

The George  
Mason Review

# GMR







**EXEMPLARY UNDERGRADUATE WRITING  
ACROSS THE CURRICULUM**

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## MISSION STATEMENT

The mission of *The George Mason Review* is to capture Mason's spirit, where "innovation is tradition," through the publication of diverse works from across the curriculum. *The George Mason Review*, a publication for undergraduates by undergraduates, seeks scholarship that demonstrates creativity and critical thought. In its print and virtual form, this cross-disciplinary and interdisciplinary journal features exemplary academic work and welcomes submissions that challenge the boundaries of how scholarship has traditionally been defined.

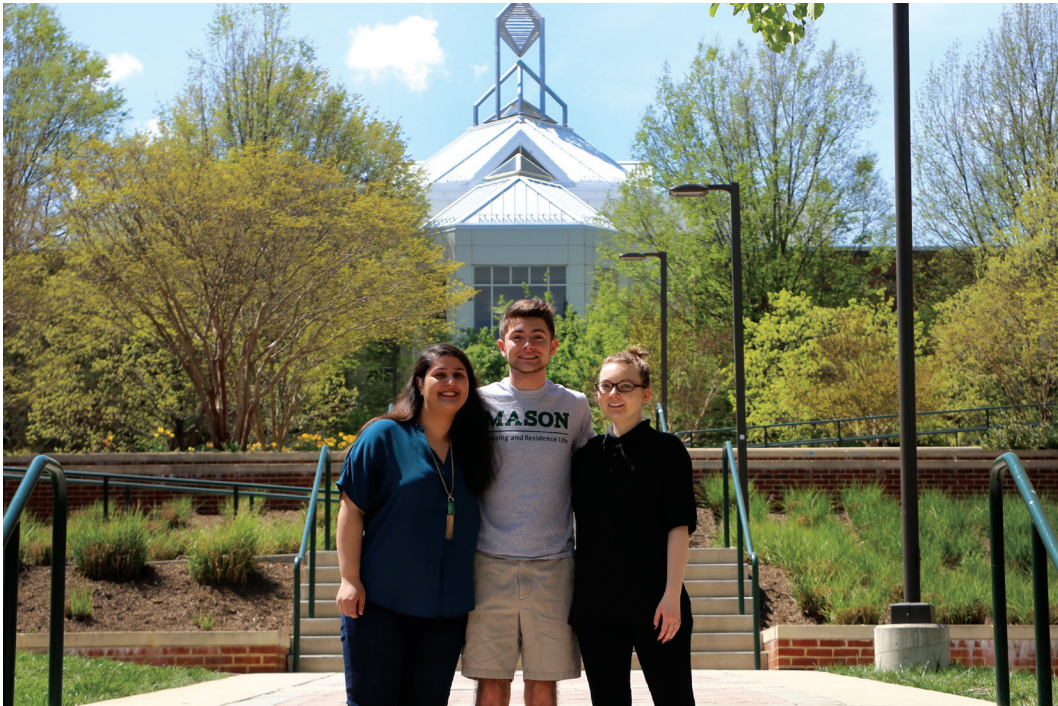
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# TABLE OF CONTENTS

HOW TO SUBMIT YOUR WORK	1
NOTE FROM THE EDITOR <i>Nina Motazedi</i>	7
MASON'S COMMITMENT TO RESEARCH SPURS INNOVATIVE LEARNING <i>Ángel Cabrera — Guest Essay</i>	12
A SENSE OF HISTORICAL DEVELOPMENT IN PHYSICS FROM A POSTMODERNIST PERSPECTIVE <i>Austin Bradley — Best Submission — 1st Place Winner</i>	20
CAMILO EGAS'S JOURNEYS ABROAD: SUCCESS OR FAILURE FOR ECUADORIAN ART? <i>Gabriela Sorely Larkin — Best Submission — 2nd Place Winner</i>	30
IMPERIALISM AND REBELLIOUS RITUALIZATION: FEMALE GENITAL CUTTING AMONG THE JOLA OF CASAMANCE, SOUTHERN SENEGAL <i>Michelle Gaspari — Best Submission — 3rd Place Winner</i>	42
PHOTOGRAPHY AND ENVIRONMENTAL ISSUES: BRINGING PLACES AND DISCUSSIONS INTO THE CLASSROOM <i>Benjamin Rhoades</i>	52



THE NILE RIVER: A MONUMENTAL FORCE <i>Brianna Russell</i>	64
ORIENTALISM AND THE PERPETUATION OF STEREOTYPES IN THE NUTCRACKER <i>Leila Mire</i>	72
TRANSFORMING THE CHILD: REINTEGRATING FORMER CHILD SOLDIERS OF SIERRA LEONE <i>Hawatu Davowah</i>	78
ELECTROPHYSIOLOGICAL ASSESSMENT OF SODIUM CHLORATE ON SPINAL CORD NEURONS <i>IN VITRO</i> <i>Zachary Baker</i>	90
REPRODUCTIVE HEALTH CARE ACCESSIBILITY: HOMELESS AND LOW-INCOME WOMEN IN WASHINGTON, D.C. <i>Michelle Gaspari</i>	98
DANGEROUS FLOWERS: THE THREAT OF IDENTITY IN PLATH’S “TULIPS” <i>Aryelle Young</i>	108
SOURCES	116
FACULTY GUIDE: GMR IN THE CLASSROOM	128



## NOTE FROM THE EDITOR

During this yearlong endeavor, I had the privilege of working alongside such talented individuals whose diligence and dedication has culminated in the journal you are about to read. I would like to sincerely thank all those who were involved in making this publication possible. From the Student Media staff to the professors who willingly sent our emails to their students, your invaluable contribution is greatly appreciated.

I would like to thank our Student Media faculty advisor, Jason Hartsel, for his continuous guidance and support. Throughout this learning experience, you answered any questions I had, calmed any concerns I had, and helped transform any ideas I had into realities. If it were not for you, I would still be trying to log in to our email account, figuratively speaking of course.

Dr. Cabrera, I would like to thank you for your contribution to our journal and, more importantly, for your contribution to this university; thank you for recognizing the scholarly potential within Mason undergraduates and for fostering an environment in which research thrives.

