 6.5 x 10^{-4} M fifteen colonies grew. Like tanninc acid, 7.5 x 10^{-2} M of cinnamic acid showed almost complete inhibition, with only two colonies present. At highest molar concentrations of eugenol, tea tree oil and clove oil inhibition of all growth of *S. marcescens* occurred. At 6.8 x 10^{-3} M (eugenol) and 6.3 x 10^{-3} M (clove oil) concentrations it was shown to completely

inhibit growth, whereas, the 7.2 x 10^{-3} M concentration of tea tree oil only slightly inhibited growth.

Table 3: The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #3)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	1	15	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	2	TNC	TNC	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	NG	TNC
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	NG	NG	21	TNC
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	NG	NG	TNC
Performed: 3/10/2014	**Results read: 3/12/2014**			

TNC = Too numerous to count, NG = No Growth

The lowest molar concentrations of both tannic acid and cinnamic acid (see Table 4) showed no effect on the growth of *S. marcescens*. The 6.5 x 10^{-3} M and 6.5 x 10^{-4} M concentrations of tannic acid, showed a drastic decrease in growth of *S. marcescens* with eight and nine colonies counted, respectively. The 7.5 x 10^{-2} M concentration of cinnamic acid showed a decrease in the growth of the bacteria, however, 7.5 x 10^{-3} M only slightly decreased the amount of bacteria that grew. At both 6.8 x 10^{-1} M and 6.8 x 10^{-2} M concentrations of eugenol, there was complete inhibition of *S. marcescens*, and at 6.8 x 10^{-3} M and 6.8 x 10^{-4} M concentrations there was decreased growth. At 7.2 x 10^{-1} M and 7.2 x 10^{-2} M concentrations of tea tree oil showed complete inhibition occurred with only two colonies being counted

on both petri dishes. The 7.2 x 10^{-3} M concentration of tea tree oil only slightly decreased the growth of *S. marcescens*; whereas, 7.2 x 10^{-4} M showed no effect on growth. At both 6.3 x 10^{-1} M and 6.3 x 10^{-2} M concentrations of clove oil there was complete inhibition of growth; 6.3 x 10^{-3} M and 6.3 x 10^{-4} M concentrations still allowed significant amount of bacteria to grow.

Table 4 :The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #4)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	5	24	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	3	101	TNC	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	11	12
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	2	2	41	TNC
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	NG	67	90
Performed: 3/17/2014	**Results read: 3/19/2014**			

TNC = Too numerous to count, NG = No Growth

As seen in Table 5, the fifth trial of this experiment, the lowest molar concentrations of both tannic acid and cinnamic acid again had no effect on the growth of *S. marcescens.* Both 6.5 x 10^{-3} M and 6.5 x 10^{-4} M concentrations of tannic acid showed a better effect on the inhibition of *S. marcescens* than the 7.5 x 10^{-2} M and 7.5 x 10^{-3} M concentrations of cinnamic acid. Eugenol showed significant inhibition of growth at all concentrations, especially 6.8 x 10^{-1} M and 6.8 x 10^{-2} M concentrations, where complete inhibition was observed. Tea tree oil only showed a partial inhibition of growth at 7.2 x

10^{-1} M and 7.2 x 10^{-2} M concentrations; growth was only slightly inhibited at 7.2 x 10^{-3} M and 7.2 x 10^{-4} M concentrations. Clove oil showed complete inhibition of bacterial growth at 6.3 x 10^{-1} M and 6.3 x 10^{-2} M concentrations and to partially decrease growth of *S. marcescens* at 6.3 x 10^{-3} M and 6.3 x 10^{-4} M concentrations.

Table 5 : The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #5)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	8	9	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	21	31	TNC	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	2	2
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	1	13	87	123
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	NG	35	30
Performed: 3/26/2014	**Results read : 3/28/2014**			

TNC = Too numerous to count, NG = No Growth

As seen in Table 6, the sixth trial of this experiment showed no effect on growth at a 6.5 x 10^{-6} M concentration of tannic acid, however, decreased growth was observed at 6.5 x 10^{-3} M, 6.5 x 10^{-4} M and 6.5 x 10^{-5} M concentrations. At 7.5 x 10^{-3} M, 7.5 x 10^{-4} M and 7.5 x 10^{-5} M concentrations of cinnamic acid it showed no effect on growth, however, at the 7.5 x 10^{-2} M concentration a significant amount of inhibition was observed. Eugenol showed complete inhibition of *S. marcescens* at 6.8 x 10^{-1} M, 6.8 x 10^{-2} M and 6.8 x 10^{-3} M concentrations and showed significant inhibition at 6.8 x 10^{-4} M concentration. Tea tree oil showed to have an effect on the growth of *S. marcescens* by

decreasing the growth at all concentrations except 7.2 x 10^{-4} M, where no effect on growth was observed. At all concentrations of clove oil, there was a decrease in the growth of *S. marcescens*, especially at the 6.3 x 10^{-1} M concentration, where complete inhibition was observed.

Table 6: The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #6)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	4	16	89	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	15	TNC	TNC	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	NG	6
Molarity	**7.2 x 10^{-1} M**	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**
Tea Tree Oil	4	27	44	TNC
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	1	24	29
Performed: 4/8/2014	**Results read: 4/10/2014**			

TNC = Too numerous to count, NG = No Growth

In the last trial of this experiment (see Table 7), tannic acid showed no effect on growth of *S.marcescens*, except at the 6.5 x 10^{-3} M concentration, where it decreased the amount of colonies that grew. Cinnamic acid showed only to have an effect on growth at 7.5 x 10^{-2} M and 7.5 x 10^{-3} M concentrations, it had no effect on growth at 7.5 x 10^{-4} M and 7.5 x 10^{-5} M concentrations. Eugenol was shown to completely inhibit growth at 6.8 x 10^{-1} M, 6.8 x 10^{-2} M and 6.8 x 10^{-3} M concentrations and significantly inhibited growth even at the 6.8 x 10^{-4} M concentration. At concentrations of 7.2 x 10^{-2} M, 7.2 x 10^{-3} M and 7.2 x 10^{-3} M tea tree oil had an effect on the growth of *S. marcescens*, however, 7.2 x

10^{-4} M concentration it did not affect growth. The 6.3 x 10^{-1} M concentration of clove oil inhibited all growth of bacteria, whereas, 6.3 x 10^{-2} M and 6.3 x 10^{-3} M concentrations only slightly decreased the growth of *S. marcescens*. The 6.3 x 10^{-4} M concentration of clove oil had no effect on growth.

Table 7: The colony count of *S. marcescens* after inoculation with five different plant extracts after three tenfold dilutions (Trial #7)

Molarity	**6.5 x 10^{-3} M**	**6.5 x 10^{-4} M**	**6.5 x 10^{-5} M**	**6.5 x 10^{-6} M**
Tannic Acid	23	TNC	TNC	TNC
Molarity	**7.5 x 10^{-2} M**	**7.5 x 10^{-3} M**	**7.5 x 10^{-4} M**	**7.5 x 10^{-5} M**
Cinnamic Acid	15	34	TNC	TNC
Molarity	**6.8 x 10^{-1} M**	**6.8 x 10^{-2} M**	**6.8 x 10^{-3} M**	**6.8 x 10^{-4} M**
Eugenol	NG	NG	NG	9
Molarity	**7.2 x 10^{-2} M**	**7.2 x 10^{-3} M**	**7.2 x 10^{-4} M**	**7.2 x 10^{-5} M**
Tea Tree Oil	3	28	76	TNC
Molarity	**6.3 x 10^{-1} M**	**6.3 x 10^{-2} M**	**6.3 x 10^{-3} M**	**6.3 x 10^{-4} M**
Clove Oil	NG	40	41	TNC
Performed: 4/15/2014	**Results read: 4/17/2014**			

TNC = Too numerous to count, NG = No Growth

V. Discussion

Methodological Aspects

Clove oil and eugenol had the greatest effect on the inhibition of growth of *S. marcescens*. Cinnamic acid and tannic acid did not have a substantial effect on the growth of *S. marcescens* even at high concentrations. Evidence that plant oils are able to inhibit growth help to show which plant oils could be useful to cure clinical bacterial infections in the future. In the past tea tree oils and clove oils were used as topical antiseptics because they have numbing properties and antimicrobial properties. By

investigating which plant oils have the greatest effect against the growth of bacteria and which concentration works the best will help to provide future alternatives to antibiotic therapy. Comparing results obtained in this experiment to other similar experiments is difficult because it is known that plant oils differ in chemical composition in different climates around the world, and experimental methods in these studies also greatly differ. (Hammer, 1999).

As seen in other experiments, clove oil showed to have antimicrobial properties against gram-negative *Escherichia coli* and *Pseudomonas aeroginosa.* As the concentration of clove oil increased, the zone of inhibition also increased against these two bacteria. It was shown that clove oil had greater antimicrobial properties against gram-positive *Staphylococcus aureus* and *Bacillus subtilis*. The two zones of inhibition observed for the gram-positive bacteria were almost double the size of the two zones of inhibition for the gram-negative bacteria. Again, as the concentration of clove oil increased, the zone of inhibition was larger.

At a concentration of 1 µl/disc of eugenol, there were no zones of inhibition observed for the four bacterial species tested in this experiment. At concentrations of 1.5 µl/disc of eugenol and 2 µl/disc of eugenol, eugenol showed to inhibit the growth of all four bacteria, with inhibition zones ranging from 9.8 mm to 19.8 mm. Various other plant extracts were used during this experiment and thymol and carvacrol were both shown to have the greatest antimicrobial properties against the four bacterial species listed above.

In this experiment, the same plant extracts were tested against two yeast strains and two mold strains. Clove oil was shown to inhibit growth against the two mold strains, *Aspergillus flavus* and *Aspergillus niger*. As the concentration of clove oil increased, the zones of inhibition also increased in size. However, as the concentration of clove oil increased, the zone of inhibition of *Aspergillus niger* tripled between the 5 µl/disc of clove oil concentration and the 10 µl/disc of clove oil; Whereas, the zone of inhibition of *Aspergillus flavus* only slightly increased between the same concentrations. Eugenol showed to inhibit the growth of both mold strains, but small zones of inhibition were observed at small concentrations of eugenol.

Clove oil was shown to inhibit the growth of the two yeast strains, *Saccharomyces cerevisiae* and *Candida lipolytica* at all concentrations. Eugenol was also shown to inhibit the growth, but the zones of inhibition were smaller compared to that of clove oil. Overall, thyme oil and clove oil had the greatest antimicrobial properties against the two yeast strains and the two mold strains (Helmy, 2012).

Another study conducted tested the effect of plant extracts against antibiotic resistant bacteria. This experiment showed that each of the seven bacterial species tested responded differently to all six of the plant extracts/phytochemicals. The combination of plant extracts and antibiotics against the growth of bacteria were observed in this experiment. It was found that antibiotic-resistant *Proteus* spp. was inhibited when either clove extract (10 μg/mL) or eugenol (5 μg/mL) was combined with tetracycline. However, there were synergistic effects observed from clove oil or eugenol on *Klebsiella pneumoniae* and *Enterobacter aerogene.* The inhibition of *Proteus* spp. occurred at low concentrations of both eugenol and clove oil, indicating a low toxic threat to humans (Nascimento et al., 2000).

Future Research

Future research should focus on testing other species of bacteria, gram-positive and gram-negative and to make sure the same plant extracts are used with the same chemical composition. Additional trials of the above experiment will help strengthen the findings of this experiment. More plant extracts should be investigated to determine their antimicrobial properties against *S. marcescens*. During these experiments, a larger number of ten-fold dilutions should be used to find the exact concentration at which the plant extract has its greatest anti-microbial activity. Once the concentration of the plant extract is determined, experiments should be carried out to determine the toxicity to humans, to see whether the plant extract could be consumed. Antibiotic-resistant strains of *S. marcescens* should be tested with the plant extracts to observe if inhibition of growth occurs.

Bacterial adhesion to human cells is another main problem in bacterial infections. Disruption of adhesion of bacteria by plant extracts should be investigated to see whether they have the ability to not only cure infections but also prevent them from happening. Investigation into all these areas could lead to a new era of therapeutic treatment using plant extracts versus synthetic antibiotics (Cowan, 1999).

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Section III:
The Social Sciences

Cosmopolitanism and Global Justice

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Given that the idea of cosmopolitanism is, more or less, the idea that each of us are citizens of a single global community of human beings, it follows naturally that this mindset would be of importance in attempts to achieve global justice. This study will explain how the traditional normative understanding efforts fall short of achieving this goal and will lay out an alternative understanding characterized by a looser cognitive conception. Given the wide variety of meanings the term "global justice" can have, this study will take a very narrow definition, in this case distributive justice necessary for a healthy life, in hopes of finding a realistic and pragmatic solution. Upon reviewing existing literature and postulating my own theory, I will examine how this new mindset might actually play out in hopes of achieving this very specific form of global justice.

I. Introduction

The rapid technological advances that has given rise to the increasingly significant trend of globalization has led to a global society that is more interconnected than at any other point in history. Accordingly, political theorists and philosophers are working diligently to keep up with the times. It is the growing presence of the idea of globalization that has led these theorists and philosophers to consider the theory of cosmopolitanism. This term, which has a wide variety of meanings (that will be discussed in much detail later), more or less refers to the idea that we, as individuals, are part of a global community of human beings, and that each human has individual rights which ought to be respected. It is natural, then, that this worldview might provide the framework for working towards a realistically attainable goal of global justice—another term which has a plethora of definitions that will be discussed further.

In this study, I seek to examine cosmopolitan ideology and how it can be successfully harnessed to achieve global justice. For the purposes of this study, I use a very narrow aspect of global justice to work toward. This is a practical measure, aimed toward truly achieving a realistic goal, as opposed to waxing poetic about a

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comprehensive global order in which all citizens are truly equal in every way. To this end, I will focus on the goal of eradicating the type of global poverty that leaves human beings unable to live healthy lives.

This study will briefly examine the history of cosmopolitan thought, building toward the most common understandings of contemporary theorists. The trouble with traditional conceptions of cosmopolitanism is, primarily, a basis on normative principles that, at worst, directly contradict stated policy goals. These normative principles focus too heavily on ideal conceptions of how we ought to act in an ideal world, and too little on realistic avenues toward justice. They serve as the primary source of contention with theorists who oppose cosmopolitan theory, and rightfully so.

I contend that these normative principles, which are difficult to both follow and defend, are holding cosmopolitan ideology back and should be foregone. Cosmopolitanism has a great deal of utility to offer the world community, and normative conceptions serve only to muddy the waters and invalidate the entire ideology. Fortunately, there is a conception of cosmopolitanism that can survive without a strong normative component. This conception, the roots of which are set forth by sociologist Gerrard Delanty, can be termed a looser, cognitive conception. That is, instead of viewing cosmopolitanism as a set of rules that determine how to act, it will be viewed as a cognitive process that individuals experience as they interact with their world. Indeed, it does insist that individuals be open to belonging to a global society, but it does not beg that one prioritize national, global, or local communities over one another. Rather, it posits a "self-understanding that arise when both Self and Other are transformed," (Delanty, 2009, p. 11) in all of these communities. In doing so, it escapes the trap laid by strict normative principles, and allows individuals to fairly assess any given situation by focusing on the dialogic interactions presented. If global justice is to be achieved, then we must shift away from our traditional normative conception of cosmopolitanism toward a looser cognitive conception.

Operating on Our Own Terms

Defining global justice

In his 2011 article, "Achieving Global and Local Justice," Michael Walzer introduces his groundwork for how he supposes we ought to achieve global justice by giving the following disclaimer: "The issues are very difficult, and perhaps it is useful to approach them in different ways, at different times. Here is one possible approach" (p. 42). It is in this spirit that I present my own argument. I do not argue, nor do I wish to,

that what is laid out in this study will be a framework that will necessarily be useful in fifty or one-hundred years. Instead, I seek to put forth a single approach that has been tailored very specifically to the world as it exists today. To this end, I want to recognize outright that the scope of this essay has been intentionally and deliberately limited. Walzer goes on to state that "Global justice would seem to require a global theory—a single philosophically grounded account of what justice is that explains exactly why it ought to be realized in exactly this way, everywhere. . . But there are several practical difficulties with this project" (p. 42). In this spirit, my study will not seek to lay out a comprehensive global theory of justice with the aim of achieving, to use John Rawls' term, a "realistic utopia." Instead, I will focus pointedly on achieving merely a subset of the far-reaching category of human rights.

The reason for a conservative approach to the subject matter is out of practicality. My hope is that this essay not serve the purpose of setting forth a global ideal that is far from reality, but that it can outline a means of actually attaining a narrowly-focused goal. As Thomas Pogge (2005), who is arguably the most important cosmopolitan scholar, points out: "The annual death toll from poverty-related causes is around 18 million, or one-third of all human deaths" (p. 1). The reality here is that while the sorts of civil and political rights that are present in nearly every discussion of global justice are important, they should not be considered the top priority. (To be sure, I want to emphasize here that in order to achieve a true sense of comprehensive global justice, each person needs to be free from what can be unilaterally conceived as oppression.) The focus here needs to be on simply accomplishing step one, which in this case is ensuring that humans are not dying simply because they cannot afford to live. Without life, it does not particularly matter if one lives under an oppressive regime. In the terms of Henry Shue, as paraphrased by Simon Caney (2001), "if we accept civil and political rights we should also accept substance rights as well since the latter are essential for the former" (p. 978). Given that a realistically narrow scope is sought, and that the most basic human right is right to live, this study will focus on global distributive justice—seeking the goal of subsistence for all—as its sole objective.

Defining cosmopolitanism

Thomas Pogge (2012) explains that "Like other -isms, *cosmopolitanism* is an intellectual position—or, more precisely, a family of such positions" (p. 312). It is natural, then, that the term itself is not particularly useful without establishing context for its use. While Pogge (2012) maintains that "The central idea . . . is that of *including all*

human beings as equals" (emphasis his, p. 312), it is often described in even less specific terms. That is, the central tenet of cosmopolitanism is that all human beings belong to a global community. It follows, then, from this concept into the understanding of all human beings as equals. For the purposes of this study, if it not otherwise stated, it is the loose conception of humans as members of a global community that will be denoted by the term cosmopolitanism. As will be evidenced, there are many different understandings of the term, each of which have strengths and weaknesses. In order to understand what it means today, it is natural that we should trace its origins, leading to a discussion about its current incarnations and where it goes right and wrong.