I am particularly indebted to my incredible Executive Board, whose aspirations for our journal served as a source of inspiration for myself. Kelly, thank you for not only impeccably managing the Peer Reviewers, but also for being passionately involved in every other aspect of *The George Mason Review's* mission. Your advice when making decisions was crucial, and your suggestions certainly elevated the publication as a whole. Jimmy, thank you for your dependability, meticulousness, and general calming presence (my sanity thanks you as well). Jason, thank you for your constant creativity, specifically in designing the cover. Above all, thank you to our dedicated Peer Reviewers and our visionary authors, both of whom are vital to the journal's existence. I am immensely grateful to each Peer Reviewers' unwavering commitment towards *GMR*. Even when the papers assigned to you more than doubled, you continued to provide timely, detailed feedback. Without you, our Peer Reviewers, there would be no publication.

This year, we received a number of exceptional papers, regrettably more than we were able to publish. I would like to thank all the student authors for pursuing research that re-vision scholarship and for producing high quality papers. Without you, our authors, we would have no content to publish. I was impressed

with your hard work, ingenuity, and professionalism, and I am confident that this will be the first of many venues in which your work will be published.

To the students, the future researchers, reading this: never stop asking questions. Your insatiable curiosity and drive to find answers will ultimately pave the path forward. Always strive to learn more, whether from books or people. Your fellow human has much to teach you, if you have the patience to truly listen. Even in the realm of academia, humanity can be a powerful, yet often forgotten, source of innovation. After reading the 26th volume of *The George Mason Review*, I only hope you will be inspired to undertake a research project of your own.

Sincerely,

**Nina Motazed**

*Editor-in-Chief*







**GUEST ESSAY**



## **MASON'S COMMITMENT TO RESEARCH SPURS INNOVATIVE LEARNING**

### **DR. ÁNGEL CABRERA**

President of George Mason University

George Mason University achieved a remarkable milestone in 2016 when the influential Carnegie Classification of Institutions of Higher Education designated Mason as a “very high research” institution, the top tier among research universities. Previously, Carnegie had considered Mason to be in the “high research” category, already an impressive achievement for a young university established in 1972. Mason’s consolidation as a top research university is good news for our region and, more importantly, for our students.

To be clear, the “R1” status does not necessarily mean we are a better university than any institution classified differently. American universities differ in their missions and seek excellence in a variety of ways. Our new classification, though, does signal that we are one of the top 115 universities in the United States in terms of the intensity of our research enterprise — the number of doctoral students, the volume of competitive research grants received, the size of the research support



staff, and other factors. The R1 designation creates an expectation that we will be competing to attract the best scholars to our faculty, recruit the most talented students, and secure the most prestigious and generous research grants.

Mason's R1 status also raises our profile nationally and internationally, and, if we manage it well, it can contribute to creating a self-fulfilling prophecy that should make our research even more distinctive. R1 indicates to the scientific community, and to current and potential partners, that Mason has the scientific wherewithal to tackle major challenges and serve as an innovation engine for our region.

Not all universities are research-intensive, nor do they need to be. There are great institutions around the world that provide transformative learning experiences to students without attempting to shine in terms of scholarship. Research universities like Mason, however, provide a specific type of experience, one that is rooted in the connection between active engagement in the advancement of a discipline and the education of new experts in that discipline. When that formula works, the outcomes can be extraordinary for students and for entire communities.

Communities surrounding research universities benefit from the spillover value of talent and innovation that takes root locally. Research universities attract talent from across the country and around the world. Graduates who choose to remain in the surrounding area fill the ranks of local companies — or help create new ones. The most significant technology transfer from universities does not take the form of patents and licensing agreements but graduates who enrich the local ecosystem of innovation by leveraging their education and connections within the knowledge-intensive hubs formed around universities.

But driving innovation is not the only reason why universities engage in intensive research. A more immediate and direct reason is that research can make universities better able to serve students.

The late Herbert Simon, a Carnegie Mellon University professor of business administration, psychology, and computer science, Nobel Laureate in economics, and one of my personal intellectual heroes, once argued that the main reason universities value research is not because of the new discoveries they hope to make. The real reason universities engage in research is that, by doing so, they can build a stronger faculty that can deliver greater value to students. Maintaining a competitive research agenda requires that faculty remain on the cutting edge of their disciplines. One cannot meaningfully contribute something new in any field without first understanding what is already known in that field. While research is not the only way for faculty to keep their expertise up to date, it is one of the most effective, and it brings additional benefits for students.

Ask anyone who had the opportunity to conduct research with a faculty member

while in school and they are likely to consider that experience as the most impactful they had in college. I am one of them.

At my alma mater, the Telecommunications Engineering School of Madrid, I did well in my computer and electrical engineering classes. But it was not until I joined the digital signal processing lab in my junior year and worked with faculty and graduate students in developing speech processing systems that I was able to connect the dots among the various disciplines I had studied in the classroom. The fact that I did well in decontextualized, narrow disciplinary exams did not guarantee that I would ever understand how disparate concepts from different domains could come together to help dissect problems and craft creative solutions. Only by joining a team of researchers facing a novel and difficult problem was I finally able to comprehend the amazing connections between various engineering, computing, mathematical, and even psychological concepts.

Students learn best when they are fully engaged with the subject matter in contexts of real significance, articulating new questions worth asking, and probing for novel answers to those questions. Students engaged in research gain a sense of independence about the direction of their own learning and a feeling of self-confidence about their ability to learn more. They also develop analytical skills that will serve them no matter their career, even in domains far removed from the disciplines in which they engaged. They fuel their passions and interests in a real-world context of mutual discovery and collaboration.

Finding creative ways to offer experiential learning opportunities through undergraduate research and other avenues is a fundamental Mason goal. We want our students to develop a much more intimate and deep understanding of a field of study. We also want them to forge close academic relationships with faculty and with each other by working together to generate new ideas and find innovative solutions for today's challenges.

For those reasons and many others, students benefit directly and indirectly from attending research universities. They have access to faculty thought leaders who have their credentials constantly checked by the best experts in the world—their own peers at other research universities. Students at research universities have access to internships and careers in knowledge-based organizations co-located and connected with their institutions. (Our Washington, D.C., region might be second to none in such opportunities). Perhaps greatest of all, students can engage in one of the richest and most effective forms of learning: conducting supervised research with faculty members who educate, inspire, and mentor them.

The beginning of a student's academic journey comes from observing the commitment and dedication of faculty members. To make a contribution to their

field, no matter how modest or incremental, a faculty member must first develop a comprehensive understanding of her discipline and its methods of inquiry, far beyond what she teaches in her courses. And she has to prove to others that she has done so. Through observation and interaction with faculty, students gain a greater understanding of the commitment that research requires as they begin to consider similar pursuits of their own.

It's a productive loop; faculty mentors say that undergraduates contribute to their own scholarship by providing research or lab support, data collection and/or analysis, and assistance with writing for publication. Students can offer fresh perspectives or insights into the research and help their mentor solve problems or clarify questions. Students' deep engagement can inspire faculty to explore new questions and topics, which has led some into new areas of discovery.<sup>1</sup>

When I decided to embark on a Ph.D. in psychology at Georgia Tech, I had to start building my knowledge of the discipline from scratch. But my undergraduate research experience, even if it was in engineering, proved to be extremely beneficial. It taught me how to learn, apply knowledge in creative ways, ask questions, and make connections across disciplines. It also allowed me to bring a set of tools from engineering to my work in psychology that had rarely been utilized before. I can relate to the Mason students I talk to who, through their own interdisciplinary research, feel the rush of discovery and the ambition to do more.

Students who are involved in the classroom, laboratory, performance stage, design studio, or field station often are the students most involved in campus life and taking advantage of the overall student experience. Graduating seniors who have done a research or a creative project with Mason faculty report greater satisfaction with the education in their major and with their overall Mason experience than other students.<sup>2</sup>

So the more undergraduate research opportunities we can provide the better, whether it is through our award-winning Office of Scholarship, Creative Activities, and Research<sup>3</sup> (OSCAR), taking Research and Scholarship Intensive (RS) courses in the major, or by assisting faculty members on their research through the OSCAR Federal Work-Study Research Assistant program. Students who participate in our Undergraduate Research Scholarship Program receive funding and course credit to work with faculty on research teams and projects. Mason faculty members mentor students in all majors, from bioengineering to history, to social work, folklore studies, astronomy, and art and visual technology.

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1 <https://ira.gmu.edu/wp-content/uploads/2013/08/OSCAR-Faculty-Survey-Report-November-2016.pdf>

2 Graduating Senior Survey 2014: Selected Results on Scholarly and Creative Activities, Office of Institutional Assessment, George Mason University, February 2015

3 [http://www.cur.org/the\\_council\\_on\\_undergraduate\\_research\\_recognizes\\_campuses\\_with\\_characteristics\\_of\\_excellence\\_in\\_undergraduate\\_research/](http://www.cur.org/the_council_on_undergraduate_research_recognizes_campuses_with_characteristics_of_excellence_in_undergraduate_research/)

You can read about some Mason students' undergraduate research on the Students as Scholars blog. Findings can also be presented at undergraduate research symposiums and seminars or published in an academic journal such as *The George Mason Review*. Creative projects such as original compositions and choreography, art and design, and theater productions are also forms of undergraduate research that can be shared with the campus and creative communities, as well as the public. Such exposure can provide valuable feedback, attract sponsors, and spark new ideas and collaboration. At the same time, it broadens the impact of your scholarly and creative work and provides a greater foundation of knowledge for others. This flow of findings and information among peers and experts in your field allows us to challenge and incentivize each other, to the benefit of all.

Mason's commitment to undergraduate research serves our mission to provide students of all backgrounds and interests the opportunity to explore their passions and feed their sense of discovery at a world-class research university.

**That's why we're here.**







# SUBMISSIONS

## **FIRST PLACE SUBMISSION**

# **A SENSE OF HISTORICAL DEVELOPMENT IN PHYSICS FROM A POSTMODERNIST PERSPECTIVE**

**AUSTIN BRADLEY**

Majors: Physics and Philosophy  
Class of 2017

### ABOUT THE WORK

My interest in the historical development of physics started before I came to Mason, but only recently have I realized the shallow nature of my knowledge on the subject. Like other histories, the history of physics cannot be so easily divided into convenient periods. Studying postmodernism and the philosophy of natural science in 2016 gave me a unique opportunity to critically analyze the development of physics through a philosophical lens. I believe the analysis in this paper to be clear enough for a general audience with tangential interests in physics and philosophy.



A broad survey of an undergraduate physics education reveals a pattern common in both professors' lectures and physics textbooks: the history of physics is cleanly divided into different periods. For example, in *University Physics* by Young and Freedman (2011), a clear distinction between classical and modern physics is made. Classical physics starts with Newton's Laws; modern physics starts with Einstein's Relativity and the quantum mechanics pursued by Planck, Einstein, Bohr, Heisenberg, and many others. Works from Copernicus, Galileo, and others are left in a sort-of pre-classical age that are discussed in little depth within the text but presented in the context of their historical significance in footnotes. These commonly upheld transition points seem to give the development of physics an overarching sense of history, but the parallels between Foucault's, Nietzsche's, and Heidegger's analyses of representation, finitude, and binary oppositions during the different historical periods and the progress described by Feynman, Einstein, and Kuhn provide enough evidence to make one question the alleged sense of historical development in physics perpetuated during a student's physics education.

In the first lecture of his book *QED: The Strange Theory of Light and Matter*, Richard Feynman progresses through a history of physics starting with the way Newton's Laws of Motion incorporated theories of sound and heat (both motions of atoms), moving on to the way Maxwell's Laws incorporated theories of electricity and magnetism, and finishing with Einstein's Relativity and Quantum Mechanics (pp. 4-5). In a similarly linear fashion, when Hans Reichenbach ends his chapter on Copernicus, Brahe, Kepler, and Newton in *From Copernicus to Einstein*, he makes claim about the history of physics, asserting, "Thus ends the first period of new physics; and with it has come a new method of inquiry to dominate the natural sciences ever since" (p. 25). At least Feynman was a little more cautious in his claims to the historical development of physics, correcting his story in the following way:

By the way, what I have just outlined is what I call a "physicist's history of physics," which is never correct. What I am telling you is a sort of conventionalized myth-story that the physicists tell their students, and those students tell to their students, and is not necessarily related to the actual historical development, which I do not really know! (p. 6)

Unfortunately, Feynman appears to be unique in his pragmatic view of the historical development of physics, which is instead dominated by the texts and lectures that divide physics in clean little chunks of classical and modern history.