Looking Back

The origins of cosmopolitanism

Though globalization is often thought as an exclusively recent trend, and large contributor to the idea of cosmopolitanism, the roots of cosmopolitanism date back to ancient Greek society. The word itself is a product of the Greek words *cosmos*, meaning world, and *polites*, meaning citizen (Pogge, 2012, p. 312). The word itself is "generally first attributable to Diogenes the Cynic, (*c.*412-323) who said 'I am a citizen of the world'" (Delanty, 2009, p. 20). A century later, Stoicism gave rise to a more explicitly political understanding before the Roman Empire brought on a more literal expansionist connotation. The middle ages built on the literal expansion through the teachings of Christianity, which prevailed until the Enlightenment (Delanty, 2009, p. 21-29). While there were a handful of thinkers, such as David Hume and Abbé Charles de Saint-Pierre, who put forth early models for peace that embraced cosmopolitan principles, Immanuel Kant is generally regarded as the father of contemporary cosmopolitanism (Delanty, 2009, p. 31). In his 1795 work, "Perpetual Peace," Kant outlined his theory that history was building toward a common republican world order, drawing heavily on moral principles of how the state ought treat its citizens, and that all citizens of the world are entitled to such treatment. While Kant is undoubtedly considered responsible for ushering in a new era of cosmopolitanism, the rise of nationalism through the following centuries would mark a trend of decline that was not revitalized until globalization became a significant global force.

Pogge's Cosmopolitanism and its Problems

His theory

There are many prominent cosmopolitan scholars—such as Charles Beitz, and Martha Nussbaum—but there is none who argue the point as strongly and passionately as Thomas Pogge. This section will specifically examine his argument, in order to properly asses its relationship to other thinkers. To this end, it will be necessary to quote his work at some length in the following pages. As mentioned earlier, in his chapter in *A Companion to Contemporary Political Philosophy* (2012), simply titled "Cosmopolitanism," Pogge explains his understanding that "The central idea guiding these morals assessments and prescriptions [that make up cosmopolitanism] is that of *including all human beings as equals*. This central idea can be understood and employed in diverse ways, and a variety of cosmopolitan positions can therefore be distinguished" (p. 312). Within this variety of cosmopolitan positions, he maintains that there are three elements shared by all:

> First, *individualism*: the ultimate units of concern are human beings, or persons—rather than, say, family lines, tribes, ethnic, cultural, or religious communities, nations, or states. . . . Second, *universality*: the status of ultimate unit of concern attaches to every living human equally—not merely to some subset, such as men, aristocrats, Aryans, whites, or Muslims. Third, *generality*: this special status has global force. Persons are ultimate units of concern for everyone—not only for their compatriots, fellow religionists, or such like. (1992, p. 48-49)

In later works, he narrows these criteria even further, emphasizing his first point as "*Normative Indidivualism*," and adding a fourth breaking the category of universality into two parts, namely "Impartiality" and "All-Inclusiveness" (2012, p. 316) He defines the new categories as follows:

> *Impartiality*: In processing [information about how individual human beings fare or are treated], a cosmopolitan moral criterion takes each included human individual into account symmetrically. Economists call this the Anonymity Conditions: that a certain number of included individuals experience a certain fate or treatment enters the assessment in the same way, regardless of who these individuals are.
>
> *All-Inclusiveness*: Every human being counts as an ultimate unit of moral concern and is therefore included in the information base on which a

> cosmopolitan moral criterion bases its assessments and prescriptions. (2012, p. 316)

Furthermore, he also confirms two more distinctions that David Miller—one of his notable critics—sets forth:

> *Weak cosmopolitanism* is the anodyne view that all human beings are of equal worth. *Strong cosmopolitanism* is the view that all human agents ought to treat all others equally and, in particular, have no more, or less, reason to help anyone needy person than any other. (2002, p. 86).

Additionally, he approves of the claims which Miller makes about these two distinctions:

> 1. *Weak cosmopolitanism does not entail strong cosmopolitanism.*
> 2. *Strong cosmopolitanism is false*.
> 3. *Weak cosmopolitanism is undistinctive in the sense that almost anyone* ('barring a few racists and other bigots') *accepts it.* (2002, 86).

As will be discussed later on, these recognitions that Pogge makes in light of his critics do not altogether jive with the rest of his writing.

Of particular relevance to this study is Pogge's classification of "*social justice cosmopolitanism*," which he classifies as a conception of social justice that is "based on taking equal account of the interests of all human beings" (2012, p. 313). Much of Pogge's theories on how to rectify global injustice call to focus on the institutions that he feels are perpetuating—if not, creating—drastic global inequality. He argues that each of us "share a collective responsibility for the justice of the existing global order and hence also for any contribution it may make to the incidence of human rights violations" (1992, p. 53). To this end, he singles out not only those directly perpetuating the institutions that make the global order unjust, but implicates all citizens as bystanders.

His critics

There are, of course, many different arguments those who oppose Pogge and his brand of cosmopolitanism make—as there would be for any scholar who is outlining the defining argument for any particular ideology. However, the strongest criticism challenges Pogge's cosmopolitanism criteria of *Universality*, later divided into *Impartiality* and *All-Inclusiveness*. The trouble with laying out such broad normative principles is primarily that it seeks to paint complex relationships in shades of black and white in a reality that has few such cases. At the heart of this argument lay issues of loyalty and moral desert. While David Miller may have conceded that *weak cosmopolitanism* is anodyne, he is not willing to make the leap and say that its direct

alternative is any better. Indeed, in response to these charges Pogge himself declared *strong cosmopolitanism* "righteous idiocy" (2002, p. 89). The most glaring issue with this need to find the middle ground is that Pogge admits that we must, then proceeds to do little to no work toward this goal. First, however, we will examine the validity of challenges to *Universality*.

Questions of loyalty

Much can be made of how a particular scholar defines cosmopolitanism. Pogge's ardent brand leaps directly to his principle of equality. Charles Beitz states that

> a cosmopolitan perspective is, at least, a perspective that seeks to encompass the whole world. But cosmopolitanism is sometimes regarded, not only as a point of view, but also as a substantive moral and political doctrine that can be expected to yield distinctive prescriptions for policy. This can lead to trouble. (2004, p. 15).

Beitz's framing of cosmopolitanism as such makes entirely evident his concerns about normative principles, yet leaves open the possibility for them to be effective in proper circumstances. Samuel Scheffler, (1999) noted critic of brands cosmopolitanism such as those of Martha Nussbaum and Thomas Pogge, defines "cosmopolitanism about justice" (as opposed to 'about culture') as being "opposed to any view that posits principled restrictions on the scope of an adequate conception of justice. In other words, it opposes any view which holds, as a matter of principle, that the norms of justice apply primarily within bounded groups comprising some subset of the global population" (p. 256.) Simply by his language, namely listing rules in the negative sense (i.e. "opposed to any view") and its implications across broad categories (i.e. "some subset"), he is framing these rules as too restrictive. At the heart of Scheffler's concern is the apparent inability to reconcile these rules with questions of loyalty. While nationalism is typically the ideology that appears to be at odds with cosmopolitanism, it is not limited to these two positions here. Scheffler poses his question as such:

> What kinds of reasons can one have, compatibly with one's status as a world citizen, for devoting differential attention to those individuals with whom one has special relationships of one kinds or another—either relationships that are personal in character or ones that consist instead in co-membership in some larger group. (1999, p. 259).

Pogge would seem to answer this question with simply a "yes" and do little to elaborate, other than to seemingly concede this point without changing any of his views. Martha Nussbaum takes a different approach. She argues in the Stoic tradition that there are

concentric circles of citizenship, starting with the local and working its way out toward the global community. She states: "Our task as citizens of the world will be to 'draw the circles somehow toward the center'" (1996, p. 9). She identifies that the primary objection to a *strong cosmopolitan* argument "is not that the local is better *per se*, but rather that this is the only sensible way to do good" (1996, p. 135). As Scheffler summarizes: "Rather than attempting to divide one's attention equally among all the children of the world, for example, one should devote special attention to one's own children, but only because it is the most effective way of allocating one's benevolence" (1999, p. 259). Scheffler continues on to demonstrate his point convincingly:

> Since certain kinds of relationships—to put the point paradoxically—cannot exist at all unless the participants value them, and since the participants cannot value them without seeing them as providing reasons for equal treatment, certain kinds of relationships cannot exist at all unless they are seen as providing reasons for unequal treatment. (p.266).

In an admittedly extreme example, Pogge's vehement critic Uwe Steinhoff insists that "one definitely does not owe equal respect to one's nice sister and to her rapist" (2013, p. 329). While at first glance this example seems to be easily brushed off by asserting that one who violates human rights in such a blatant way may sacrifice their own claim to such rights, it validly identifies complex relationships which Pogge and the like cannot seem to explain.

Pogge and Nussbaum are not writing for the real world, but rather for the ideal world that ought to be. In doing so, both are downplaying the significance of legitimate questions of loyalty. By making concessions, they render their own arguments extremely weak. While Nussbaum's argument in regards to how to practically allocate one's benevolence, she is making exceptions to an admittedly difficult rule. Similarly, Pogge gives the example of efforts to find a missing girl and moral reasons to help. Pogge concedes that "my moral reason to help find the child depends on my relationship to her: I have more moral reason to volunteer when she is my daughter or niece than when she is a stranger—surely. When she is a stranger, then perhaps I also have more reason to volunteer if she is a fellow citizen or fellow resident" (2002, p. 87). He then goes on to draw attention toward his conception of important negative duties (i.e not to "collaborate in imposing an unjust institutional order" and not killing any world citizen, regardless of loyalty [p. 87-88]), without reasonably justifying his differing conceptions of positive actions. In regards to the question of giving some preferential treatment over another, he argues that "it is not a problem . . . so long as you do not, thanks to your special

relationship with [one], owe less to [another] *than you would have owed her otherwise*" (2002, p. 90). This is problematic because it begs the question of how we can reconcile owing preferential treatment to one and not another.

There is, to my mind, only one way to understand these contradictions. Simply put, if even the most fervid advocate for these rules is willing to make exceptions, there must be a problem with the rules. In this case, the problem is that the rules exist at all. That is, that Pogge and others are trying to apply normative principles where they cannot possibly be expected to be followed. Even if we concede that there are legitimate reasons for breaking some of the rules, they remain difficult to follow. In this sense, normativity itself, which is defined by Steve Buckler (2010) as "thinking [that] typically invokes principles with respect to how we should conduct and organize ourselves; [and] as such, seeks to provide 'norms' that prescribe appropriate ways of acting individual and collectively" (p. 156).

Charles Beitz argues that "the feeling[s] that I have obligations to compatriots simply because this is *our* country . . . are real and that they are primitive in the sense of being irreducible to feelings with a basis either in impersonal morality or self interest" (1983, p. 599). To cast these feelings aside, or to justify them via a loophole in the theory of cosmopolitanism is not a satisfying reconciliation to this direct affront to Pogge and others' claims of *Universality*. Furthermore, each attempt to allow for an exception to the rule will only lead to further objections, as can be found in the above explanations. My solution to this problem, as will be elaborated further, is to shift away from normative roots altogether toward a cognitive conception of cosmopolitanism that allows for various loyalties without placing priority over one another.

In Defense of Cosmopolitanism

At this juncture, I feel it is pertinent to reiterate my holding that cosmopolitanism is a critical component in achieving basic substantive global justice as I have outlined here. I do not wish to convey the notion that the theory is inherently flawed and not worth embracing in any sense, but simply that normative principles are complicated to the point of hindering any real cosmopolitanism progress. I shall here examine the better parts of the theory as it has been outlined by others, starting with the man that so many draw on when forming cosmopolitan theories: John Rawls. Let it be clear: Rawls did not promote cosmopolitanism as we have discussed here. Indeed, his brand of political liberalism explicitly draws on sub-units of society. While he rejects nation-states as the important unit, as evidenced by the title of his 1999 work *The Law of*

Peoples (not, it should be pointed out, 'The Law of Nations'), many of the principles he lays out are drawn upon very heavily by cosmopolitan thinkers.[2] This makes sense not only because his rejection of states, but because of the values he places on individuals within "peoples." In *The Law of Peoples*, he outlines eight basic principles which make of the Law of Peoples, the most notable of which, for our purposes, are numbers six and eight: "6. Peoples are to honor human rights. . . 8. People have a duty to assist other peoples living under unfavorable conditions that prevent their having a just or decent political and social regime" (p. 37). In regards to honoring human rights, he elaborates:

> The list of human rights honored by both liberal and decent hierarchical regimes should be understood as universal rights in the following sense: they are intrinsic to the Law of Peoples and have a political (moral) effect whether or not they are supported locally. That is, their political (moral) force extends to all societies, and they are binding on all peoples and societies, including outlaw states. (p. 80)

It is from this line of reasoning that Pogge draws his condition of *generality*. It is also from Rawls that Pogge draws his conception of obligation. Rawls posits that that peoples have a duty to serve those "living under unfavorable conditions," much like Pogge argues in favor of *All-Inclusiveness*. The principles Rawls sets forth guide nearly every theory of cosmopolitanism, and indeed begins to frame these global issues of justice in a favorable mindset, even if the Rawlsian principles—which he describes as having a place in a "realistic utopia" (pp. 11-23)—are used to create less-than-functional normative principles of cosmopolitanism.

Furthermore, my issue with Pogge and his like-minded scholars is primarily with their means—not their ends. That is, they are using cosmopolitanism to try to achieve worthy goals. I simply cannot see how their methods to attain the goals can be fruitful. Pogge, for instance, is particularly passionate about eradicating the crippling world poverty that kills 18 million people each year. Nearly all of his work that discusses cosmopolitanism, with rare exceptions being responses to the work of other academics, draws conclusions by using this exact case study. The goals of cosmopolitanism are certainly noble, and not without warrant. Indeed, it is difficult to imagine the world's

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[2] Of the sixteen articles and three books—not all of which ended being cited here—(not counting Rawls' own *Law of Peoples*, all but three directly cite Rawls. The three that did not were short articles by Thomas Pogge—Rawls most notable pupil—that were in direct response to an article written by a different author, mainly those challenging Pogge's views.

privileged peoples working toward ending the suffering of others without some sort of notion that they are all citizens of a global community.

Concluding Review of Existing Literature

To this point, I have outlined the basic tenets of cosmopolitanism, particularly the brand that Thomas Pogge has presented, and its strengths and weaknesses. I hope that I have effectively demonstrated why normative conceptions of cosmopolitanism fail to provide a realistic framework in a complex world. While any conception of cosmopolitanism is likely to contend that we are all citizens of a global community, it is much more difficult to defend the notion that we must treat each human precisely equally, particularly in regards to compatriots versus strangers from far away. It is natural that there will be some personal relationships that we value over that of a foreign stranger, and it is difficult to reconcile this with far-reaching normative principles. As Scheffler claims, if there is "the need to choose between equality and special responsibilities, consistent liberals must choose equality, and must therefore end up as extreme cosmopolitans" (1999, p. 264). The theory of cosmopolitanism I have yet to outline avoids this normative trap, and allows for complexities. In order for my theory to make sense, however, we must examine the data surrounding the issue of global justice as I have framed it.

II. Methodology

As mentioned earlier (in the section titled Defining global justice), my definition of global justice in this study is quite narrowly limited. In this instance, I seek to view the effect of cosmopolitanism on global distributive justice on merely a very basic level of subsistence. I have selected this issue for a variety of reasons. First, as mentioned previously, before one can even begin to worry about political rights and living a happy life, one needs to simply live. Second, as Walzer (2011) points out, "it is the poor who suffer most from every other kind of disaster" (p. 43). Overcoming crippling poverty has tremendous effects not only on health, but in enduring many other hardships. Third, my hope is that this study could actually be of some use in today's society. I do not hope to set a paradigm that will redefine how we view justice for the rest of civilization. I hope to tackle a tangible and feasible goal. For this reason, my study is very limited in nature, and will need to be reexamined should basic global distributive justice be achieved. I will review the state of global distribution as it stands, and then move on to demonstrate how my theory of cosmopolitanism will rectify the injustice that is present in the world.

III. Data

As Thomas Pogge is quick to point out, one third of all human deaths—18 million—are due to poverty-related causes (2005, 1). According to the World Health Organization, as of 2014 women in high-income nations have a life expectancy that is nearly 20 years longer than women of low-income nations (2014, p. 7). Pogge (2008) continues his recounting of statistics:

> Official estimates show 830 million humans chronically undernourished, 1,100 million lacking access to safe water, and 2,600 million lacking access to basic sanitation. About 2,000 million lack access to essential drugs. Some 1,000 million have no adequate shelter and 2,000 million lack electricity. (p. 72).

As Dr. Steve Snow always points out when covering topics that involve high death tolls, we as humans cannot conceive of the realities of numbers in the millions. We are cognitively unable to understand just how large the number 18 million people dying per year—let alone Pogge's obscure characterizations of 2,600 million without sanitation—truly is. To his point, no matter how shocking these numbers may feel to us, the situation is inevitably worse than we can imagine. What is even more shocking is how little the amount of money that can make a world of difference is. Pogge (2008) points out:

> The aggregate shortfall from the World Bank's $2/day poverty line of all those 40 percent of human beings who now live below this line is barely $300 billion annually, much less than what the United States spends on its military. This amounts to only 0.7 percent of the global product, or less than 1 percent of the combined GNIs of the high-income countries. (p. 73).

The point that Pogge builds toward, and is entirely convincing in making, is that "With our average per capita income nearly 180 times greater than that of the poor (at exchange market rates), we could eradicate severe world poverty if we chose to try," (2005, p. 1) and that "It is for the sake of trivial economic gains that national and global elites are keeping billions of human beings in life-threatening poverty" (2008, p. 73). Given this examination of the data, and even ignoring Pogge's moral charge as to why these funds have not been reallocated, it is entirely obvious that eradicating, or—more simply—greatly reducing, severe world poverty is a truly achievable goal. The question now becomes: how do we get citizens of the world to try?