The idea Feynman might be hinting at is similar to one Foucault points out in *The Order of Things: An Archaeology of the Human Sciences* — history cannot be

neatly divided between different periods. Foucault states that the slow movement from what he calls the Renaissance to the Classical period cannot be explained in a single word, but is rather an “event that is distributed across the entire visible surface of knowledge” (p. 233). There are no clear transition markers. Rather, there are developments in biology, economics, and linguistics that indicate an epistemic transition from Resemblance to Representation and then later from Representation to Man, when the Classical moves to the Modern period. No one cause in particular is responsible for each transition. In physics, it might seem easy to point to Newton’s works on motion and light, or Einstein’s works on motion and light, and say they are each clearly responsible for transitions from pre-Classical to Classical and from Classical to Modern, respectively, but one cannot be sure. Newton left many questions about the actual composition of light and the motion of objects in a high gravitational field unanswered. While Einstein helped to answer those questions, his solutions left questions about the motion of very small objects unanswered. But the fact that both Kepler’s and Newton’s Laws are still in use in the “Modern” period today is an indication of the illusion of different time periods perpetuated in physics education. Further indication of this illusion can be seen if one analyzes the different time periods through a Foucauldian lens.

Although this essay does not go so far as to define epistemes (the factors in relation to which knowledge is defined) for the pre-Classical, Classical, and Modern periods of physics, an analysis of Foucault’s Representation in terms of physics shows how the episteme (if it were applied to physics) permeates all of the periods. In his analysis of the human sciences, Foucault notes that although representation in biology, economics, and linguistics continues into the Modern from the Classical (p. 236), it is the defining characteristic of the Modern. For physics, two kinds of representation are a key feature of all three periods: mathematical models and pictures.

Mathematical models provide an extremely useful way to abstractly represent the nature of reality. Kepler’s mathematical models are built on geometry and represent the motion of planetary bodies in our solar system; Newton’s mathematical models are built on a calculus he invented to represent the motion of massive bodies in general (including on our planet and otherwise); Einstein’s mathematical models are built on differential geometry to represent the motion of massive or massless bodies in large gravitational fields; and quantum mechanical models are built on differential calculus, linear algebra, and probability theory to represent the motion of objects on a very small scale. Martin Heidegger points out in “The Age of the World Picture” that the use of mathematical models was a key revolution in physical science: “If physics takes shape explicitly, then, as something mathematical, this means that, in

an especially pronounced way, through it and for it something is stipulated in advance as what is already-known” (p. 119). Using mathematical models to represent natural phenomena allows physicists to make predictions before an experiment is carried out to see how nature actually works. The use of mathematical models in itself could be thought of as an episteme in physics, but unlike the episteme of Representation in the human sciences, mathematical models are relied upon to such an extent in the Pre-classical and Modern periods that their use exceeds the boundaries of the Classical period, so would be an episteme of all periods.

The second kind of representation is the way physicists use simplified pictures to represent complex natural phenomena. The motion of planetary orbits is often not drawn to scale, but rather represented as a simplified view with dimensions of the ellipses and distances from the sun; the motion of massive objects is represented as a simplified drawing of boxes moving on frictionless surfaces connected by massless ropes draped over idealized, massless pulleys; the motion of objects at near-light speed is often represented as a train car or spaceship with clocks and beams of light to indicate the passage of events; and the motion of very small objects is represented as “clouds” of possible locations where an object might be. The profession and education of physics requires simplifying and representing nature in this way, and, like mathematical models, it exceeds the boundaries of the Classical period, both backward to the Pre-classical, as well as forward into the Modern period.

Both kinds of representation are not without disadvantages, though. For example, the simplified way in which the motion of very small objects is represented as “clouds” of possible locations highlights in physics a key characteristic of Foucault’s Modern period of the human sciences: a finitude in our ability to know something, and in physics, to know a thing for certain. Heisenberg summed it up as the Uncertainty Principle (sometimes today called the Uncertainty Relation). Two related quantities, like the position of a small object and its momentum, cannot be simultaneously known with more precision than a given constant (Young, p. 1275). Feynman gives a somewhat less abstract definition in describing a commonly studied experiment. In it, light will take one of two paths, but which cannot be known for sure before the experiment is conducted because of the Heisenberg Uncertainty Principle (p. 55). In a similar experiment, light has an 8% chance of being reflected off glass of a given thickness, but whether an individual photon of light will be reflected is not known for sure. Newton attempted to explain why only some of the light is reflected, but his and others’ failures since then have resulted in another type of finitude on which Feynman comments, “while I am describing to you how Nature works, you won’t understand *why* Nature works that way. But you see, nobody understands that” (p. 10), even going so far as to claim that the question of why probably has no meaning (p. 24). In

spite of both types of finitudes, physicists still try to understand how the world works.

The finitude in our ability to know both a small particle's location and momentum, or know which path the light will take, or know why nature behaves the way it does is similar to the finitude Foucault describes when he poses the following conclusion about our inability to know the unthought, or the unconscious part of our mind: "the *cogito* will not therefore be the sudden and illuminating discovery that all thought is thought, but the constantly renewed interrogation as to how thought can reside elsewhere than here, and yet so very close to itself; how it can be in the forms of non-thinking" (p. 350). But, he says, finitude is not a defining characteristic of the Modern period by itself; rather, finitude provides a "positive foundation for the possibility of knowing" (p. 342). Similar to the human sciences, physicists did not view the finitude in simultaneously knowing the position and momentum precisely as an insurmountable roadblock to acquiring knowledge, but rather, they built entire disciplines around the limitation. Quantum mechanics, high energy particle physics, condensed matter physics, and many other disciplines have all embraced the uncertainty inherent in the nature of very small objects and continued developing mathematical models and simplified pictures to represent natural phenomena. However, while Foucault saw a possible breakdown of the episteme of Man and dissolution of the Modern period in man's attempts to overcome finitude by including in himself what was outside himself, physicists' acceptance of their own finitudes without pursuit to overcome them does not show similar indication of a dissolution of the Modern period in physics (if such a direct comparison can be made with the human sciences).