IV. Discussion

Achieving Global Justice

In *The Law of Peoples*, John Rawls writes that "one should allow, I think, a space between the fully unreasonable and the fully reasonable" (p. 74). My hope is to find the middle ground that he allows for, and determine how it can be of use. In this endeavor, the notion from the previous section (of how relatively small the effort needed to bring about drastic change in global poverty levels is) is of critical importance. While taken at its face, the number $300 billion may seem a staggering number. Yet, in the context of a global economy, it seems barely a drop in the bucket. Therefore, we do not need an expansive overhaul of the system, merely a slight shift in fund allocation. To this end, the brand of cosmopolitanism that I am about to set forth need not even be adopted by every citizen in the world, but merely by some of the small fraction who have the type of power and resources to affect fund allocation. (I would, of course, prefer that each person in the world look through the lens of cosmopolitanism as I frame it. I just seek to point out that for practical purposes, this is not necessary.)

It is at this point that I will begin to lay out exactly how I recommend cosmopolitanism be adapted from a strict set of normative principles to a looser cognitive conception. For all of my hooting and hollering against normative principles, I find it imperative to set forth a single basic criterium that will lay the foundation for the rest of my theory. My defense of this decision is two-fold. First, this study must be, at its core, a policy paper. Any effort to set forth tangible policy that is lacking any sort of normativity, which you will recall Buckler (2010) defined as "prescrib[ing] appropriate ways of acting," is a hopeless endeavor. Moreover, for this study to achieve its goal of being a practical tool, some sort of normative instruction is necessary. Secondly, the normative principle I set forth has none of the complexities or contradictions that are characteristic of most cosmopolitanism principles. In fact, it has been described by even the harshest critics of cosmopolitanism as "anodyne" and accepted by "almost anyone" (Pogge, 2002, p. 86). Namely, that all human beings are of equal worth and consideration. Without this principle, and a willingness to consider the worth of even strangers one has never met or seen tangible relations to, cosmopolitanism has no value whatsoever. So, in order for my theory to operate, I must rely on this single normative principle.

From here, I draw heavily on Gerard Delanty's theories of cosmopolitanism. In his book *The Cosmopolitan Imagination* (2009) and his 2014 article "The Prospects of Cosmopolitanism and the Possibility of Global Justice," he sets forth a unique way to

view the ideology which has been central to this study. While his logic and reasoning is extremely compelling, it is very much limited by his position as a sociologist. He puts forth that

> While cosmopolitanism has become influential within normative political theory, it has been taken up in a different guise in disciplines such as history, sociology, anthropology and cultural studies where the tendency has been towards a more situated or rooted understanding of cosmopolitanism as always contextualized. (2009, p. 3)

In creating my own theory, I seek to apply some of his principles through the lens of a political scientist while creating a comprehensive framework suited to the task at hand.

Delanty's Theory

I shall first present Delanty's theory as he has framed it, necessarily citing him at some length, then move on to altering and applying it to fit our needs. He terms his distinctive approach as *critical cosmopolitanism*, and states that:

> Rather than seeing cosmopolitanism simply as an ideal, as is indicated by the title of this book [*The Cosmopolitan Imagination*], the cosmopolitan perspective requires a particular imagination. . . The basic view of cosmopolitanism taken in this book is that it is rooted in two contexts: a new definition of social reality of immanent possibilities and a conception of modernity that emphasizes its multiple and interactive nature. (2009, p. 6).

It is Delanty's notion that "the cosmopolitanism imagination is both an experience and an interpretation of the world" (2009, p. 6) that has profoundly influenced my theory. He goes on to outline the sort of "experience" and "interpretation" to which he refers:

> First, any analysis will have to take as its starting point the context of the local and in particular major national, regional and civilizational traditions. Second, the impact of the culture of the Other ranging from the influence of other nations to global forces, must be brought to bear on the analysis of the self. In addition to this interplay of the local and the global by which Self and Other interact, there is also the cosmopolitan dimension of ways of thinking, cognition and feeling that derive neither from the native culture or the culture of the Other, but from the interaction of both. (2009, p. 10)

While here he is referring to how the Self interacts with culture, I will later outline how this cognitive process is entirely applicable to conceptions of justice.

The last point of vital importance to understanding Delanty is his position on cosmopolitan citizenship. He defines citizenship "in terms of rights and duties. The classic rights of citizenship are political rights . . . civic rights . . . and social rights," the last of which encompass the category of healthcare and general protection which are importance here. He goes on to write that "These rights are underpinned by duties" to serve others (2009, p. 118). For him, "A cosmopolitan political community does not have to rest on an underlying cultural community" (2009, p. 127)—a point of contention that has not been discussed up to this point, primarily consisting of concerns over whether a single prevailing homogenous sense of a single global culture is a necessary component of cosmopolitanism. Moreover, he argues that "cosmopolitan citizenship is to be understood in terms of a cultural shift in collective identities to include the recognition of others" (2009, p. 127). In this sense he does not want to undervalue the local level of cosmopolitan citizenship

> since it is on this level that some of the major political struggles take place and it is the site of the voice of the global poor. We thus speak of cosmopolitan citizenship as opposed to global citizenship to capture this sense of the local global dimension" (2009, p. 127).

While recognizing the value of local citizenship, he makes definitively clear his position that we have obligations to communities beyond local municipalities and nations. I agree whole-heartedly with Delanty in his condemnation of holding the position that "only cohesive national communities are real and we have no obligations beyond the borders of nation-states" (2014, p. 216). As will be made evident in the next section, this grasp of the importance of the local in a global context plays a vital role in finding a viable cosmopolitan theory.

Cosmopolitanism as a Cognitive Dimension

The most attacked tenet of classic conceptions of cosmopolitanism is the claim of *Universality* or *All-Inclusiveness*. The beauty of my theory is that it does not require prioritizing different notions of community amongst one another. To this end, the single principle which I insist on adopting—that all human beings are of equal worth and consideration—seeks no further priority than mere consideration. Based on Delanty's understanding of cosmopolitanism as a cognitive process, I argue that cosmopolitanism as fits the realm of political science should also be understood as a cognitive process based on interactions with the Others of the world. That is, when an individual is faced with a decision, particularly those that have direct impacts on citizens around the globe,

they will assess what is in the best interest of all parties involved. Taking solely the principle of equal consideration, it is natural, then that the rights of those who fit the identity of Other will be taken into consideration. This cognitive moment makes no moral judgement as to which community ought to take priority in this instance. That is, I envision each individual as belonging to multiple societies, and making rational decisions within these societies. I reject Nussbaum's insistence that we conceive of concentric circles, and focus primarily on the local, but instead argue that there can be no hierarchy of relationships. In Delanty's words, "a cosmopolitan position involves the recognition of differential levels of obligation and membership" (2014, p. 217). Instead of insisting that, when making impactful decisions, one must act exclusively in the interest of the entire global community and not in the interest of their national or local community. Merely, the stage is set for a rational assessment of which community has the greatest needs in a particular instance and how one can help meet those needs. To this end, I take no issue with placing loyalty to a particular subset of the global community. It is rational that loyalties will vary from one individual to another in the unique situations they will face. So long as all individuals are given equal consideration, there will inevitably be times that the global community to which one belongs will take precedent.

Some may argue that this position is unrealistic, due to human nature as being primarily self-interested, and will select to serve only their most immediate community. While this is in itself an entirely contentious position, the validity of this statement is not relevant this instance. We will recall that my theory does require adopting the mindset that all individuals are of equal worth and consideration and calls for an honest assessment of the needs of all. If we are truly to extend equal consideration to all the citizens of the world, the position begins to seem less anodyne, and instead an impactful perspective. Given the nature of cosmopolitanism as a cognitive process, the 'cosmopolitan moment' is that in which one views the world as it is presenting itself (the Other) and how one prioritizes their needs in regards to oneself. Delanty writes that "Cosmopolitanism is centrally about learning; it is about how the moral and political horizons of individuals, groups, the public in general, societies are broadened through the capacity for connectivity" (2014, p. 218). The cognitive dimension I envision embraces this understanding heartily, and recognizes that any decision that is made that has ramifications for the global community is likely to occur in a moment in which new information is presented. The hallmark of this process is the recognition of the global society of one worth considering.

Applying the Cognitive Dimension

Much of the debate over various conceptions of cosmopolitanism, which has been largely ignored in this study due to its nature as normative, and therefore problematic, pertains to who ought to be primary actors in taking action toward achieving global justice. Those who do not embrace the notion of downplaying the role of states in a global cosmopolitanism community will argue, as Rawls does, that it is the duty of the subdivisions of society—"Peoples" in Rawls case, and primarily nation-states in others. Alternatively, thinkers such as Pogge stress the importance of NGOs and those within these existing and not state-driven structures. Another beauty of my theory is that it does not call for one over the other. Individuals, as they work in NGOs or national governments alike, will experience the cosmopolitan moment in assessing how to take action.

To this end, individuals within a national government, when allocating a budget, will consider what is in the best interest of various communities, including the global community. In giving at the very least equal consideration to the citizens of the world who live on less than two dollars per day—and giving this consideration in a serious sense, not simply a petty or partisan discussion on the role of government, but truly assessing what is in the best interest for each of the communities they consider,—these national governments will inevitably allocate a larger portion of funds toward alleviating world poverty. Given that the funds needed to make up the gap that holds the worlds poorest below $2/day is "much less than what the United States spends on its military" (Pogge, 2008, p. 73), it would take relatively little effort from the world's wealthier countries to make up this shortfall. This does not even take into account the various individuals who are making decisions within NGOs, or individuals taking personal philanthropic action. As mentioned earlier, the small nature of this gap is what enables this theory to remain operative. Were the gap unable to be made up incrementally as I have argued, there would necessarily be a more major overhaul of the prevailing global network. Though it may seem simplistic at its face, a global understanding of cosmopolitanism as a cognitive phenomenon would pay huge dividends in aiding the plight of those in severe poverty globally. To that end, the goal of achieving substantive global distributive justice is entirely attainable.

V. Conclusion

Michael Walzer wrote in his 2011 article that his relevant principle contends that "whoever can, should" (p. 45). The question of cosmopolitanism can be framed as asking

whoever can, should, for whom? Given the complexities of local communities, let alone a global community, normative principles serve largely to trap individuals into not knowing how to prioritize loyalty. For while the principles insist that each citizen be treated precisely equally, exceptions are made for various reasons that render the guidelines contradictory and messy. By viewing cosmopolitanism through the lens of a cognitive moment, as opposed to normative, one escapes these difficult questions of loyalty. By recognizing that each new interaction is an opportunity to view the world in a new light, and by giving each citizen at least equal consideration, one is able to fit into the global community without being asked to give up other loyalties or questions whether the decisions they make are 'allowed.' Delanty's *critical cosmopolitanism* argues that change comes from clashes between opposing viewpoints, and the results from the clash between nationalism and globalization. It is this cognitive moment of reconciling opposing viewpoints that is of such importance. In this moment, individuals are challenged to reconcile the interests of various communities to determine what is in the best interest of each.

To this end, my theory lends itself perfectly to achieving the most basic goal of global justice, which I have identified as raising the world's most poor out of poverty to the point that is no longer killing them, and in turn responsible for a third of the world's deaths. By embracing the cognitive moment of cosmopolitanism and giving equal consideration to all of the world's citizens, decision makers serving in various positions—national, local, global, or not fitting any one of these descriptions—will be challenged to consider the Others of the world. In doing so, it is inevitable that more resources will be devoted to help the plight of the world's severely poor. As previously identified, this theory is only designed to be applicable to this specific problem in today's specific world. Should the goal of distributive justice as defined here be achieved, it will be time to reassess this theory and adapt it toward a new goal. I look forward to it.

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Section IV:
Critical Essays

The Preservation of van Gogh

Casey Schweiger (Theatre/Speech)[1]

On the twenty-ninth of July, 1890, Vincent van Gogh passed away by his own hand at the age of 37. Practically unknown to anyone outside his circle of fellow artists and a few family members, it was likely that his name would be forgotten. Fortunately for Vincent and for all of us who study and admire his work, his family and friends decided to grant his work the recognition it deserved. Those most responsible for preserving van Gogh's memory were his sister-in-law, Johanna van Gogh-Bonger, and his friend and fellow artist, Emile Bernard. These two individuals, aided by family and friends, shared van Gogh's work with the world. They are responsible for raising him from obscurity to his rightful place as one of the most recognizable personalities in the history of art.

The earliest attempts to establish van Gogh as a prominent artist were made by his brother, Theo, and their mutual friend Emile Bernard. As early as 1889, while van Gogh was a patient at St. Paul's de Mausole in S. Remy, Bernard sent copies of their correspondence to the magazine *Le Moderniste* for publication. The magazine was headed by the critic Albert Aurier. Soon after, Aurier would be the first critic to formally review van Gogh in his 1890 article "Vincent van Gogh: Les Isoles". The letters submitted by Bernard were never published by the magazine ("Publication History").

Van Gogh's death left Theo unspeakably heartbroken and inevitably quickened his own demise. Shortly after his brother's passing, Theo endeavored to set up an extensive memorial in the form of a gallery show. Theo explains in a letter to Emile Bernard that his proposal for an exhibition was rejected by the father-and-son firm Durand-Ruel. Ruel Sr., who had initially expressed some interest, but decided that showing Vincent's work would not be lucrative choice for the firm, and therefore was not worth their time (Stein 235). In response to that rejection, Theo decided to display Vincent's works in the Paris flat he shared with Jo and their baby, Vincent Willem. Much to his dismay, Theo felt he was unable "to arrange them together as to give a coherent sense of his oeuvre", and reached out to Emile Bernard. A letter from Theo to Bernard

[1] Written under the direction of Dr. Laura Morowitz for AH321: *The Madman and the Savage*.

dated 18 September, 1890 reveals the motivation behind Theo's request. He tells Bernard, "When I saw in Auvers (at Vincent's funeral) how capable you were at such arranging (of Vincent's pictures), I had already gotten the idea of asking you for your help when the time came to organize and exhibition." Theo goes on to explain that the planned exhibition had been relocated to his own home and asks Bernard simply, "In short, could you please give me a hand?" (Stein 236).

Naturally, Bernard was eager to help his friend. He recounts the initial in-home exhibition in the preface to his collected correspondence with Vincent, which was published in 1911, and will be discussed later. He writes, "The hanging was completed in no time. He [Theo] left everything up to me." Bernard explains that the reason his hanging was so successful was that he had "not left a single empty space on the walls". He also relied on "an idea Vincent had often mentioned in his letters: to make a painting sing by placing it next to another; to place a color scale of yellow next to a scale of blue, a scale of green next to a red, etc…" (Stein 237-238). The exhibit included not only van Gogh's work but pieces from Theo's extensive collection of works from other artists that had been friendly with Vincent. Though in a confined space the show was a success and served as a place for artists and friends to gather in remembrance and reflection.

Sadly, the exhibit was short lived. Theo became violently ill in mid-1890, a combination of anguish over Vincent's death, and the final stages of syphilis. Jo abruptly fled to Holland with Theo and their son. Presumably this move was motivated by Jo's desire to be nearer to her family. Though her relationship with him was strained, her brother, Andries Bonger had been a mutual friend of the van Gogh brothers. In November, Theo was admitted to the Willem Arntsz clinic, an asylum, in Den Dolder. On 25 January, 1891, at the age of 33, Theo van Gogh died at the clinic, leaving his wife a widow at only 29 years old (Hulsker 455).

Vincent's death announcement , sent by Theo to family and friends (from Van Gogh A Retrospective edited by Susan Alyson Stein)

With the collected works of her late brother-in-law and his namesake in-tow, Johanna van Gogh-Bonger officially moved back to the Netherlands. There, she became the proprietor of a boarding house, the Villa Helma, near Amsterdam. Since she was the heir of all that had passed from Vincent to Theo, she also became the curator of the van Gogh collection. She wrote to Bernard, as recounted in his aforementioned preface, "It's a nice house, where baby, the paintings, and myself will be better accommodated than in our Paris apartment where we, nonetheless, felt so at home and where I spent the happiest days of my life." Despite being urged by those around her to destroy or sell the collection, which was worthless at the time, she chose to carry on Theo's work. She assured Bernard, "you shouldn't fear that the paintings are going to be put up in the attic, or in dark cupboards. They'll decorate the whole house, and I hope that you'll come to Holland sometime to see what care I've taken of them."(Stein 239). Jo further documented her steadfast intentions for Vincent's work in a diary entry dated 14 November, 1891, "Besides the child he [Theo] had bequeathed me another task- Vincent's work- to get it seen and appreciated as much as possible; keeping all the treasures that Theo and Vincent had collected intact for the child-that, too, is my work" ("Publication History").

Her first step in sharing Vincent's work was to display his art in just the way she had described to Bernard. Many of the lodgers at her boarding house were artist and writers which gave her the advantage in trying to stir up some enthusiasm over Vincent's pictures. Often she lent out pictures to those who were interested in showing them in galleries around the country (V.W. van Gogh). She also shared his letters with anyone

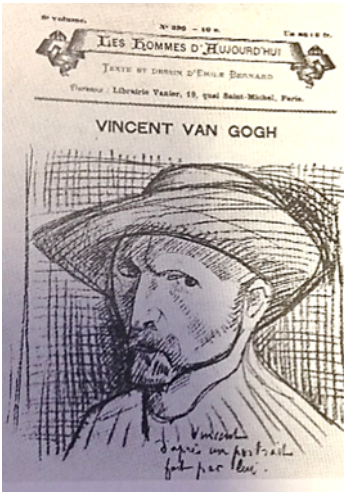
who would read them. One of her guests, the Dutch artist Richard Roland Holst, displayed a great deal of curiosity about the collection. Together they produced an exhibit at the Kunstzaal Panorama in Amsterdam, which Holst curated under Jo's supervision. Christiaan van Kesteren, the gallery manager, sent Jo a floor plan of the space to help her plan the layout of the exhibit. The exhibition ran from 17 December, 1892 to 5 February, 1893. Reportedly the pieces were arranged not only by where they were created, but according to their dominant color, which was unique for the era. No less than 112 works were displayed and the show's catalogue even contained selections from Vincent's letters. Holst himself designed the cover for the catalogue. A symbolic work, it features a drooping sunflower encircled by a halo against a black background, as shown on the next page ("Van Gogh Museum Journal").