The continued use of mathematical models and representative pictures into the Modern period and the discovery and acceptance of several finitudes both highlight problems with the thinking that there is an overarching sense of history in the development of physics. Nietzsche's analysis of binary oppositions and their role in the slow transitions from one period to another provides another avenue to explore this false sense of history in physics. In both his works, *Beyond Good and Evil* and *On the Genealogy of Morals*, Nietzsche describes the important role that perspective plays in how two "opposite" ideas are viewed. Primarily, he describes a transition from the opposites Good and Bad to Good and Evil, and how the transition of Bad in the first binary pair to Good in the second binary pair indicates a transition of one period into another. In *Beyond Good and Evil*, he says, "Throughout the longest period of human history — one calls it the prehistoric period — the value or nonvalue of an action was inferred from its CONSEQUENCES" (k. 1422).<sup>1</sup>

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<sup>1</sup> This quote is from the Kindle Edition of *Beyond Good and Evil*, but no page numbers are given. Instead, "k." is used here as an abbreviation for Kindle Location, Amazon's electronic equivalent to page numbers.

Valuable actions were those associated with nobility; the consequences of their actions, like conquering new lands and establishing laws, were seen as valuable. In *Genealogy of Morals*, he describes the Good as associated with aristocratic, noble, prideful, and strong, while the Bad as associated with common, plebeian, low, humble, and weak (§4). However, over a long period of time, less value was placed on the consequences of an action and more placed on the intention of the action (*Beyond*, k. 1448). This transition came at the hands of the priestly caste in response to their repression by the nobility (*Genealogy*, §7). As a result, the values represented by the nobility and associated with Good in the first binary pair — strength, prideful, rich — became the Evil values in the second binary pair. Those values represented by the commoners and priestly caste and associated with Bad in the first binary pair — weak, humble, poor — became the Good values in the second binary pair. The transitions of Good into its opposite Evil and Bad into its opposite Good was a transition of perspective from the noble view of the world to the priestly view of the world.

Perspective plays an important role in the binary pairs in physics as well; the slow realization of this provides evidence of the slow transition between the different periods. In *The Evolution of Physics*, Albert Einstein and Leopold Infeld (1938) describe the experiment in which Hans Christian Oersted discovered that an electric current creates a magnetic field (p. 90). These two seemingly unrelated phenomena had never been observed in conjunction before, and it was not until Maxwell united them mathematically as fields did physicists see that they were actually the same phenomena viewed from a different perspective. Similarly, Einstein and Infeld describe many experiments which seemed to show that light could exhibit both particle-like behavior (pp. 98-99), as Newton claimed, or wave-like behavior (pp. 118-120), and while there is evidence to support either member of the binary pair as more representative of light, the two authors settle on light as a wave (pp. 156-157). In contrast to Einstein and Infeld, Feynman concludes the opposite when describing light from a quantum electrodynamics perspective:

This strange phenomenon of partial reflection by two surfaces can be explained for intense light by a theory of waves, but the wave theory cannot explain how the detector makes equally loud clicks as the light gets dimmer. Quantum electrodynamics “resolves” this wave-particle duality by saying that light is made of particles (as Newton originally thought), but the price of this great advancement of science is a retreat by physics to the position of being able to calculate only the probability that a photon will hit a detector, without offering a good model of how it actually happens. (pp. 36-37)

Essentially, Feynman conveys that light can be viewed either as a particle or a wave, depending on the need of the physicist. Interestingly, Feynman highlights how both perspectives come with their own finitude in what information can be known about the phenomenon. The slow discovery of the relationship between the binary pair of electricity and magnetism, and the transition in thought of light between the binary pair of particle and wave, both dependent on the perspective taken, show how discoveries like these cannot define transitions between different historical periods in physics, as they do in textbooks and lectures.

In “Postmodernism” on the Stanford Encyclopedia of Philosophy, Gary Aylesworth (2005) makes a conclusion that can apply equally well to the alleged sense of historical development in physics:

In Nietzschean fashion, Foucault exposes history conceived as the origin and development of an identical subject, e.g., “modernity,” as a fiction modern discourses invent after the fact. Underlying the fiction of modernity is a sense of temporality that excludes the elements of chance and contingency in play at every moment. In short, linear, progressive history covers up the discontinuities and interruptions that mark points of succession in historical time. (§3)

The development of physics, shown in the works of people like Copernicus, Galileo, Newton, Maxwell, Einstein, Heisenberg, Feynman, and many others, has been riddled with chance discoveries and ingenious insights. The gradual process of connecting seemingly unrelated ideas, like electricity and magnetism, and slow acceptance of certain finitudes limiting our possible knowledge of nature and the incorporation of those finitudes into the business of physics, both shadow the points of succession in physics. Instead of the linear timeline alleged by physics textbooks, the development of physics may be more closely represented by Kuhn’s model in *The Structure of Scientific Revolutions*.

Kuhn describes the development of science as going through cycles. From pre-history to normal, to crisis, to revolution, and back again to pre-history and normal, he claims the central idea of the cycle is the paradigm, which he defines as an achievement or idea accepted by the majority of a community, but one which leaves several issues unresolved (pp. 10-11). For example, Newton’s Laws of Motion are the paradigm most commonly attributed to the normal science that took place in the Classical period. Several experiments and observations, however, could not be explained by the Laws of Motion, like Mercury’s orbit and conservation of energy in electron orbits. These two specific examples defined crises in physics that each



led to their own revolution. Mercury's orbit could be more accurately represented in General Relativity and electron orbits could be more accurately represented in quantum mechanics. But neither General Relativity nor quantum mechanics were developed overnight; instead, both relied heavily on the extensive groundwork that came before. In the case of quantum mechanics, de Broglie's application of the particle-wave nature of massless light to massive electrons and other matter paved the way for the mathematical models that became the paradigm explaining the hydrogen atom. Kuhn's cyclic model more precisely reflects actuality in physics. There are not clearly defined periods, but rather there are ideas, representations, finitudes, and binary oppositions that arose in the development of physics that played key roles overlapping the alleged periods.