Though the show helped to popularize van Gogh in his home country, it did not have the same effect for Jo. A while later, in a letter to another artist, Holst wrote a scathing review of Jo's involvement in the exhibition. He recalled "Mrs. Van Gogh is a charming little woman, but it irritates me when someone gushes fanatically on a subject she understands nothing about, and although blinded by sentimentality still thinks she is adopting a strictly critical attitude. It is schoolgirlish twaddle, nothing more" (Kendall 13-14). Whatever Mr. Holst might have thought of her, Jo proved to be an intelligent and skillful businesswoman.

Sunflower by Richard Roland Holst for the Panorama exhibition catalogue, 1892 (http://www.sothebys.com/es/auctions/ecatalogue/2008/dutch-modernism-the-schiller-david-collection-of-symbolism-art-nouveau-and-art-deco-1880-1930-am1047/lot.html)

In addition to shows such as the Panorama, various publications throughout Europe began promoting van Gogh's work. *Van Nu en Straks*, a Belgian avant-garde magazine, which was printed in Dutch, was one such publication. The magazine ran more complete versions of the letters over the course of 1893, all of which were given to them personally by Jo in 1892. Along with the letters, *Straks* ran memorial pieces written by a variety of artists (including Richard Roland Holst, oddly enough), some of whom had known Vincent personally ("Publication History").

While Jo was busy making a name for Vincent throughout northern Europe, Bernard took up the cause in France. It was Bernard in fact who sent her Vincent's collection. After the tragedy of Theo's death, Jo did not wish to return to Paris and instead had all of the work shipped to her at the boarding house (Hulsker 456). Moreover in 1891, Bernard wrote a memorial article on van Gogh in his series for the *Mercure de France* called *Les Hommes d'Aujourd'hui*. The cover plate (below) displays an etching by Bernard of his late friend, based on a self-portrait van Gogh had given him as a gift. The article itself tells the tale of their first meeting, their friendship, and the tragic end of a vibrant life. As an author, Bernard allows his grief to pour onto the page. His opening paragraph is perhaps the most moving, "He was mine, so I want to speak of him, although I am gripped by apprehension…one mistrusts the judgments set forth by friends, indeed even of relatives of the dead. And yet how much more valid these seem to be than the others, for whom do we know better than those we love, especially in art, where all friendship is based on like aspirations, or on similar views?"(Stein 282-283).

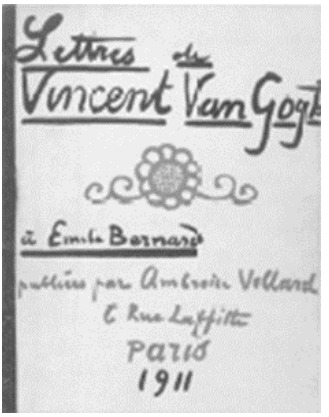


Cover plate for "Les Hommes d'aujourd'hui" by Emile Bernard
From Van Gogh A Retrospective edited by Susan Alyson Stein

The following year, Bernard was able to fulfill Theo's dream of showing van Gogh in a real Paris gallery. With nothing but 600 francs sent to him by Jo, her encouragement, and what was left of Vincent's work in Tanguy's attic, he exhibited 14 pictures for the month of April at the borrowed gallery space at Le Barc de Boutteville. In return, he received "no other satisfaction than to have performed the duty of a friend" (Stein 239). Soon after the exhibit closed, Bernard began consulting with Jo on the publication of Vincent's letters.

In 1893, he edited and published copies of the letters in the *Mercure de France*. Bernard sometimes consulted his friend, Andries Bonger (Jo's brother) when editing the letters for publication. Often, he relied on Andries for reassurance that his editing was not shameful to Vincent's memory. Jo agreed to cover the cost of the printing plates so that Vincent's sketches could be included in the published version just as they were in the originals. Since *Mercure de France* was an internationally read magazine, Bernard was successful in sharing Vincent's work with a wide audience. Soon, other periodicals throughout Europe began publishing translations of Bernard's original articles ("Publication History").

Another major development in the preservation of van Gogh's work came in 1905. The Stedelijk Museum in Amsterdam held an exhibition of roughly 460 pictures which made Vincent's work widely popular throughout Holland. The pictures were organized in the same way that the Kunstzaal Panorama show had been; first by where they were made, and then by color ("Van Gogh Museum Journal"). Most of the pieces displayed were from Jo's collection. She and her second husband, Johan Cohen Gosschalk, an artist himself, whom she married in 1901, were fully involved in the execution of the show ("Publication History"). This particular exhibition was incredibly important because it solidified van Gogh's place in Dutch history. An artist whose life and work were so entwined had never been so accessible to the public. Suddenly, his name meant something to the common Dutch person. Practically overnight, he became something more than an artist: he became a national figure.



Cover for Letters from van Gogh by Emile Bernard, 1911
http://www.dbnl.org/ tekst/_van012200201_01/ _van012200201_01_0003.php

Despite the rising popularity of Vincent's work and life, it would take six more years for any full versions of his letters to be published. A French dealer, Ambroise Vollard published van Gogh's letters to Bernard in 1911 ("Painted with Words"). To this day these letters are considered a distinct group as they demonstrate the mentor-student relationship between the two artists. Vollard paid Bernard around 2,000 francs for access to the letters. Additionally, Bernard was supposed to receive a portion of the profit for each volume sold, but the number of copies that were distributed remains unknown ("Publication History"). As previously mentioned, Bernard wrote the introduction

himself, and designed the cover. His design, shown above, is unabashedly imperfect, a handwritten homage to his friend's memory. The collection was translated from French to English in 1938 by Douglas Cooper ("Painted with Words").

After years of carefully arranging the letters into chronological order, Jo's edited collection, entitled *Brieven aan zijn broeder* was finally published in Holland in 1914. The original edition spanned three volumes and contained only letters from van Gogh family members, mostly those from Vincent to Theo. In his memoir of his mother, Vincent Willem recalls Jo's process of editing and organizing the letters, "in the beginning she copied them by hand, later on they were typewritten. The proofs she corrected herself". When Jo moved to New York in 1915, she took the letters with her to continue her work. She began translating Vincent and Theo's writings into English, a task which she continued even after her move back to Amsterdam in 1919, and until her death on 2 September, 1925. By that time she had managed to translate 526 of the letters (V.W. van Gogh).

Vincent Willem became the official curator of the van Gogh collection after Jo's death. Technically, he had been the curator since Theo's death when the older members of the van Gogh family had legally waved their rights to inherit Vincent's (and therefore Theo's) collection. However, Vincent Willem had very little desire to follow in the footsteps of his parents and uncle. He became an engineer with the hope to make a name for himself outside the world of art. He traveled in France, the US, and Japan before making his way back to the Netherlands in 1920. In spite of his best attempts to get out of the family business, Vincent Willem found himself in charge of one of the most sought after collections of the day. He lent pieces to various museums around Europe throughout the late 1920's. Another particularly successful show at the Stedelijk Museum in Amsterdam in 1930 prompted him to loan the museum the majority of the collection.

After WWII, Vincent Willem became more invested in sharing the collection with the public, presumably a response to the mass destruction of art that had occurred during the war. For the next three decades he toured internationally, lecturing on the collection and his own views on the importance of art. He also continued to publish new editions of the collected letters through the 1970's. As early as the 1950's, plans emerged for instituting a permanent home for the van Gogh collection. Pre-existing museums were considered but no one could be decided on. The establishment of the Vincent van Gogh Foundation in 1962 contributed to a final choice. With federal funding the Foundation purchased the collection and construction began on a new museum to house it in 1969. Vincent Willem served as the advisor for the construction of the new building and was

enthusiastically involved in the process despite being in his seventies by that time ("Van Gogh Museum Journal"). On 2 June, 1973 the Vincent van Gogh Museum opened next door to the Stedelijk Museum, containing the van Gogh collection on permanent loan from the Foundation. Similar to that very first exhibit in Theo and Jo's Paris apartment, van Gogh's art was not displayed alone, but was enhanced by the surrounding works of his fellow artists (Kendall 14-16). Vincent Willem van Gogh passed away in 1978 at the age of 88.

Photo of Vincent Willem with "The Yellow House"
at the van Gogh Museum in Amsterdam
From Van Gogh's Van Goghs by Richard Kendall

It is thanks to these individuals that van Gogh's work has survived. On one hand, a grief-stricken brother and a sister-in-law who had only met him on three occasions, and on the other a friend whom he took the opportunity to teach. Had Johanna not been searching for a way to mend her broken heart, or had Emile Bernard not felt the need to honor the memory of his mentor, van Gogh could have easily been forgotten. The dedication and love of these remarkable people and their painstaking efforts were the first steps in turning van Gogh into a household name. Thankfully, his family and friends saw the value in his work when few others did. His pictures, the focus of constant study, are now some of the most famous in the world. They have stood the test of time and remain a source of inspiration for scholars and laymen alike.

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Alien to Ourselves: Finding Humanity in *Mars Attacks!*

Abigail Creem (English)[1]

While Tim Burton's *Mars Attacks!* (1996) shows a vicious alien invasion, the attack reveals more about consumer-driven human society than it does the Martian invaders. The movie is set in three prominent locations: Washington, D.C., New York, and Las Vegas. Each of these locations represents different capitalist traits within consumer culture; however, all of them share a common notion of television-driven superficiality. The Martians' research and tests on humans bring to life this superficiality in a way that makes the flaws of the humans they experiment on all the more blatant. Moreover, we see how power shifts take place among the classes when those in charge fail to defeat the Martians. How *Mars Attacks!* reflects humans clearly highlights not only our failings as a species, but also our triumph as humane beings in the end. This triumph ultimately shows our fundamental resilience to the ruthlessness of the Martians, which also acts to remind us of our humanity.

Washington D.C. characteristically represents the center of power, control, and overall reason; however, the movie parodies the role of the President of the United States, his advisers and cabinet members. In the second scene, we see the President (Jack Nicholson) in his office surrounded by men of science, men of war, and men of justice, but instead of asking them their opinions of the aliens, he turns to his press secretary:

> PRES. What's your take on this, Jerry?
>
> JERRY. The people are gonna love it! Our only decision is whether to ambush the six o'clock news, or hold out for primetime.

The President's first concern is not whether the country is safe, but how this information should be released to the press. Only when his chief military officer (Rod Steiger) cuts in does he address any safety concerns, but even then the film mocks the officer's concern and portrays it as irrational. Finally after the President asks for scientist and professor, Donald Kessler's (Pierce Brosnan), opinion – who reassures him of the evolved, nonviolent, nature of the aliens – the President returns to Jerry in order to continue discussing the photo opportunity they are planning. From this very early scene, we see

[1] Written under the direction of Dr. Susan Bernardo for EN323: *Aliens, Cyborgs and Time Travel in Literature and Film*.

that the President's priorities are not where they should be: those in power fail to recognize the potential for serious threats and are not putting the public's safety first. The President is supposed to do what is best for the United States; however, his only concern is with which suit he is going to wear. Here we see an intersection between media and politics where the glamor of television overrides reason and reality.

While Washington fails to live up its political duties, New York also fails as the main source of news and media. Jason Stone (Michael J. Fox) and Nathalie Lake (Sarah Jessica Parker) care only for their personal fame instead of reporting the truth to the people. Nathalie Lake's interview with Donald Kessler focuses on the flirtation between the two rather than information about the Martians. During this interview the Martians first communicate with Earth. Again, the television is at the center. The entire United States witnesses the attack that accompanies the Martians' first encounter because it is a televised event that attracts thousands. Hedgecock argues that "television is in control. Plot developments cut to characters watching them on television, until the characters – and the audience – cannot distinguish immediately between television and 'reality'" (113). This estrangement from reality continues in the tests the Martians perform on their prisoners, Lake and Kessler. The Martians end up switching Lake's head and body with her Chihuahua's because that is how she portrays herself on the television, always with her dog. In the television reality the two are the same and that is what the experiments portray. The same goes for Kessler after his capture. The Martians choose to decapitate him, though he still remains alive. This depicts him as the television portrays him; that is, he can only be valued for his intelligence, his brain – he is a talking head. He is incapable of any real action, thus the Martians take away his body. The television reduces the man to the way he exists in this superficial society; the Martians' tests simply accentuate this existence.

Finally Las Vegas represents the hub of commercialism and consumerism. Here, people become so blinded by greed and consumption that they do not even realize the Martian invasion is taking place until it is too late. The only ones who escape the invasion are Byron Williams (Jim Brown), Barbara Land (Annette Bening), Tom Jones, Cindy (Janice Rivera), and for a short while a sleazy lawyer (Danny DeVito). Byron and Barbara contradict the superficial consumerism of those around them in this city of sin. Barbara, while depicted as flighty because of her belief in New Age spirituality, constantly disagrees with her casino developer husband Art Land's (also played by Jack Nicholson) greed; and instead of grieving his death, she simply says that she told him something like this would happen. As for Byron, a former prize-fighter turned bouncer,

he is looking for a way to make money for his family, despite being divorced. These characters' priorities are selfless in contrast to Art Land's and the sleazy lawyer's. Both Land and the lawyer embody extreme consumerism. While the Martians are attacking, Art Land moves forward with his pitch for a new hotel and ignores the potential investors' warning that something is happening. Meanwhile the sleazy lawyer joins Byron's crew; however, the Martians eventually trap the lawyer as he, Barbara, Tom Jones, and Byron try to escape. He tries to bargain with them using his prowess as a lawyer and the worth of his watch. He says: "it's a Rolex." The mere fact that the lawyer pleads while relying on brand recognition to save him shows how much faith he puts in consumer culture. He believes the capitalist lifestyle appeals to everyone and can ultimately save him; however, he fails to persuade the Martians, and they kill him.

Rejecting the commercial norm is what ultimately saves the world. Those who survive all exhibit the inherently human senses of selflessness and individualism that society at large has lost. These characters are "member[s] of a social system yet not strongly attached to that system. He or she does not conform completely to systematic norms. Interpersonal relations among strangers are characterized by social distance […] the stranger, relatively free of these networks, can more easily deviate from the norms of the system" (Gerlach and Hamilton 126). What sets these characters apart is ultimately what saves them, as well as recalls a sense of humanity prior to society's dependence on media and consumption.

For instance, Richie Norris (Lukas Haas) and his family represent a microcosm of the entire country. The family dysfunction works to parallel the dysfunction of all the Americans who are corrupted and blinded by consumerism. The family embraces the aliens on the Earth as long as they do not have to leave their couches to do so. Even during the Martian attack, Richie's mother vehemently declares: "I'll tell ya one thing – they ain't gettin' the TV." The focus is still on the television. Despite the real life attacks going on in their front yard, the sensationalism of the television captivates them. Billy Glenn (Jack Black), the eldest son in the family, who naively joins the army, has an unrealistic view of what it takes to be a soldier. During the first Martian attack, he attempts to play the hero and charges directly at the enemy as so many others do in action films; however, his gun is empty, he fails, and the Martian vaporizes him instantly. Richie and his grandmother (Sylvia Sidney) represent outsiders within the family and in society. Richie, in spite of his father's demands that he stay home, decides to risk his life and save his grandmother at the nursing home. His defiance promotes the idea of the individual versus the collective norm as well as shows his innate selflessness as he saves

his grandmother; both ideas resonate with the core of humanity, which is only able to be revealed through this alien invasion.

The grandmother is even more removed from society, due to her old age. Because of her senility, nothing she says or does resonates with the faux-reality of consumerism. Richie is the only one who takes the time to try to figure out what she is saying, which results in one of the few moments of clarity from the grandmother:

GRANDMA: I want to get back to Slim. Slim and Muffy and Richie.

RICHIE: Grandma, I'm Richie.

GRANDMA: I know, Thomas. Richie was always the best one.

Even though the grandmother is senile, she is still a better judge of character than most of the people around her. The grandmother's country music is what ultimately defeats the Martians. This is because she, like Richie, is a stranger to the consumer society that attaches itself to the television. Instead she is content staying in her little room, listening to her music, and petting her taxidermal cat. Her role as an outsider thus allows her to survive the alien attack. What is more, the music itself is reminiscent of a simpler time in America. The country-western crooner Slim Whitman's music is free from the poppy, artificial mechanics that has consumed modern music.

The film also shows Taffy (Natalie Portman), the first daughter, as an outsider to the television-dependent society. She seeks family over anything else, but a family is the one thing she cannot have. To crave the traditional American value of a closely bonded family also represents an aspect of humanity that is lost in this society. The only way she is able to spend time with her parents is if she helps her mother redecorate the Roosevelt room or listen to her father's speeches on television. She wanders the White House looking for human contact, but finds none. Her craving for interpersonal relationship is what saves her. She does not want the non-reality of the TV universe; she wants real people. This notion is what prompts her to survive and is the reason why she, not her media-crazed father, or image-centered mother, stands in front of the White House at the end, giving Richie the Purple Heart.

The Williams family, in turn, contrasts with the Presidential family. Here, the family is in repair. Byron admits to turning his life around for his family. The film suggests that at one point, Byron was consumed by the glamor of Las Vegas and failed to provide for his family. Now however, Las Vegas no longer seduces him into a life of consumption. Contrary to Richie's family, each member of the Williams family shows estrangement from the dominant media culture. Byron's ex-wife, Louise (Pam Grier), who works as a bus driver, displays the struggles of single parenthood as well as being

part of the lower middle class. After catching her kids skipping school when she sees them in an arcade playing video games, she irately highlights what is at risk for them. She says that if they skip school, they will flunk; if they flunk, they will go to jail; and if they go to jail, they will do crack. While it seems dramatic, it is clear that Louise's fears are rational. When she returns to her bus, still yelling at her sons, the passengers begin to applaud, as though they know this is what the kids need – a reality check. Louise's firm grip on reality sets her apart from the others as well as triggers the same sense of reality in her sons.

Because her sons', Cedric and Neville, grasp this sense of reality, they are able to distinguish the alien threat as real despite the videogame-like manner in which they fight. When both boys are on an educational tour of the White House, the Martians invade it. Their understanding of the reality of the threat prompts them to take up arms and fight the Martians. Between Richie, Taffy, Cedric, and Neville there is a final sense of role reversal in which those in charge, such as the President and his security detail are unable to take charge of the situation. Cedric and Neville are the ones who say: "What are you guys gawking at? Get that President out of here." It is the younger generation, the lower class that takes control of the situation.

The reunion of the Williams family as well as Taffy's desire for attention from her parents reinforces the call for closer filial bonds and better grasps on reality. Richie's decision to save his grandmother over helping his mother save the television signifies a demand for a less television-oriented public and a more selfless humanity. *Mars Attacks!* shows how consumer-oriented and media heavy our society has become. Through the threat of destruction of humanity by the Martians we understand how these human qualities of individual thought, selflessness, and family-centered acts will survive and not the faux-reality television presents – a truth ironically revealed through a Hollywood film. The failure to recognize this need results in a quick loss of power, as seen in the President and his men, and their eventual deaths. The role reversals at the end with Richie getting a medal of honor instead of Billy Glenn, Taffy awarding the medal instead of her father, and Byron reuniting with his family instead of remaining in Las Vegas reflect the reestablishment of innately human values and reaffirm our humanity as a whole.

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Representation of Society through Film in Weimar Germany: Fritz Lang's *Metropolis* (1927)

Jessica Catanzaro (History)[1]

Noted as the "father of film noir," Fritz Lang takes us "into the mouth of Moloch" with his 1927 science fiction film *Metropolis*.[2] *Metropolis* is a German Expressionist film that was produced during Germany's Weimar Republic period (1919-1933). The society and culture of this period in German history changed dramatically because of the outcome of the First World War (1914-1918). Many German Expressionist films during the Weimar period reflected the fears, anxieties, and ideals of the German people after the radical change in government and their defeat in WWI. But, how do films like Fritz Lang's *Metropolis* capture culture and society in Weimar Germany in the years 1919-1927? It was the defeat in WWI which created feelings of men being emasculated, and new fears of women and Jews that were reflected in the films of the Weimar period. The notion of working class unity, the femme-fatale and the evil Jewish mastermind were themes that were prevalent throughout German films, like *Metropolis*, in the Weimar Republic. Several characters in the film embody these themes. For example, the Madonna-like Maria represents the femme-fatale, the controlling woman who leads men to their doom. Dr. Rotwang is the quintessential Jewish character that is prevalent in many of Fritz Lang's films. Dr. Rotwang is portrayed as the conniving Jew who misleads people and ends up ruining them. Finally, the workers that run the city of Metropolis are the working class that the Germans feared so much. The workers in Lang's film are ready to revolt and destroy the powerful industrialist city that is Metropolis.

Films like *Metropolis* that were made during the Weimar Republic in Germany are classified as German Expressionist films. German Expressionism was an art form in Germany during the Weimar period that gave German filmmakers the freedom to express the way that they felt about society and the world in their films. This means that the

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[1] Written under the direction of Dr. Lori Weintrob for HI286: *On the Screen- Gender, Class, and Culture in Film*.

[2] Vincent Brook, *Driven to Darkness: Jewish Emigre Directors and the Rise of Film Noir* (New Jersey: Rutgers University Press, 2009), 58; Janet Ward, *Weimar Surfaces: Urban Visual Culture in 1920s Germany* (California: University of California Press, 2001), 142.

filmmakers created films that represented how the filmmaker himself viewed things. German Expressionism is depicted by dark, shadowy sets that almost appear haunted. "Weimar cinema took up the tools of expressionist yearnings for a mythological rebirth for Germany in the wake of the defeat of World War I."[3] German Expressionism rose out of the changing society after World War One. It was influenced by the turmoil in society after Germany's defeat in WWI and the Allied Power's (England, the United States, and France during World War One) attempt to improve the German government with the installation of the Weimar Republic, Germany's first democratic government.[4]

Fritz Lang captures German Expressionism in his film *Metropolis*. The film is composed of shadows and large, looming edifices. This idea of a dark city was new and *Metropolis* "etched the first blueprints of Dark City: omnipotent external forces dictating the fate of innocent people, and uncontrollable internal urges leading to self-destruction."[5] It is fitting for Fritz Lang to use these German Expressionist themes of darkness because Lang experienced some difficult times at one point in his life. In late 1920, Lang found his wife, Lisa Rosenthal, dead in her bathtub from a gunshot to the chest. The gun Rosenthal used was Lang's Browning revolver. Lang found his wife's body and claims that she committed suicide. It was known by many, including Rosenthal, that Lang was having an affair with actress Thea von Harbou (she played Maria in *Metropolis*). Rosenthal was distressed for some time about the affair and the fact that her husband was flaunting his relationship with von Harbou. Lang was furious that Rosenthal would not accept his affair and, according to a witness, he had waved his revolver at her during a heated argument about the matter.[6] Although Lang was never tried for murdering his wife, many believed that he did, in fact, kill Rosenthal. Whatever the cause of Rosenthal's death, murder or suicide, there is much speculation on the relationship between the incident and Lang's work "which is haunted from the first film to the last with guilt, complicity, false accusation, irredeemable crime, inadvertent crimes, and suicide."[7]

In order to understand the relationship between Fritz Lang's *Metropolis* and Weimar Germany, we must look at the society in the new Republic and the fears and anxieties that many faced. The working class, "unleashed" female sexuality, and the Jews

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[3] Ward, *Weimar Surfaces: Urban Visual Culture in 1920s Germany*, 145.
[4] Colin Storer, *Short History of the Weimar Republic* (New York: I.B. Tauris, 2013), 27.
[5] Brook, *Driven to Darkness: Jewish Emigre Directors and the Rise of Film Noir*, 58.
[6] Ibid., 60.
[7] Ibid.

were all elements "the Fascists considered a part of a conspiracy against the German 'fatherland'."[8] Men were paranoid and all-consumed with this supposed conspiracy and they felt that women, Jews, socialists, and foreigners had humiliated Germany and were "hindering efforts to resurrect its power."[9]

When the Weimar Republic government was put in place, a new constitution was written. This constitution added something that not even the United States had at this time: equality for women. With this new law emerged the image of a "new woman" in German society. The "new woman" was one who challenged the traditional roles of women and who was more open about her sexuality.[10] The "new woman" was seen as a vamp, a woman that would lead men to their ruin by being "a mysterious and seductive temptress."[11] During the inter-war period of the Weimar Republic, there was a collective male consciousness that was obsessed with the supposed loss of male power and authority because of women and the Jews.[12]

These anxieties about losing power and authority were not only prevalent among the common people of Germany but they were also present in the German elite. After Germany's defeat in World War One, Germany felt powerless and it felt that it lost all of its former glory in the world. The fear of the working class came to fruition because of this "loss of authority." It was the dynamic between the worker and the boss, the fact that one was in essence enslaving the other, which increased this feeling that eventually the worker would rise up and destroy the powerful leader.[13] This feeling or anxiety was a reflection of the times because Germany was destroyed by the ones it was trying to enslave or more appropriately, control.[14]

All of these fears and anxieties, fear of the "new woman", the working class, and the Jews, were all themes in German Expressionist films including Fritz Lang's 1927 film *Metropolis*. Fritz Lang's classic science-fiction silent-film takes place in the year

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[8] Richard P. McCormick, "From 'Caligari' to Dietrich: Sexual, Social, and Cinematic Discourses in Weimar Film," *Signs* 18, no. 3 (Spring 1993): 644.
[9] Ibid., 648.
[10] Ibid., 641.
[11] Andreas Huyssen, "The Vamp and the Machine: Technology and Sexuality in Fritz Lang's Metropolis," *New German Critique*, no. 24/25 (Fall81/Winter82 1981): 228.
[12] Barbara Hales, "Projecting Trauma: The Femme Fatale in Weimar and Hollywood Film Noir," *Women in German Yearbook*, no. 23 (December 2007): 226.
[13] Thomas Halper and Douglas Muzzio, "The Republic in the Metropolis," *Journal of Popular Culture* 44, no. 3 (June 2011): 475.
[14] Storer, *Short History of the Weimar Republic*, 27.

2000 and in its bare bones is a story about clashes between "workers and an authoritarian industrialist in a giant city."[15] This clash or issue is resolved in the film when the city of Metropolis is nearly destroyed and the leader of the city realizes that he needs to be more caring to his workers. While this is the main plot of the film, Lang slips in these recurring themes that were prevalent in Weimar Germany.

The story of *Metropolis* is centered on Maria and Freder. Maria is the caretaker of the workers' children and she is the one who convinces the workers that there is someone out there who will help them out of their troubles. Freder is the son of the authoritarian industrialist Joh Fredersen and wants to experience the life of the worker after seeing Maria. Maria, when she sees Freder in one of her catacomb meetings with the workers, believes that he is the mediator that will help the workers receive a better life. When Joh Fredersen learns of the relationship between his son, Freder, and Maria, he goes to his scientist, Rotwang, and asks him to turn his new invention into a doppelganger of Maria. Rotwang has created a Machine-Man, a robot, and transforms it into the image of Maria in order to place the workers under her spell so they will listen to the command of Joh Fredersen. However, because of an earlier event, Rotwang does not like Joh Fredersen and soon he changes the Machine-Man Maria so that she will only listen to his command. At this point, the Machine-Man Maria is convincing the workers to destroy the Heart Machine that runs the city so that Joh Fredersen will be destroyed. The workers soon realize that they did not protect their children from the destruction of the city. Little do they know, however, that the real Maria and Freder are rescuing the workers' children. In the end, the workers want to burn Maria for being a witch but they burn the Machine-Man Maria instead of the real Maria. After the workers settle down and they realize that the Maria they were after was a machine, Freder convinces his father to shake hands with a worker and the audience is led to believe that all problems in the city are now solved. The film ends with the message "The Mediator between head and hands must be the heart!" This means that the one who will bring the industrialist (Joh Fredersen) and workers together is the one who cares about everyone's well-being (Freder).

Without knowing the themes that are present in German Expressionist films, *Metropolis* appears to be a film about disagreements between workers and the industrialist. The film is, for the most part, about love and compassion and we are left with a happy ending and the message that revolt is not the solution to society's problems.

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[15] Mark Cousins, *The Story of Film* (New York: Thunder's Mouth Press, 2004), 100.

However, now that we know the themes that were part of German Expressionist films, we see that there are underlying meanings to *Metropolis*. Three strong themes that are present throughout the majority of the film are fear of the Jew, fear of the "new woman," and fear of the worker which all lead to a sense of powerlessness and loss of authority among German men.

There was a general anxiety in Weimar Germany that the working class and the worker would create an uprising and cause the destruction of the powerful industrialist. In Weimar Germany it was the idea that the working class would ruin Germany's utopian vision of a new Germany after its defeat in WWI that caused many industrial leaders in Germany to have fears and anxieties about the working class. *Metropolis* is a kind of microcosm of Germany after the First World War where the utopian vision "has gone awry, producing a tyrannical ruling class which enslaves the workers who eventually rebel against their masters."[16] In Germany, the year 1919 saw a wave of strikes, demonstrations, and uprisings against the established order. There was a real fear amongst western leaders that the foundations of capitalism and liberal democracy were being shaken and might give way.[17] The city in *Metropolis* is divided by the haves and have-nots, the industrialist and the workers, and this divide leads the workers to strive for change.[18] In Fritz Lang's film, Joh Fredersen, the industrialist, is regularly brought papers that were taken from the workers that illustrate plans to destroy the major machines that give Joh Fredersen's city life. Joh Fredersen enlists the help of Rotwang to figure out what the plans mean and how they will be achieved. It is Joh Fredersen's greatest fear that the workers below his city will try to overthrow him, and he does everything he can, including transforming Rotwang's Machine-Man into the image of Maria, to stop the workers from uprising. Freder also warns his father of the threat of the workers, he says "Your magnificent city, Father, and you the brain of this city, and all of us in the city's light, and where are the people, Father, whose hands built your city…what if one day those in the depths rise up against you?"[19] In the end, because of Machine-Man Maria's influence, the workers below Joh Fredersen's city destroy the machines that support Fredersen's city. In reality, Joh Fredersen had reason to fear an uprising and the German elite feared that the workers during the Weimar period would do the same. Joh Fredersen

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[16] Mary K. Leigh and Kevin K. Durand, *Marxism and the Movies: Critical Essays on Class Struggle in the Cinema* (McFarland, 2013), 17.
[17] Storer, *Short History of the Weimar Republic*, 42.
[18] Halper and Muzzio, "The Republic in the Metropolis," 477.
[19] Fritz Lang, *Metropolis* 1927.

as the industrialist and the industrialists in Weimar Germany have this fear about losing control, which was extremely prevalent after Germany's defeat in WWI.[20]

Throughout Weimar Germany there was an anxiety and fear over the "new woman", a woman who was free with her sexuality and who challenged gender roles.[21] This "new woman" rose out of the period of WWI that gave women the opportunity to participate in the work force while the men were fighting at war.[22] This new image of women in Weimar Germany led to the view of women as femme fatale and the view that women would be the ruin and downfall of men. In Fritz Lang's *Metropolis* both the real Maria and Machine-Man Maria, embody the image of the "new woman." Fritz Lang shows the anxiety over the "new woman" in Maria's interactions with the people of the city.

There are several instances in Fritz Lang's *Metropolis* where Maria and her double have power and influence over men. The very first occurrence is when Freder first lays eyes on Maria and he immediately wishes to follow her. She has a strong hold over Freder which causes him to become infatuated with her even though the only thing he knows about her is that she is the caretaker for the workers' children. It is Maria and Freder's awe over her which leads Freder to enter the workers' city for the first time and experience the hardships that the workers face. Although this encounter with Maria is a mild one, it sets off a chain reaction that does not become resolved until the end of the film.

Freder's first encounter with Maria leads him to trade places with one of the workers, worker 11811. As a worker, Freder attends one of Maria's catacomb meetings where she tells the workers that there will be someone who can help them with their problems and that they should not rise against Joh Fredersen. Maria has a hold over Freder and the workers in these meetings and she has the ability to make them listen to what she says. Maria holds these meetings because she does not want the city of Metropolis to be ruined by the workers. Maria does not like violence and she would rather not see the workers revolt against Joh Fredersen, instead she wants to have a peaceful revolution.

When Maria is taken by Rotwang and her image is given to the Machine-Man, Rotwang hosts a party with Joh Fredersen to show the workers Maria as an erotic dancer

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[20] Huyssen, "The Vamp and the Machine," 228.
[21] Storer, *Short History of the Weimar Republic*, 150.
[22] Barbara Hales, "Dancer in the Dark: Hypnosis, Trance-Dancing, and Weimar's Fear of the New Woman," *Monatshefte* 102, no. 4 (Winter 2010): 534.

which will make them listen to her every will. In this scene, Machine-Man Maria preforms a trance-dance that hypnotizes the workers causing them to listen to her command. This trance-dance is "hypnotic both in the sense of alluring her masculine audience and casting a spell over them."[23] In this scene, it is alluded to in Freder's dream, that Maria is represented as the Whore of Babylon.[24] When Freder realizes that the erotic dancer is Maria, he faints and has a dream that a monk is preaching the bible verse "Verily, I say unto you, the days spoken of in the Apocalypse are nigh! And I saw a woman sit upon a scarlet colored beast, full of names of blasphemy, having seven heads and ten horns and the woman was arrayed in purple and scarlet color, having a golden cup in her hand and upon her forehead was a name written, mystery, Babylon the Great, the mother of abominations of the earth!" It is not an accident that during the erotic dance, Machine-Man Maria rises onto the stage and sits with a golden cup in her hand on top of a dais formed like the seven-headed beast.[25]

The final scene where we see women as holding power and authority over men is when Machine-Man Maria is back in the catacombs under Rotwang's control. Machine-Man Maria is convincing the workers to destroy the machines that make Joh Fredersen's city thrive. This scene, where Machine-Man Maria yells "Who is the living food for the machines in Metropolis? Who lubricates the machine joints with their own blood? Who feeds the machines with their own flesh? Let the machines starve you fools! Let them die! Kill the machines!", Machine-Man Maria has complete control over the workers and she convinces them to "kill the machines" that make up the city. The workers in this scene blindly listen to her and they completely forget about rescuing their children such is Machine-Man Maria's hold over them. In the end, the workers try to burn Machine-Man Maria at the stake after they realize they forgot about their children, they call her a witch and capture and burn the Machine-Man. These four scenes display the fears that Weimar Germany's men had towards the "new woman." These men felt that they would lose their power and authority to these women and that the women would destroy the men's lives.

There is one scene in particular in Fritz Lang's *Metropolis* that shows the German fear of and the loss of power and authority to the Jew. The scene is towards the beginning of the film when Freder firsts stumbles into the vast workers' city. He sees the

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[23] Ibid., 537.
[24] Ake Bergvall, "Apocalyptic Imagery in Fritz Lang's Metropolis," *Literature-Film Quarterly*, no. 4 (2012): 247.
[25] Ibid., 248.

workers working in a synchronized fashion at their machines. Soon a great mouth in the machine opens with steam rising from every corner, Freder yells "Moloch!" when he sees the giant machine. The following segment shows Freder in absolute terror as he watches workers being marched up the steps to Moloch's mouth and descending down into the gaping maw of the machine. In the ancient Semitic religion, Moloch is a deity that is honored by human sacrifices and this scene in *Metropolis* shows the sacrifice of the workers to the machine that runs the city.[26] Freder, who is not accustomed to seeing the workers' city and the practices that keep the city running, is terrified at the sight of this great machine and the march of workers into its mouth. This is a representation of Germany's fear of the Jew because Germany does not understand the ancient beliefs of the ones that they feel will overtake their authority, therefore they fear what they do not know or understand.