Kuhn's cyclic model of science is similar to Heidegger's: a groundbreaking idea takes hold, experiments are conducted to observe the idea in nature, and then the business of science transitions into a driven activity (*Question*, pp. 117-124). Heidegger's *groundbreaking idea* can be thought of as Kuhn's *paradigm* discovered during a *revolutionary period*, while Heidegger's *driven activity* is Kuhn's *normal science*. Viewing the development of physics from this perspective offers additional evidence for there being no cleanly divided periods in its history. Particle physics was (and still is) at the forefront of physics when Heidegger wrote "The Age of the World Picture"; describing particle physics, he perfectly captures the blurring of historical periods into one: "Within the complex of machinery that is necessary to physics in order to carry out the smashing of the atom lies hidden the whole of physics up to now" (p. 124). All of physics, from classical mechanics, to electromagnetism, to relativity and quantum mechanics is required to accelerate particles into each other or into a target material. When discussing the periods of history that man has defined in retrospect, Heidegger asks the questions, "Does every period of history have its world picture...Or is this, after all, only a modern kind of representing, this asking concerning a world picture?" (pp. 128-129). For Heidegger, the modern age is distinguished from the preceding because *it is* picture, not because the world picture changed from the medieval to the modern period (p. 130). Using the same criteria to evaluate physics reveals additional evidence against a transition of periods. The finitudes inherent in the mathematical models and simplified picture representations of the natural world prevent one from drawing the same conclusion in physics, that the natural world in the modern period *is* the representation of it.

The historical development of physics is something that has been invented after the fact. If the episteme of representation can be applied to physics, the linear transitions between periods breaks down because the representations permeate all periods. If the defining characteristic of overcoming finitudes can be applied

to physics, the transition from the Modern to something beyond relativity and quantum mechanics breaks down because physicists stop at accepting the finitudes like the Heisenberg Uncertainty Principle instead of trying to overcome them. If the defining characteristic of overcoming binary oppositions can be applied to physics, the linear transitions between the periods breaks down because each period has its own set of binary oppositions that were overcome. Finally, if Heidegger's claim about the age becoming the picture that represents it can be applied to physics, the linear transition to the Modern breaks down because the finitudes in the mathematical models and picture representations prevent them from accurately being the world picture. Physics textbooks and lectures allege a sense of overarching historical development in physics, but an application of philosophical ideas from Foucault, Nietzsche, and Heidegger show the fault in that story.

The danger for students of physics is they might see an implied idea that "Modern" ideas are somehow better than "Classical" ideas, or that new ideas replace the need to ask old questions. A student may interpret the generalization of Newton's Laws of Motion from the Classical period to Einstein's Special Relativity in the Modern period as encouragement to forget Newton's Laws and always use Special Relativity. Similarly, a student may interpret the transition from a deterministic physics in the Classical to a probabilistic physics in the Modern as encouragement to stop questioning what is actually happening when an individual photon either passes through glass or reflects. The sense of historical development should not be one of progress where the new ideas replace the old ideas or where new ideas somehow negate the need to ask the old questions; rather, students should come away comfortable with both the new and the old ideas (and all the useful steps in-between), the intuition for applying all ideas correctly, and the curiosity to ask questions long forgotten by the established professionals. Nature does not distinguish between Classical and Modern periods, between nonrelativistic and relativistic velocities, between macroscopic and microscopic systems, or between determinism and indeterminism. To artificially apply such boundaries on a student's thinking limits their creativity when they should be learning how to think outside the box.





## SECOND PLACE SUBMISSION

# CAMILO EGAS'S JOURNEYS ABROAD: SUCCESS OR FAILURE FOR ECUADORIAN ART?

GABRIELA SORELY LARKIN

Major: Latin American Studies  
Class of 2017

### ABOUT THE WORK

In Fall 2016, I took the online course “Transatlantic Encounters in Twentieth-Century European and Latin American Art” with Art History Director Dr. Michele Greet as part of my Latin American Studies curriculum. This course examined the interactions Latin American and European artists had while in Paris between World War I and II and how these artists’ experiences shaped their work post-wars. I chose to do my research project on Ecuadorian painter Camilo Egas, who lived in Paris during the 1920s because, even though I was born and raised in Ecuador, I lacked knowledge about his life, art, and accomplishments abroad.

Through academic research and conversations with Dr. Greet about Egas’s artistic trajectory, I encountered a disjunctive reception of his art in Ecuador and New York City that prompted me to explore the following question: *Were Egas’s successes abroad a gain or loss for Ecuadorian art?* In New York, Egas was a well-regarded faculty member and Latin American representative whose work was praised as innovative and representative of Ecuadorian national identity. In Ecuador, on the contrary, his art was mostly misunderstood and underappreciated because his images were not pleasing according to conservative standards of artistic taste. Because of this disjunctive reception, Egas chose to stay in New York and never return to Ecuador, where his art was less known until the opening of the Camilo Egas Museum in 1981. Only recently the Ecuadorian government is finally creating spaces and legislation to promote culture and better labor conditions for artists in the country.

When discussing the artistic trajectory of Ecuadorian artist Camilo Egas, we must refer to the journey of an individual who possessed an extraordinary talent and acute eye to represent his subjects' reality and struggles through different historical and social contexts in Ecuador and New York City. Egas's works were conceived during a time of political and social restructuring in Ecuador in which Egas, through art, sought to make sense of his world by creating aesthetically pleasing images that merged his European influences and his deep connection to the Ecuadorian highland region. Egas's experiences abroad were especially unique; he utilized his technical expertise to paint, teach generations of artists, and ultimately became his own promoter abroad by becoming an important figure in the New York art scene. This was an important gain for Egas, who was able to make a living during difficult times in the US; however, it was a loss for Ecuadorian art because his talents were not utilized to form the next generations of artists in the country.