Another area where Fritz Lang's *Metropolis* shows the Weimar fear of the Jew is in the character Dr. Rotwang. Rotwang is the scientist that Joh Fredersen goes to for assistance who makes his Machine-Man in the form of Maria. According to some scholars, it has not gone unnoticed that Rotwang, the evil scientist/black magician, looks Jewish with his beard and hook nose but also "employs explicitly kabbalistic practices to transmogrify the Madonna-like Maria into her inhuman twin."[27] The "master-criminal types" like Rotwang offer negative Jewish stereotypes like the evil Jew that will take control. In the film, Rotwang deceits Joh Fredersen by turning Machine-Man Maria against Joh Fredersen and willing her to only listen to Rotwang's command. This is the same fear that the Germans had after World War One, that the Jews would hinder any attempts at Germany becoming powerful and that they would take away Germany's authority.[28]

Camera angles were very important for showing how the Jews, the working class, and women undermined men's authority and power in Weimar Germany. In many scenes with Maria and the workers, the camera often looks down on the workers and up at Maria giving us the illusion that Maria is superior to the workers. These angles show that Maria is above the workers because she has power over them. Another example of this is when Rotwang stands over Maria in order to give her image to the Machine-Man. Rotwang is shown as leaning over Maria because at that moment, he has power over her

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[26] Leigh and Durand, *Marxism and the Movies*, 21.
[27] Brook, *Driven to Darkness: Jewish Emigre Directors and the Rise of Film Noir*, 68.
[28] Storer, *Short History of the Weimar Republic*, 43.

and controls her. Lighting is also an important tool for film. The workers' city is always shown in shadow and Joh Fredersen's office is shown in the light with sunlight shining through the windows. These examples of light show how desolate and depressing it is in the workers' city and the light in Joh Fredersen's office shows that he is greater than the workers because he is living in a land of brightness and in essence, happiness.

After the regime change that came with Germany's defeat in World War One, new fears and anxieties arose amongst the people in Germany. These fears came out of the idea that Germany had been emasculated by its loss during the war and the efforts to bring Germany's former glory back were being hindered by specific groups such as Jews, the working class, and women. The Germans felt that their power and authority were being undermined and taken over by these groups and society and culture reflected these anxieties. The cinema during the Weimar period exploded with films that represented the anxieties that were rampant in Weimar society. German Expressionism rose out of this changing society and it gave film directors the opportunity to use light and shadow to express how they felt about society. With German Expressionism, directors were able to make film into an art form, as Fritz Lang says "I may boast to have been one of those among the passionate pioneers for the development of film who fought most fiercely for the claim that film is called upon to develop itself from a vapid entertainment industry into an artwork."[29] Films like Fritz Lang's 1927 science-fiction film *Metropolis* captured the themes of German Expressionism and Weimar society. Fritz Lang used the city in *Metropolis* as a microcosm of Germany during the Weimar period and revealed the fears and anxieties that were prevalent in society through hidden themes, camera angles and lighting techniques.

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Even the Grass: Food in *Half of a Yellow Sun*

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Food is something most readers take for granted, and so is peace. The surreal horror of war is not something most readers have experienced first-hand—casualty counts are abstract and devastation is hard to quantify, so in *Half of a Yellow Sun*, Chimamanda Ngozi Adichie makes the tragedy of war imaginable by wrapping it in the context of day-to-day life. Adichie's careful references to food and drink throughout her novel reflect the long-term effects of colonialism on the Biafran people of Nigeria.

Adichie uses food and drink to call attention to key differences between certain characters. As soon as the novel begins, the characters and their relationships with certain foods illustrate the cultural variations between them. First, food is used to distinguish the lives of the middle-class Igbo people from those of the upper-class. When Ugwu begins working for Odenigbo, he is accustomed to eating his mother's "watery soup" and dividing strips of dried fish among his siblings and himself (8-9). His entrance into Odenigbo's comparatively luxurious lifestyle is summarized by his spotting of "a roasted shimmering chicken" on the "topmost" shelf of the fridge, introducing meat as an indicator of status in Igbo society (6). For Ugwu, food is undeniably linked to prosperity. He fantasizes about winning his cousin Nnesinachi over with chicken wings before she moves to the North, where "a fortune [is] to be made" and she could be won over by a "pot-bellied trader" who would "bring palm wine to her father." Descriptors like "pot-bellied" remind the reader that eating well in Nigeria is evidence of an individual's wealth and status (9-10).

Although Western characters like Richard would like to generalize about the Igbo people, Ugwu's relationship with food reflects his spirituality in a way that Odenigbo's does not. When Ugwu irons Odenigbo's sock, he searches for the herb *arigbe* to cook in his master's soup. Ugwu believes this local herb has the power to "[soften] a man's heart" (18). Ugwu's cooking is often influenced by his spiritual beliefs, as is typical of middle-class Igbo in this novel, whereas Odenigbo, having received a formal Western education, is removed from the mysticism of Igbo culture, and he dismisses Ugwu's Igbo superstitions. Odenigbo's detachment from middle-class Igbo culture is fully on display

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when he visits Ugwu's village and refuses a local pineapple because they are “too acidic” and “burn [his] mouth” (113). This is the first of several instances in which a burning sensation in a character's mouth suggests the inability or relucatance to fit into a certain culture. After living with Odenigbo for some time and growing used to the food that once seemed like the height of luxury, Ugwu finds that his “mother's food [is] unpalatable” (154). Anulika sees the influence in her brother and tells him, “You have forgotten where you come from, and now you have become so foolish you think you are a Big Man” (154). Her words remind the reader that the contrasting lifestyles and diets of the different Igbo classes were caused by Western colonization.

Adichie also uses food to compare characters of Nigerian and English heritage. Although Nigeria becomes independent in 1960, the impact of England's presence is not so readily left behind. Harrison's role as Richard's servant is the personification of Western influence on the Igbo people. Harrison is perhaps an accelerated version of the man Anulika sees Ugwu becoming. He is desperate to impress Richard with his knowledge of English cuisine (91) and believes that “the food of white people makes you healthy,” unlike the “nonsense that our people eat” (262). The imbalance of power between the colonizers and the colonized leads Harrison to idealize Western culture and dismiss that of his own people. Harrison thus serves as a foil to Richard, who would do anything to fit into Igbo society but fails to see how his privilege as an Englishman prevents him from being truly Biafran. Richard often tries to pass as Biafran, but certain cultural indicators allow the other characters to see through his attempts. For example, when Ugwu clears Odenigbo's guests' plates, he notes that every guest has chewed their chicken bones, with the exception of Richard. Adichie includes these small cues to indicate how Richard, though admiring of the Igbo people, is an Englishman at heart. Richard's love for Igbo culture is on display when he eats Ugwu's pepper soup, pretending to like it more than he does, just to earn the approval of Odenigbo's guests (137). Later his efforts backfire; Okeoma criticizes his patronizing fascination of the Igbo-Ukwu roped pots and the pepper soup burns Richard's tongue. While Richard may enjoy the culture of the Igbo people, Odenigbo and his friends see how he also condescends to it, with statements like “It's quite incredible that *these people*... perfected the complicated art...” (Italics mine, 141). Richard is angered by Okeoma's implication that he is racist, and he tries to justify his place in Igbo society to himself, buying groundnuts from a hawker in the traditional Igbo way. Richard does not actually want the nuts, but is instead purchasing a facsimile of Igbo culture. Eating the “shriveled” nuts, he thinks of the “crumpled pages” of his manuscript—a story that he cannot write, does not

have the tools to write, but desperately wants to be able to write, a representation for his desire to be Igbo (143). While Richard's intentions are usually good, his Western background comes with a blanket of ignorance regarding Nigeria. This ignorance extends throughout the novel. Later, when Biafra is at war and her people starving, a "plump" American journalist stares in horror at children roasting rats over a fire, and another American journalist says, "Niggers are never choosy about what they eat" (463). These two journalists represent the typical American attitude towards the Biafran War. They are there to make profit off of pictures of children with kwashiorkor—a disease from which a child may recover "if it is given adequate and timely medical care" (Konczacki 434). All of this while eating chocolate bars and saying "I wish I could do more" (Adichie 464).

Adichie also uses food and drink to foreshadow events that occur later in the novel. While Arize and Olanna cook together, Arize marvels at Olanna's ability to put off getting married. This is something that she can only afford because of her Western education. For uneducated Arize, the only way she can secure a living for herself is to get married and have children. She then "[removes] a translucently pale egg from inside the chicken," Adichie's nod to her impending pregnancy, which is ended prematurely upon her eventual presumed rape and murder. The issue of starvation during the war is foreshadowed many times in the novel. When Ugwu and Olanna are first getting to know each other, they see a lizard and Ugwu tells her "Don't kill it!" because if she does, she will get a stomachache (60). Later in the novel, the children of Biafra are suffering from kwashiorkor, which distends the stomach, and they resort to eating lizards to survive. The imminent loss of food is implied heavily when Olanna sees a mother carrying her dead child's head in a calabash, or hollowed gourd (188). Where there once was food, death now presides, in particular the death of the children. Finally, when Ojukwu appears at the administration block, the crowd chants, "give us guns!" Ojukwu says in reply, "Even the grass will fight for Biafra" (215). He does not know how true his statement is; the Biafrans do not fight a war with guns. Instead, starvation becomes their biggest enemy and cultivating the land they live on become their only means of defense.

Once Olanna and Odenigbo are displaced, food becomes an indicator of how heavily the war is affecting the Igbo people. At Odenigbo's house in Abba, they have mango and kola nut trees, and chickens in the yard, all of which will seem like luxuries just a few months in the future, but Olanna thinks only of what she lost when they left Nsukka: "her books... her clothes... her wigs... the television" (231). The little food they have serves only to remind her of how they lived before the war took Nsukka. Olanna attempts to maintain a semblance of normalcy, apologizing for their lack of meat and

asking Okeoma to “remove [his] grenade while [they] eat” (406). Everyone is affected and few have extra food, but still Olanna clings to Igbo social customs, which are rapidly disintegrating as the war enters homes. Thus food itself becomes a weapon in the war, with vandals poisoning relief milk meant for infants with kwashiorkor (426). Adichie reminds the reader just how far Olanna and Odenigbo's quality of life has fallen when Olanna visits Professor Ezeka to beg for a new placement. Mrs. Ezeka repeatedly offers her brandy, cake, and lunch but Olanna feels detached from the luxury, describing their house as “surreal” (429). Mrs. Ezeka can't believe what the war has “reduced” them to, as she stares at her full furnished bunker. Sentences later, Olanna comforts Baby who is crying over Adanna's mother cooking and eating Adanna's pet dog Bingo (430).

The stark contrast between those affected by the war and those protected by their Western associations is portrayed again and again through the appearance of food. In times of war, food is power and Kainene is incensed when she discovers Father Marcel has been giving her hard-earned relief food to girls who will have sex with him (499). She finds his taking advantage disgusting, and the exploitation of a people in exchange for their own natural resources is meant to remind the reader of colonialism on a whole. Ugwu experiences the other side of this power dichotomy when he is conscripted into the war. Initially, Ugwu is eager to join the win-the-war cause, and he focuses on not the violence but on the rising sun on the soldier's arms (225). In “Recollections of Childhood Experiences during the Nigerian Civil War,” fifty-two year old Ocha recalls that despite the violence, “[he] was excited at what was going on.... [he] was anxious to go and defend [his] fatherland...” (Uchendu 397). But when Ugwu kills a man for the first time, he feels in his pockets and finds “a cold hard kola nut and warm thick blood” (Adichie 454). The juxtaposition of an Igbo food, traditionally extended in welcome to guests, now being described like a dead body shows how far Ugwu has traveled away from his comfortable lifestyle with Odenigbo. Similarly, when Ugwu's fellow soldiers goad him into raping the bar girl, they tell him, “The food is still fresh!” (458). Ugwu indulges. He has lost all agency in his life, so he takes advantage of a helpless party, exercising control in the only way he can.

In *Half of a Yellow Sun*, food symbolizes success in a country where success is historically achieved at the expense of others. The effects of England's colonization of Nigeria are shown through the characters' various relationships with food. In a novel about a war in which starving to death was as imminent a threat as being bombed, Adichie uses food to heighten the reader's understanding of the ironic horror of the Biafran war, and show them exactly what is at stake. At the conclusion of the novel,

Odenigbo tells Olanna that “the war has ended but hunger has not...” (540). Kainene's continued disappearance after she goes looking for food symbolizes the long and uncertain journey away from starvation that lies ahead of the Igbo people.

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Ahead of Her Time: Feminism in the Writings of Emilia Pardo Bazán

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Many of the writings of Emilia Pardo Bazán, including the collection *Torn Lace and Other Stories,* examine gender roles and the role of women in societies. When exploring the feminist tendencies in the writings of Pardo Bazán, it is important to note several things. First, it is important to look at the life history of the author, as it greatly influenced her writings. Secondly, it is essential to note that in today's world many readers would surely dub Pardo Bazán a "feminist;" however, she was writing during an entirely different era- an era long before feminism as a movement even existed. One author states that this style of writing did not go under the radar of the public eye, saying of Pardo Bazán:

> in her own time she challenged the conventions of a society which sealed women in a role, and her audacity often met with rebuke, scorn, grudging tolerance sometimes agreement and praise. Clearly she did not go unnoticed or disregarded, for irresponsive of personal or professional bias, her critics could not dismiss her as boring or frivolous, and the thickest veil of sarcasm cannot conceal the fact that they did not take her seriously. (Giles 356)

Pardo Bazán placed strong women at the center of many of her stories and as such was able to look at relationships between men and women. Additionally Pardo Bazán breaks down many traditionally constructed gender roles. Pardo Bazán criticizes and challenges societal norms concerning gender largely through her writings on marriage, sexuality, and submissiveness.

First and foremost, it is important to examine thoroughly the personal life of Pardo Bazán. She was born in La Coruña, a small city of Galicia in northern Spain, in the year 1851. Her father was recognized as a count, and as such she grew up in an elite social circle. She inherited the title of countess when her father passed away, and remained a woman of the upper class all her life, which, interestingly enough, greatly contrasts with some of her writings concerning impoverished characters. The education

[1] Written under the direction of Dr. Marilyn Kiss for the honors course SP213: *Hispanic Literature in English Translation*.

of Pardo Bazán far surpassed the normal etiquette classes that many women of that era took. Perhaps this is why one author admires her decision not to write under a male alias, stating that this was "unlike many women writers of the nineteenth century" (Bauer 23). At the age of fifteen, Pardo Bazán married a nineteen-year-old law student named Don Jose Quiroga y Perez Deza. At the start of their relationship, Don Jose encouraged Pardo Bazán's education, even allowing her to complete some of his homework for law school. However, as time went on he began discouraging her work. His disapproval came to a climax when Pardo Bazán wrote a critique of Emile Zola, a French novelist. She received much disapproval from a great deal of people, including her husband. In fact, "her reading public tended to ignore her criticisms of Zola; it was scandalous that a woman should be reading Zola at all, much less commenting explicitly on him" (Tolliver xii). Jose Quiroga agreed with the general public and insisted his wife give up writing. Instead of succumbing to her husband's wishes, however, she separated from her husband and moved her children and herself to her mother's home and continued her life as a successful novelist. This idea is important to note because in many of her stories she includes stories of brides leaving their soon-to-be husbands, or defying them in general. These themes certainly can be credited to her intelligence and ability to know that she deserved more than what she was being allotted simply because she was a woman. Additionally, her personal experiences must have played a role in her opinions on women and their rights.

There are several styles of writing that are evident in the works of Pardo Bazán. The first and perhaps most prominent was the naturalist style. Naturalism can be described as:

> a type of literature that attempts to apply scientific principles of objectivity and detachment to its study of human beings. Unlike realism, which focuses on literary technique, naturalism implies a philosophical position: for naturalistic writers, since human beings are, in Emile Zola's phrase, 'human beasts,' characters can be studied through their relationships to their surroundings. (Campbell)

This style of writing is especially prominent when Pardo Bazán writes about feminist themes because many characters have strong female voices that can be credited to the events in their interaction with their surroundings. For example, in the short story entitled "Piña" in *Torn Lace and Other Stories,* the main female title character is a monkey who submits to an abusive relationship with the male monkey, named Coco, when he is placed in her cage about half way through the story. The story follows Piña

and Coco's abusive relationship and Piña's eventual depression. However, for the readers to be more affected by the emotional development of the story, Pardo Bazán uses the first half of the short story to describe Piña's normal behavior within her surroundings. The readers learn that she is rambunctious and adventurous, so much so that it gets her in trouble, to the point where she must remain caged at all times. At this point, the readers are introduced to Coco and see the development of an abusive relationship. Because abuse and submissiveness were two somewhat taboo topics in the day of Pardo Bazán, she was able to speak more freely on the subject by using animals as the main characters. However the moral of the story, feminine freedom, would not be as powerful had readers not gotten a thorough description of Piña's normal behavior previous to her relationship with Coco. Pardo Bazán's naturalistic descriptions make the short story much more powerful. However, one author remarks on the backlash Pardo Bazán received for this, stating:

> from the moment of Emilia Pardo Bazán's entrance into the public sphere, criticism of her work has been marked by gender considerations and confusions…her writing has been subjected to a particular scrutiny. In her own time, Pardo Bazán was attacked by contemporaries for endorsing naturalism despite being a woman. Yet she was also identified by and with the most respected male literary authors. (Colbert 427)

Additionally, Pardo Bazán incorporates realist themes in her writing. Realist themes are somewhat similar to naturalist themes in that realism examines psychological relationships with others. Realist literature styles focus primarily on honestly stating things for how they are. This type of literature is important for the strong female voices stating their true feelings. In the title story entitled "Torn Lace", Pardo Bazán writes of a bride who, "when the bishop of San Juan de Acre asked the bride if she took Bernardo for her husband, she let loose- at the very foot of the alter- with a resounding and energetic "No!" (Pardo Bazán 61). This story goes on to have realist descriptions of a bride when her soon-to-be husband becomes dramatically angry when she tears the heirloom lace of her gown. Instead of tolerating what surely would have been an abusive relationship, the bride defies the societal norm and loudly states that she will not marry her fiancé. The realist descriptions elevate the story to one that is empowering for women overall.

It is important not only to acknowledge the writing styles that Pardo Bazán incorporates in her stories, but also to notice the overall themes of defiance of societal norms in marriage and sexuality. Though not as evident in *Torn Lace* as in other writings by Pardo Bazán, many critics examine her adoration for androgyny. One author states:

> (Since) Pardo Bazán identifies androgyny as a favorite topic of the decadents, we must recall that she has already limited the figure's appeal by associating the androgyny with the monstrous. Indeed, although Pardo Bazán uses androgyny in her fiction to frustrate genre and gender expectations with indeterminacy…it is certainly tempting to explain Pardo Bazán's concern with an author androgyny by referring to the Countess's own literacy and personal battles. The tension in the relationships of both decadence and androgyny with nature is ultimately an asset for Pardo Bazán, as she shifts away from problematic androgyny and toward a new image of the unprecedented. (DuPont 354)

Androgyny is certainly a criticism of gender roles because it rejects the necessity to "choose" one gender. Pardo Bazán's fascination with androgyny could be credited to her attempt to deconstruct socially constructed gender norms, which is certainly present in stories such as "Memorias de un Solterón" in which "gender confusion implicit in the female author's use of a male voice is highlighted by references to the sign system of dress, to the unconventional garb of both narrator and the rebellious female protagonist, Feíta Neira" (Bauer 24). Such use of cross-dressing as a tool for feminism had not been seen in many previous writings, and Pardo Bazán uses it to further her pursuit for gender equality.

Somewhat related to androgyny is the importance of fashion in the writings of Pardo Bazán. Though some readers might think that fashion would not promote feminism, Pardo Bazán uses it for much more. One author remarked on the evolving changes in fashion reflecting the changing attitude of women, stating "during the final decades of the nineteenth century-whether in Spain or in the rest of Europe- neither the new fashion for women nor the feminist movement was viewed in a positive light. The image of a modern woman wearing a divided skirt, smoking a cigarette, or riding a bicycle was perceived as a menace to the traditional ideals of femininity and, as such, was largely ridiculed by the Spanish periodicals" (Heneghan 64). However Pardo Bazán challenges these societal norms not only by writing stories that explored the sexuality of women that was not normally discussed, but also by using this new sexuality as a tool to gain power. This idea is absolutely present in two stories in *Torn Lace* entitled "The Look" and "The Key". In both short stories, the leading women use the power of their feminine sexuality as a means to gain an upper hand against their male counterparts. In both stories the women are described as having a certain level of sexuality about them that the men in the stories cannot seem to resist, and they use this to their advantage. This method of storytelling was entertaining and somewhat over the top in its development of

plot and characters; however, Pardo Bazán was once again able to discuss a difficult subject without directly addressing society as a whole.

Another interesting theme throughout Pardo Bazán's various stories is her tendency not to give women stereotypically "happy endings". The first story that comes to mind is once again "Champagne". One of the last lines of the story is when the protagonist remarks, "but I think that if all women spoke their minds-as I did because of the champagne-a lot of them would be worse off than me" (Pardo Bazán 74). This line is interesting because it seems to be alluding to the prostitute's acknowledgement of a certain level of being content with her life. Though this line may come off as somewhat of a warning to other women not to speak their mind, in her last few lines the prostitute remarks to her lover for the night, "come on, give me more champagne. Now I can drink whatever I want. My lips have no more secrets to let out" (Pardo Bazán 74). The combination of these two lines seems to assert that though the prostitute had a much different life than perhaps what she was anticipating; she is free.

One of the only stories that seemed to contrast the fiercely prominent theme of feminism and freedom was "Sister Aparicion". This story follows a nun whose eyes could "never be forgotten" (Pardo Bazán 44). Throughout the development of the story, it is revealed that before the nun joined the convent, she was known as Irene and had a deep love for a man named Camargo. However, once she finally thinks she has found her happiness and given in to having sexual relations with him, he embarrasses her in front of all of his friends and she runs off to the convent, ashamed of herself. This story was one that seemed to stand out from the rest of the *Torn Lace* stories because it seemed quite the opposite of feminist. Irene not only depended on a man to find her happiness, but also succumbed to his ongoing advances toward her and finally was so embarrassed she felt the need to run away to a convent and forever be seen weeping, perhaps as a form of self-declared penance. The only feminist tone there is that of the narrator, who only in the finale of the story is revealed to be a woman. However, perhaps it asserts the idea that being submissive to a man will only result in personal embarrassment and shame, rather than the freedom of "Champagne". One author identifies this idea of freedom and happiness in Pardo Bazán's writings as well, stating that readers "should regard Pardo Bazán's feminism as a metaphor for women in transition to full personhood and as such a means rather than an end" (Giles 366). This idea seems to be a key one to understand, and could be attributed to Pardo Bazán's life choices as well. Rather than the "happy ending" defined by women finding the man with whom they will live for the rest of their lives, the real happiness is in finding the courage to stand up for themselves and their

own happiness. This is a bold perspective in contrast to the Victorian stories that preceded Pardo Bazán's writing. It seems to be a call to action for women to stop settling, and not be afraid of being alone-as Pardo Bazán was after she separated from her husband. This is also important to note because many people even in today's world have a false belief that feminism is composed of women whose purpose is to insult and degrade men, when in actuality it is mostly a movement that empowers women not to feel the necessity of having a male present in their life to make it worth living.

In addition to this dismissal of a need for a male presence, the writings of Emilia Pardo Bazán are also taken seriously for the manner in which she writes from a male perspective. One author states this added to her credibility, and that she "stands out among nineteenth century Spanish realist writers for the consistency with which she writes through a fully developed persona of the opposite sex, a fact perhaps too easily explained by the possibility that she wanted to avoid writing what George Elliot called 'silly novels by women novelists' and instead empowered her fiction with the greater degree of seriousness typically attributed to the male voice" (Bauer 25). Pardo Bazán is able accurately to represent both male and female voices as well as to identify the societal problems associated with both. Additionally one author remarks that the use of the male narratives makes her stories more powerful, stating:

> the use of the male narrative voices in the vast majority of the Countess's short narrative production is a characteristic of her work that needs to be more closely studied. It is due to the use of male narrators in many of her tales that the reader is generally given very little direct access to the female characters' thoughts and experiences. At first glance this may appear to be an unexpected finding, since we know from Pardo Bazán's non-fictional writings that she fully believed in the rights of women to be recognized as autonomous subjects. This technique, however, is not discordant with the Countess' feminist beliefs because there are often other nuances in the narrative structure of the tales that subtly manipulate the readers' interpretation of the story. The benefit of using a male narratorial voice is the credibility that it lends to the text simply because it is what a nineteenth century reader expected since most texts written during this time period used male narrators. (Walter 10)

For many of the stories of *Torn Lace,* the narrator's perspective sets the tone of the tale. Though for some of the stories the narrator remains nameless, it is assumed that a man is telling the story, with the exception of "Sister Aparacion." However despite this, Pardo Bazán is able correctly to identify the emotions of women in these stories so that readers

are able to connect to both the narrator, who may or may not be a woman, as well as the women in the story.

Emilia Pardo Bazán is regarded as a powerful woman and author in today's literary world who largely influenced other women to have the same amount of courage and fearlessness when writing their novels as well. In almost all of her stories, she makes observations about the lives of women and their difficulty in moving outside of their gender role. However, by giving the various characters of her stories powerful voices and purpose, she was able to put them in situations where they had power. Being a smart and well-educated woman, she knew she would receive backlash from the public; however, rather than writing under a male name or not writing at all, Pardo Bazán incorporates stories that are somewhat fantastic in their plot development, and simultaneously have relatable male and female characters. Because of this, readers are able directly to parallel her writings to their lives and see the clear critiques she is making of the treatment of women of her time. She challenges the ideas of marriage, sexuality, and submissiveness in relationships and how, above all, happiness and freedom should be valued. Emilia Pardo Bazán was a woman far beyond her years in wisdom, and she serves as an inspiration for readers even in today's world.

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Re-writing Myth, Exploring Gender, and Challenging Misogynist Narratives in Christine de Pizan's Writings

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Christine de Pizan was an astonishing figure, to the extent that she was a woman writer exploiting masculine "myths" and challenging standard gender roles in medieval France. Christine insisted that women must be educated, and was persistent in defending their morals and intelligence. While Christine was by no means today's version of a radical feminist, she did actively question the misogyny present in her medieval society, and in classical literature. Literary works written by men such as Ovid, Boccaccio, and Chaucer present the typical misogynist narrative that was prevalent in medieval society. Christine skillfully followed their writing techniques and reworked their own stories so she could paint a more favorable image of women. Although she was a woman writer, she was not entirely marginalized by her society since she was part of the aristocracy. Christine does challenge misogynist ideals, especially in the very beginning of her works when she notes that women can be just as moral and intelligent as men, but she does not necessarily question woman's place in society. In some cases, Christine reinforces the idea that women should be "self-sacrificing" and even advocates that women accept the conditions of their marriages, even if their husbands are brutal, for they will be rewarded in the afterlife. Christine's writings are heavily entwined with Christian ideologies throughout. A common comparison Christine makes is associating woman to the Church, implying that nurturing female attributes resemble the Church. In this essay, I plan to focus on the concept of feminism in the Middle Ages and closely examine how Christine's writings fit a feminist framework since she bended gender boundaries and reworked popular misogynist texts that initially sought to silence her sex. Ultimately, Christine's writings created a space that embraced the accomplishments of women—a space that called for individuality and empowered women to defend themselves against the tales that have demonized them.

Some modern feminists are cautious about claiming Christine since she does not call for a change in woman's position. It is important, though, to note that Christine was

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writing within medieval cultural boundaries. Critic Rosalind Brown-Grant argues that "such judgments tell us more about what modern feminists might wish Christine to have achieved, as opposed to what she herself sought to achieve in her campaign to champion the cause of women" (2). Christine, however, is explicit in her attempt to rework literature that shames her sex and ultimately create an opportunity for attitudes toward women to transform. Useful here is Helene Cixous' article "The Laugh of the Medusa," where she states that women should "write women" because they have been oppressed by patriarchal language, a view at some odds from Christine's. Cixous argues that if women write women, they will be reconnected with their bodies, which the masculine literary tradition has denied them. Christine's works, however, bend boundaries between the sexes since she sees "authorship as masculine performance" (Desmond, *Christine de Pizan and the Categories of Difference*, 195). Cixous' argument is not particularly helpful for this aspect since she creates simplistic binaries for each sex. Cixous develops a narrow interpretation of the concept of woman. Judith Butler's *Gender Trouble* is more useful in examining Christine's treatment of sex because she argues that universal concept of "woman" is problematic. Butler argues that gender is rather performative, and socially constructed over time: "gender proves to be performative — that is, constituting the identity it is purported to be. In this sense, gender is always a doing, though not a doing by a subject who might be said to preexist the deed" (33). This also proves to be a persistent theme in Christine's writings. I will explore each of these feminist theorists later in this essay. First, I will uncover Christine's reasoning for taking on a project in which she reworked well-known works of literature to form a series of writings that celebrate women rather than shame them.

Christine's personal life had an immense impact on her writings. Christine was a prominent writer in France during her time, writing between 1399 and 1430. After Christine's husband died, she earned an income with her writing. in order to support herself and her family. Many scholars consider Christine to be the first major woman writer to ever have done so. Christine raised some important questions regarding the representations of her sex during her time. She helped "foster the first major literary debate in French history and inaugurated what Renaissance writers and subsequent historians would call the 'debate about women'" (Krueger 594). Christine's *The Book of the City of Ladies* describes three allegorical ladies Reason, Rectitude, and Justice, who come to Christine in a dream and give her the authority to construct her own city comprised solely of women. Each of the women is able to rely on the other, which

enforces the sense of community amongst women. Her first step in establishing legitimacy is reimagining the antifeminist literature that surrounds her.

Christine states in *The Book of the City of Ladies* that her inspiration for writing the work is that while reading 13th century compilations, she could not find a chapter that did not criticize women and highlight their immorality. In each of the works written by male authors, "the behavior of women is inclined to and full of every vice" (4). Christine represents herself in the work so that readers can also experience the self-hatred she felt while reading these antifeminist stories. Because male authors have represented women negatively, Christine wishes that she had been born a man instead of a woman: "Alas, God, why did You not let me be born in the world as a man, so that all my inclinations would be to serve You better, and so that I would not stray in anything and would be as perfect as a man is said to be?" (5). After the three women come to Christine in a dream, encouraging her to develop a solid ground where she could defend women, Christine draws attention to the works that are filled with misogyny. She wants to counter the narrative on women that has been fostered in literature for so many centuries. Christine's main strategy is to reveal that women are not completely vile, which is why she must rewrite these women. Since the misogynist tradition has been reinforced in literature, the mystical figures appoint Christine the task of rewriting the destructive narrative and building her own city of women:

> Those ladies have been abandoned for so long, exposed like a field without a surrounding hedge, without finding a champion to afford them an adequate defense, notwithstanding those noble men who are required by order of law to protect them, who by negligence and apathy have allowed them to be mistreated…We three ladies whom you see here, moved by pity, have come to you to announce a particular edifice built like a city wall, strongly constructed and well founded, which has been predestined and established by our aid and counsel for you to build, [A city] where no one will reside except all ladies of fame and women worthy of praise, for the walls of the city will be closed to those women who lack virtue…Thus, fair daughter, the prerogative among women has been bestowed on you to establish and build the City of Ladies (10-11).

By encouraging Christine to build a city of women, the figures are emphasizing the significance women have had on the development of communities. The mystical manifestations present the key idea that women and men are equal to one another. The names of the three figures are also extremely significant. Lady Reason is the one to provide Christine with logic and to encourage her to pick up her pen and rewrite these

women. Without logic, Christine would not have the capability to question the well-known male authors of her time. Justice is a Christian figure, representing the daughter of God. Throughout Christine's works, we see that she enforces Christian themes, which were standard at the time period she was writing in. In addition, Justice is also a darker entity who seeks to punish the men that have written negative portrayals of women. She reveals the horrific fate of misogynists who lie about women. Rectitude is rather similar to Reason. She tells Christine examples of virtuous women, convincing Christine to channel her "great love of investigating the truth" (10). Lady Justice also tells Christine, "I am in God and God is in me, and we are as one and the same" (14). Her claim that God shares a close bond with women directly would have been a controversial statement in Christine's society. Christine eventually comes to the realization that she must adapt these authors' works to her own conditions.

While she would not have known her, Christine seems to echo Chaucer's fictional *Wife of Baths* when she states that had women written these works "they would read quite differently, for well do women know the blame is wrong" (Desmond, *Christine De Pizan and the Categories of Difference,* 73-74). According to Sheila Delany, Christine mentions virtuous women that defy the misogynist generalizations in order to "rewrite women good" (Delany 81). Christine ultimately adapts male-authored mythological works concerning famous women, such as Ovid's *Metamorphoses* and Boccaccio's *De mulieribus claris,* to fit in her own framework, as she writes of virtuous, intelligent, and sincere women. Christine's main goal is to establish the effect of the existing social structure and signify woman's active place (Kellogg 183). Christine does not take on Ovid's approach of shaming the sexes, however. Rather, she draws in Christianity as a tool to solidify her argument that the sexes were made equal: "God created the soul and placed wholly similar souls, equally good and noble in the feminine and in the masculine bodies" (Pizan 23). Christine's work is divided into three textual levels of meaning: text (actual story) gloss (morals within the story) and the allegory (Christian truth). In each of these levels, Christine reveals women in a more positive light, than they had been in previous literary works.

Christine was extremely critical of Ovid, especially in her work *Epistre au dieu d'Amour*. *Epistre* is an allegory where Cupid addresses women who claim that men were mistreating and cultivating lies about them. Cupid's final verdict is that these dishonest men should be banished. Prior to announcing his final decision, Cupid mentions examples where men lied to women and severely mistreated them. He mentions several writers that are guilty of this practice, including Ovid and Jean de Meun. Although

Christine directly draws attention to Jean de Meun's demeaning view of women, in the *Romance of the Rose,* she notes that he "borrowed" his views from Ovid. Christine claims that Ovid's views present "perverse, poisonous doctrine" (Kellogg 181). According to Cupid, because of Ovid's immense "lust," he took his feelings out against women and "set out to slander them" (Desmond, *Christine De Pizan and the Categories of Difference,* 182). Christine notes that Ovid's *Art of Love* teaches men "how to trick women into bestowing their favors on them…this book is badly named: it is rather a book of the art of sheer deceit and dissimulation—that's the name I give it" (182). Christine is rather explicit about her disdain for Ovid's representation of women, who are typically portrayed as the objects of male desire and who are repeatedly punished.

In order to defy the misogynist narrative, Christine follows the Ovidian tradition to refine the initial representation of women. Since Ovid's work was well known in medieval society, Christine is rewriting the women who have been established in literary tradition, in order to show them in a more positive light. Both Ovid and Christine rewrite the Greek myth of Arachne. In Ovid's *Metamorphoses*, Arachne was a poor young girl who challenged Athena, the goddess who invented the art of weaving, to a weaving contest. During the contest, Arachne wove 21 pictures that captured the corruption of the gods and goddesses: raping, cheating, and punishing humans. Arachne reveals that the greatest perpetrator of all was Zeus. Athena was outraged, and eventually turned Arachne into a spider. Feminists have analyzed the story of Arachne as representing the male attempt to silence and ignore female artists over time. Men have committed the rapes and have tried to silence the women who have sought to report sexual violence. In addition, other critics have also pointed out that Athena is not really female, but rather masculine since Zeus technically gave birth to her when she popped out of his head. Critic Patricia K. Joplin says that Athena was "an enfleshed fantasy, a male fantasy" (Wisman 138). In Christine's version of Arachne in the *Epistre au Dieu d'Amours,* the story is only four lines long. Christine acknowledges that the story of Arachne, is a fable—an false story. By referring to Arachne's story as a fable, she is already undermining Ovid.

Although Christine does not change Arachne's original fate of being transformed into a spider, she emphasizes that Arachne was punished for her boastfulness, instead of exposing the gods' cruelty. Moreover, it is important to note that in Christine's version, now that Arachne has been transformed into a spider, her punishment is to spend the rest of her life spinning "work of no value" (Pizan, Brownlee, and Blumenfeld-Kosinski 36). Prior to Arachne's transformation, her works told significant stories, and they were creative. With this detail, Christine is emphasizing that

the importance of female craft and artistry (36). Feminist theorists Helene Cixous and Judith Butler would both approach this story in their own distinct manners.