Egas's techniques and subjects evolved over time as his vision conflicted with new audiences in Europe who were used to seeing indigenous people portrayed as "primitive" through the works of other European artists. In this context, Egas experienced a personal conflict because the art he produced prior to traveling to Paris, such as "Las Floristas (1916)" and "El San Juanito (1917)," aimed to give the indigenous people more humane qualities despite their struggles after the Spanish conquest of Ecuador. Through this soul-searching journey, Egas developed a disjunctive relationship between the allegiance to his academic formation and the profound influence of his Ecuadorian experiences, which had an impact on how he presented his art to audiences abroad. These personal and artistic conflicts raise some questions that need to be addressed in a broader cultural spectrum that not only affected Egas's stay in Ecuador in 1926, but also new generations of artists who want to contribute to Ecuadorian art and culture after acquiring experiences abroad. These questions include: *What historical and social factors impeded Egas's art from becoming a force in Ecuador in 1926? Did his personal perception and artwork change once he established himself in New York City? Finally, were Egas's journeys abroad a personal success or a failure for Ecuadorian art because of the lack of attention from the government?*

To understand why Egas painted his indigenous subjects, I must first address the historical and artistic contexts of Ecuador and the United States to form a better idea of where his distinctive art emerged. Egas was born in 1889 in Quito, Ecuador, during a time when the country was fighting to overcome the patterns of conservatism established decades earlier by Catholic president Gabriel Garcia Moreno.<sup>1</sup> Ecuador was shifting towards a more liberal state with the ascension to power of General

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<sup>1</sup> Ernesto Capello, "The Politics and Poetics of Regionalism," in *City at the Center of the World: Space, History, and Modernity in Quito* (Pittsburgh: University of Pittsburgh Press, 2011), 12

Eloy Alfaro. In a country where the regional and social disparities were evident, Alfaro’s government sought to improve relations by building a train system that facilitated trade between the capital, Quito, and main port, Guayaquil. He also put into effect a new constitution and made substantial improvements to the education system. One of those accomplishments was the reestablishment of the School of Fine Arts of Quito in 1904; this institution provided artists an opportunity to learn a trade and gain experience with the newest European art techniques and trends, which in turn contributed to the emergence of a new art scene in Quito. Egas received his early education here, and thanks to a government sponsorship, he was able to study in Italy and Spain.



Figure 1: Las Floristas

During this early period of artistic development, Egas’s subjects followed European standards, and his early sketches incorporated his “Trans-Atlantic” experiences. As he progressed in knowledge and technique, he found inspiration for his paintings in the town of Zambiza, where he observed and painted “indigenous fiestas, dances, and scenes from every-day-life from the Andes on large-scale canvases and in a rhetorical style.”<sup>2</sup> One such thematic painting that merged his



Figure 2: Gregorio y Carmela (top); El San Juanito

knowledge on European techniques with an Ecuadorian context and reflected his national identity was “Las Floristas” in 1916. (fig. 1) In this painting, Egas portrays a group of indigenous women walking down a dirt road, as if they were taking part in a ceremony, carrying flowers and outfitted in their traditional garments. Their facial expressions are gentle, emphasizing “classical values of symmetry, ideal beauty, timelessness, and harmony”<sup>3</sup> associated with European classical influences. “Las Floristas,” and subsequent works “Gregorio and Carmela” (1918) and “El San Juanito” (1917) (fig. 2), gave Egas the opportunity to show his craft, and consequently he received

<sup>2</sup> Trinidad Perez, “Exoticism, Alterity, and the Ecuadorean Elite” in *Images of Power: Iconography, Culture and the State in Latin America* (Canada: Berghahn Books, 2005), 100.

<sup>3</sup> Michele Greet, *Beyond National Identity: Pictorial Indigenism as Modernist Strategy in Andean Art, 1920-1960* (Pennsylvania: The Pennsylvania State University Press, 2009), 27.

national recognition by winning the gold medal at the *Salón anual de bellas artes*. Positive response by the critics of the *Salón de bellas artes* allude to his usage of refined techniques and vibrant colors, naturally found in indigenous textiles and the highlands of Ecuador. These paintings, according to Egas's scholar Dr. Trinidad Perez, marked a milestone in the construction of a new Ecuadorian artistic identity in which the often-marginalized indigenous people were now seen as a "symbol of the nation,"<sup>4</sup> worth showcasing in public settings.

In 1923, Camilo Egas takes another sojourn outside Ecuador to Paris, where he encountered a vibrant Latin American community of painters who were incorporating avant-garde techniques into their works and forging a reputation for themselves through self-promotion in different venues around Paris. One of those opportunities to show their work came along in 1924 by the newly established "International Academy of Fine Arts" and the "House of Latin Americans in Paris," which aimed to present the works of Latin American painters living in Paris. These two institutions hosted the Exhibition of American-Latin Art in 1924, the first of its kind, in which works of art were organized thematically, including a pre-Columbian section where artifacts, textiles, and paintings were displayed, exposing Parisian audiences to the rich indigenous culture that persisted despite the Spanish conquest. The exhibit's main emphasis was placed on the contemporary section where paintings, sculptures, and woodwork displayed a variety of artistic tendencies that did not fulfill the expectations of "native content" that viewers hoped to see. However, Egas chose to present "Cabeza Indígena (1924)" (*fig. 3*) and other drawings portraying indigenous people of Ecuador in a conventional manner – more in line with the Pre-Columbian section showcased in the first part of the installment, rather than the Parisian influenced works that other Latin American painters chose to bring to the exhibit.