Since Cixous divides man and woman into binary opposites, she would argue that the original version of Arachne presents man's attempt to silence woman, furthering her oppression. If we consider Athena to be a man, since she popped out of Zeus' head and takes on masculine traits, Cixous would emphasize that the original story represents the superiority men have over women. She believed that sex and gender discourses were interchangeable, and that therefore Athena must really be a man. Thus, Cixous called on women to write women so they could challenge masculine narratives. From Cixous' perspective, she would emphasize that Christine is bringing "women to their senses and to their meaning in history" (Cixous 875-876), ultimately showing women how men have trampled on them in literature. Similar to Christine, Cixous also highlights that men have typically denied women their subjectivity. Thus, Christine takes on the task of establishing woman's importance, especially since Ovid's story seeks to punish Arachne for revealing her craft. However, if we are applying Judith Butler's theory to Arachne, Butler would claim that Athena is a woman, and is instead taking on masculine traits. Since Butler emphasizes that gender is performative, an individual can take on the traits from either sex. Through performance, the individual can obtain the authority that is projected through bodily characteristics. I will further explain this subject later in the paper when discussing Christine's complex view on gender. Christine also adapted other Ovidian works, where she used Christianity to defend women.

In *Othea,* Christine reworks Ovid's myth on Ceyx and Alcyone to emphasize that women are moral, committed, and channel the saving grace of the Church. The tale is a tragic story about King Ceyx and his wife Alcyone. King Ceyx dies at sea after Alcyone begs him not to undertake in the voyage. In Ovid's version, he does not give the reader any details of Ceyx's suffering in the storm. Ovid ultimately refrains from discussing the human drama on the story. In Christine's version, she directly places Alcyone as the main focus on the story. She also details the human emotion, highlighting Alcyone's power and courage. Christine defends women in this myth when she points out that Alycone's feminine actions are similar to the Christian Church. In times of need, individuals seek counsel in the Church. Women also take on the qualities of the church, especially in times of need. According to critic Judith L. Kellogg in her article "Transforming Ovid The Metamorphosis of Female Authority, Christine "associates the idea of the Church with loving female actions rather than an inanimate object" (184). Since the Catholic church held a significant position in Christine's society, equating the

Church with women would have been controversial in a time where women were scorned.

In Christine's version of the myth, when her husband is killed in the storm, Alcyone attempts to join him in order to share his tragic fate. Instead, when Alcyone throws herself into the sea and dies, she and her husband, are transformed into birds. Kellogg argues that this scene presents an example of Christian eternal salvation. Eternal salvation "is only attained after death, and after a life of self-sacrifice, of loving another more than oneself as Alycone has done. She, by her spirit of charity, thus becomes an appropriate and satisfying emblem for the Church" (185). While Kellogg's analysis provides vital insight to Christine's attempts to channel Christian ideologies in her work, specifically when comparing women to the Church, I find it concerning that Kellogg does not consider the implications this part of the story has for Christine's feminist agenda. Kellogg does not critically examine or explain Christine's approach in placing Alcyone in the typical "self-sacrificing" role for a woman. Throughout literature, women are constantly expected to take on the self-sacrificing role for their husbands. I find that Christine is merely reiterating a problematic narrative that has been repeated for centuries. Kellogg ultimately does not challenge Christine's spiritual approach to feminism. Christine has also mentioned in her work that she longed to follow Alcyone's footsteps when her husband died: "I raised myself up like a mad woman. I climbed high and would have plunged myself into the sea and came close to doing so. If someone hadn't helped me, I would have jumped. For never did Alcyone jump any sooner into the seas where Ceyx, whom she had long loved, was lost to her than I would have fallen into the sea" (186). Since Christine is following Ovid, the story must also involve some sort of transformation. Thus, Christine becomes a man so that she is able to take on the responsibility of supporting her family, and can rid herself of "typical" feminine feelings of sorrow. Kellogg also mentions the reasoning for this change. Christine needed to take on the male traits in order to thrive in the patriarchal society.

Some feminists are reluctant to claim Christine de Pizan as one of their own, mostly because she did not challenge woman's place in society. Although Christine is critical of misogyny, she accepts woman's suffering. According to Christine, women must endure the abuses of men, along with the Church's mistreatment of them. In the *City of Ladies,* Lady Reason tells Christine that women must follow "the example of suffering which God commands" (LeGates 108). Women who have husbands "who are cruel, mean, and savage," must be patient, for they will "acquire great merit for their souls through the virtue of patience" (108). Marlene LeGates argues that while Christine

challenged misogyny, she did not necessarily challenge the structures that have oppressed women: "Christine de Pizan draws back from any call of social change. Her claim for spiritual equality entails nothing further" (109). Christine mostly attacks individual and psychological misogyny. In these lines specifically, we can see that Christine is extremely connected to the traditions of her medieval culture, and shows some reasons why feminists have criticized her. However, by invoking Christian tradition, and emphasizing women's equality under spiritual beliefs, Christine can alter negative attitudes toward women. Christine did in fact try to create a better image of women, and change the oppressive narrative surrounding her sex. However, Christine was aware that she had to channel masculine attributes in order to develop a platform where she could defend women with her writing. Therefore, she did not have a restricted understanding of gender.

Feminist theorists tend to disagree with one another especially, when defining and applying the concept of "woman." Christine asks in a debate concerning the poor representation of women in the medieval French poem *Roman de la Rose:* "Who are women? Who are they? Are they serpents, wolves, lions, dragons, monsters, or ravishing devouring beasts and enemies to human nature that it is necessary to make an art of deceiving them and capturing them" (Desmond, *Christine de Pizan and the Categories of Difference*, 190). In her groundbreaking work, *The Second Sex,* Simone de Beauvoir asks a similar question: "What is a woman?" Beauvoir herself even stated that Christine was the first woman to "take up her pen in defense of her sex" (105). Early on, Beauvoir claims her own embodiment when she states "I am." While claiming her femininity, Beauvoir also wants to uncover the reason for woman's long-rooted oppression. She highlights that woman is the *other*. According to Desmond's work *Reading Dido: Gender, Textuality, and the Medieval Aeneid*, Christine "does not achieve her authorial identity in relation to the 'the threatening Other.' Instead, it is her identity as a woman—and her culture's identification of woman with the Other—that must be negotiated and renegotiated in each of her texts" (196). Further, Christine must tamper with gender expectations in order to establish authority in her writing. When we analyze the situation of women, we have to consider the belief system they are subjected to and also the individual situation each women is put into. We typically define feminism as the pursuit of achieving legal and political equal rights for women, which is rather naive and simplistic with respect to feminist theory.

Mainstream "feminists" today tend to critique other women who share a different culture and experiences from them, which often leads to alienating them.

Generally, many assume that feminism is mostly concerned with obtaining "equal rights" for women and have silenced women of low-income backgrounds, women of color, and lesbians—mostly because they may share a different perspective. Mainstream feminists would be quick to dismiss Christine, primarily because of her upbringing and conservative viewpoints. In Christine's defense, she was writing in a conservative medieval culture in France where women were continuously demonized by society, and especially in the misogynist literary tradition. The term "feminism" was not coined in France until the 1880s, where it was linked to emancipating women (Krueger 590). The concept of obtaining "equal rights" was nearly impossible during Christine's time. Yet she was still able to make a living from her writings, which was extremely rare for a woman of her time. Cixous, within her narrow understanding of gender, called on women to "write women" in the 1970s, stating that there were not enough women writers challenging male-dominated narratives: "And why don't you write? Write! Writing is for you, you are for you; your body is yours, take it. I know why you haven't written. Because writing is at once too high, too great for you, it's reserved for the great—-that is, for great men; and it's silly" (877). Contrary to Cixous' assumptions, Roberta L. Krueger's article "Toward Feminism: Christine de Pizan, Female Advocacy, and Women's Textual Communities in the Late Middle Ages in Beyond," says that if we reconsider "our perspective to look for evidence of the promotion of women's intellectual activity, the defense of female moral equality, and the affirmation of women's contributions to their families and communities, then the record becomes far richer" (591). Christine's writings are certainly evidence of this phenomenon.

In her poststructuralist feminist text "The Laugh of the Medusa," Cixous attempts to connect women to writing, so they can be reunited with their bodies. Cixous emphasizes that women should write about women: "Write your self. Your body must be heard. Only then will the immense resources of the unconscious spring forth" (880). With this claim, Cixous evokes a sense of eroticism, encouraging women to explore their repressed bodies. In addition, according to Cixous, men have helped turn women against one another, which is why women have to claim their bodies and should write. Instead, women are expected to follow the classic narrative that women are dreamy, passive, and sensitive. Within this narrative, we never really have a chance to explore women's bodies in literature. If women write women, they can help transform this representation and liberate themselves in the process.

Throughout this article, we encounter a theme that women can change their position in society through language. However, Cixous notes that language has also

contributed to women's oppression. She argues that reinventing the masculine language of writing "Écriture feminine," will give woman her femininity, thus allowing her to explore her sexuality. She states that writing is "typically masculine [and] a locus where the repression of women [is] perpetuated over and over" (879). While there are obvious disparities between Christine's work and Cixous' piece (which I will explain later in this essay when we talk about the treatment of gender in Christine), what is important to note is that both women emphasize writing women. Christine was part of the foundation for women to begin writing women: she established self-authorization. Cixous' calling on women to challenge patriarchal narratives is what Christine already did hundreds of years before.

Like Christine, Cixous also reworks myth, particularly the story of Medusa. While mythology has painted Medusa as a monstrous, deadly figure, Cixous emphasizes that "You only have to look at the Medusa straight on to see her. And she's not deadly. She's beautiful and she's laughing" (885). It was Christine who explicitly confronted the misogyny of her time and wrote back to prominent male writers. Cixous defines what writing is: "Writing is precisely the very possibility of change, the space that can serve as a springboard for subversive thought, the precursory movement of a transformation of social and cultural structures" (879). Christine's writings created a space where debate concerning women could flourish. In defying antifeminist narratives, Krueger professes that Christine acts like a "lawyer refuting false charges with superior evidence….[she] progressively constructs a defense of women's intellectual and artistic capacities, women's constancy and resourcefulness, and their fortitude as rulers, wives, mothers, and martyr saints" (595).

However, Christine and Cixous differ especially on perspectives concerning the female body. Modern feminists could potentially argue that Christine's Christian approach to the female body is repressive, for she constrains herself within medieval cultural boundaries. According to scholar Benjamin Semple, the female body in medieval Christian culture was primarily viewed as "profane" in comparison to the male body (164). However, Semple points out in Christine's defense, that besides illuminating on woman's moral, intellectual, and political achievements, Christine emphasizes that "body is given as a gift because it can be withheld, and that the body as a threat is only considered threatening because the person who directs the body—the woman—has been represented as divested of ethical capability" (183). In contrast, Cixous' emphasis on the body endorses sexual and economic exploitation of the female body. Along with there

different approaches to the female body, both Cixous and Christine have different treatments of gender.

Christine appears to have a complex view of sex and gender. Christine's earlier work *The Book of Fortune's Transformation,* showed that she found it difficult to define her gender. In a work written the *Book of The City of Ladies* with her dream of the three women, Christine questions her sex and wishes to be a man. According to Kellogg, "Given the unsettling cultural signification attached to the female body, considered a grotesque sign of woman's base and irrational nature, it is not surprising that a male body would become a necessary symbolic vehicle for admittance into the public, economically driven world of patriarchal discourse" (Kellogg 188). Taking on male characteristics offered Christine a chance to survive in the male-dominated public sphere.

To Christine, gender is not a limited and solidified category. There is space in between the genders, and individuals can shift between the two, and absorb the attributions of each side. Christine says that her upbringing as a woman severely limited the opportunities she was able to explore. In *The Book of Fortune's Transformation*, she explains that Fortune changed her sex when she was 25 years old, after her husband died, and that change was imperative so she could obtain the masculine qualities required in order to survive: "Wearied by long crying, I remained, on one particular occasion, completely overcome; as if unconscious…Then my mistress came to me, she who gives joy to many, and she touched me all over my body…I felt myself completely transformed" (Walters 100). Christine suddenly feels stronger and no longer feels her grief: "I no longer remained in the lethargy of tears, which had been increasing my grief, I found my heart strong and bold, which surprised me, but I felt that I had become a true man; and I was amazed at this strange adventure" (100). The transformation emphasizes that both man and woman share a soul and the quintessence of the human species (Rosalind-Grant 120). Christine is expressing the notion of a universal human perspective. Literary critic Earl Jeffery Richards notes that because of her metamorphosis, Christine retained the memories of a woman, even after becoming a man, which "literally embodies the human condition" (Richards 150). She carefully detaches herself from the notion that sex and gender are interchangeable. Cixous was very firm on completely separating man from woman, which makes her argument problematic to gender studies. In her approach to feminism, Cixous divides the genders into two district categories, male versus female, while also placing women into one universal category. Butler, on the other hand, is uncomfortable with this aspect. She thinks that the notion that women share the same qualities despite cross cultural differences and experiences, is

a destructive generalization, as is the universal concept of women. Her argument is important in understanding Christine's ambiguity surrounding gender. In addition, when Christine challenges the biological relation to gender, she echoes Judith Butler's take on gender.

Judith Butler's text *Gender Trouble* argues that performance is vital to determining one's gender. An individual can obtain authority of the other sex through performance. Butler is uncomfortable with the simplistic gender binaries that Cixous has set up in her argument. She argues that the universal concept of "woman" is problematic. Gender is rather performative, and socially constructed over time. Individuals take on a role and act out their gender. She emphasizes that one comes into gender through actions: "gender proves to be performative — that is, constituting the identity it is purported to be. In this sense, gender is always a doing, though not a doing by a subject who might be said to preexist the deed" (Butler 33). Gender and sex should be viewed as two entirely separate discourses. In addition, Butler finds the universal approach to the concept of "woman" problematic. Christine explores her gender in a related way through her name play. Christine points out to the readers that her name derives from the male figure Christ. By doing this, Christine is forcing the reader to see her name as an allusion to Christ. Ultimately, her hybrid name because of its universality, reinforces her ambiguous view on gender (Walters 98).

Christine eventually comes to accept her sex in *The Book of the City of Ladies*, when she encounters the three women, Reason, Rectitude, and Justice, and they inform her of woman's achievements throughout history. Lady Reason especially, who draws out self-knowledge in Christine, points out that her loathing toward her sex mirrors the process of fire trying gold:

> Fair daughter, have you lost all sense? Have you forgotten that when fine gold is tested in the furnace, it does not change or vary in strength but becomes purer the more it is hammered and handled in different ways. Do you not know that the best things are the most debated and the most discussed?…Come back to yourself, recover your senses, and do not trouble yourself anymore over such absurdities. For you know that any evil spoken of women so generally only hurts those who say it, not women themselves (Pizan 6-8).

Christine overcomes the desire to be born a man. The three women eventually enforce in Christine a sense of pride in the female body and female intellect. However, some aspects of her masculine self follow her as she turns into her "natural self" in the *City of Ladies*. Ultimately, Christine unveils her understanding of herself as a "woman," whereby she

can write with male authority, while also addressing the issues surrounding women of her time. Most importantly, she is critical of male authority and antifeminist slurs. She writes stories of powerful women such as the Joan of Arc. Ultimately, the trend of creating heroic women persisted in her writing (Pizan, Brownlee, and Blumenfeld-Kosinski 256-257). Christine calls on women to search for their female ancestors, and specifically focuses on powerful women. Although Christine has a primarily Eurocentric worldview, which is not surprising considering the time that she was writing in, she expresses the notion that we should explore the stories of women.

Feminist thought can be complex, especially Western feminism that often groups women into one vague category, while marginalizing women of non-Western cultures and places. While Cixous makes an important argument that women should write themselves, considering the fact that women have been subjected to a patriarchal framework, other feminists note that we should be careful when applying the concept of woman. Butler highlights that categorizing women can be destructive, since sex and gender are different concepts and involve social constructions. Feminism is far more complicated and involves many more approaches than focusing on "equal rights." Each of these theorists clearly emphasizes that the traditional idea of "woman" does not mean the same thing to every woman. To Christine, woman was not a narrow category that was solely comprised of feminine attributes. Channeling male characteristics ultimately helped Christine survive and support herself, especially after her husband died. Now that Christine has lived as both a man and a woman, she is able to carefully approach misogynist literature with a critical eye.

Medieval society viewed woman as less intelligent and less ethical than man, and perceived her body as profane. Because of these views, Christine had developed the desire to become a man. In her fiction, Fortune visited Christine and transformed her into a man, so that she could obtain masculine authority in a patriarchal society, and could support herself and her family. Christine's ambiguous views on gender illustrate Butler's claims that gender is performative. People's actions come to define gender, rather than their biological makeup. While Cixous' theory is somewhat useful in understanding Christine in terms of women writing women, her understanding of gender is too restricted for understanding Christine, who claims she was able to take on the traits of each gender. Most importantly, Christine is able to look beyond gender boundaries, and emphasize the shared human experience in order "to persuade the male reader to look beyond the identification of woman with the body and man with the soul, and to attach greater significance to what unites the two sexes—their higher human faculties such as

rationality—than to what distinguishes them" (Brown-Grant 216). Moreover, Christine eventually overcomes her desire to become a man, when the three women visit her and encourage her "to return as a woman and be heard" (Desmond, *Christine De Pizan and the Categories of Difference,* 189). Christine ultimately transforms into her "natural self." However, this natural self now contains both masculine and feminine experiences since she claims to have lived as both. With the support of the three women, Christine is able to establish feminine authority in her society, while also defying the male assumptions about women that are presented in Ovid and other similar works. Although Christine is not critical of woman's inferior position in her society, she attempts to change society's attitude toward women. By establishing herself in the *City of Ladies,* Christine invites the female reader to challenge antifeminist narratives, while emphasizing that woman can obtain moral virtue, despite what the misogynist narrative may imply. She is able to attack misogyny directly and rewrite women as virtuous and intelligent figures. Christine unveils the "poisonous doctrine" in antifeminist texts that encourages women to refute the sexist narratives that have been written. By establishing a female voice that defends her sex. Christine's writings are just as relevant today in understanding feminist theory and its progression as they were when she wrote.

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