In comparison to his early works back in Ecuador, such as "Indígenas con Vasijas (1922)" (*fig. 4*) in which the subjects maintain



Figure 3: Cabeza Indígena



Figure 4: Indígenas con Vasijas

<sup>4</sup> Trinidad Perez, "Exoticism, Alterity, and the Ecuadorean Elite" in *Images of Power: Iconography, Culture and the State in Latin America* (Canada: Berghahn Books, 2005), 117





Figure 5: Caravane Otavalo

distance from each other and are carefully depicted as elongated figures, wearing their traditional bright colors, Egas's painting "Caravane Otavalo (1924)" (fig. 5), made in Paris, shows the opposite scenario, as if Egas were shifting "his approach to the indigenous subject moving from academic and naturalistic to exaggerated and almost comedic."<sup>5</sup> These grotesque, fuller images of Ecuadorian

indigenous people painted by Egas in Paris seemed to be the product of influences from the works of Spanish painter Pablo Picasso, who was departing from painting spheres, cubes, and other geometrical shapes during his early Cubist period. In this transitional stage, Picasso painted fuller figures, as illustrated in the works "Three Women at the Spring (1921)" and "Large Bather (1921-1922)" (fig. 6), which marked a new phase of Picasso's artistic expression. During his "Paris Period," Egas's artistic style went through a major transformation, which prompted him to re-evaluate and rebalance his position as a Latin American painter in Paris as one who represented the culture of Ecuador on his own terms. This posed a conflict because audiences in Paris were interested in viewing art that looked "primitive" rather than images that celebrated the indigenous culture that remained in place after colonialism. With all these experiences and lessons learned in Paris, Egas returned to Ecuador eager to show his work and spread ideas from the latest European trends to the Ecuadorian art scene.



Figure 6: Three Women at the Spring (left); Large Bather

Upon his return to Ecuador in 1926, Egas encountered a country with a gloomy social and political landscape, a product of regional divisions after Alfaro's Liberal Revolution and subsequent administrations left the country further in debt and with no clear path to success. While Egas was living abroad, Ecuador "had expended two constitutional presidents, one acting president, a plural executive, and five ministers of finance, and from then on, a nation that had undergone a revolution that had ended in an authoritarian regime that had already positioned three provisional governments in 14 months."<sup>6</sup>

<sup>5</sup> Michele Greet, "Occupying Paris: The First Survey Exhibition of Latin American Art", *Journal of Curatorial Studies* 3: 2+3, 2014, 227

<sup>6</sup> Pablo R. Izurieta Andrade, "Boom & Bust: Ecuador's Financial Rollercoaster, The Interplay between Finance, Politics and Social Conditions in 20th century Ecuador" (Delaware, Vernon Press: 2015), <https://vernonpress.com/files/1457445692.pdf7>

In the artistic sphere, the outlook was discouraging, as artists lacked cultured audiences and their work often went unnoticed or was underappreciated. As a result, artists would often escape to local “cantinas” to drown their sorrows in alcohol and drugs. In the article “Here the Artist is a Loss,” published in the cultural journal *Hélice*, writer Raul Andrade poetically sums up the feelings of desperation and isolation artists encountered as they tried to forge an art scene in Quito:

If he produces artwork, nobody buys it; if he writes a comedy, nobody represents it on a stage, because “he is lost” or something else: a degenerate. He looks for work in the newsrooms, and even there the relentless legend has gone. And the artist, who is only a sensitive, is denied bread and salt and is condemned to die. Today alcohol, tomorrow narcotics ... From there that perpetual emigration and that mournful melancholy of exile.<sup>7</sup>

Despite these difficulties, Egas challenges the establishment and seeks to make a contribution to the Ecuadorian art scene. In 1926, he opened the first art gallery in Quito to exhibit his own work and hosted fellow artists eager to showcase their work in a non-judgmental environment. To maximize cultural exposure, Egas founded the cultural journal *Hélice*, which “reflected the new sentiment in Ecuador and demonstrated the spirit of renovation and anti-traditionalism characteristic of a vanguard sensibility.”<sup>8</sup> These noble efforts by Egas went mostly unnoticed, as *Hélice* did not yield a high enough number of readers to keep it afloat. Additionally, his art was misunderstood by audiences who proved unwilling to accept and appreciate Egas’s non-traditional representations of indigenous people.

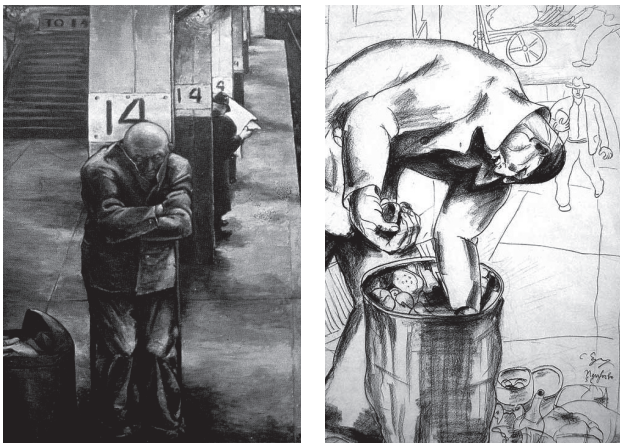
These feelings of despair and frustration were apparent to one of Egas’s colleagues who captured the moment in the illustration titled, “Painter of the Indian Race” (fig. 7). In this depiction, Egas is standing in his art studio in front of one of his “Paris Period” paintings, which illustrates two “full-figured” indigenous people taking part in a musical celebration in the highlands. The illustrator portrayed Egas looking slightly irritated and slouching, communicating low self-confidence and defeat. This poor reception and lack of support Egas encountered in his own country prompted him



Figure 7: Painter of the Indian Race

7 Raul Andrade, “Aquí el Artista es un Perdido.” trans. Gabriela Larkin, in *Hélice*, 10

8 *Ibid.*, 54



**Figure 8:** Trabajadores Sin Hogar (top);  
Calle 14 o Estacion de Subway (left); El Desocupado

to embark on a new journey to New York City, where circumstances in the late 1920's were more promising.

During his early days in the Big Apple, Egas promoted his services through local newspapers, enabling him to make a living as a private art instructor. In 1929, he was hired to be a part of the faculty at the prestigious New School for Social Research, where he taught art workshops for non-degree seekers and headed that department until his death in 1962. Because of his tenured position at the New School, Camilo Egas was spared from the financial insecurities and lack of opportunities many New Yorkers experienced during the Great Depression. However, his

art was not immune to the period's downfalls. We observe how his works "The Unemployed (1932)," "Homeless Workers (1933)," and "14th Street or Subway Station (1937)" (*fig.8*) depicted the existing human suffering Egas witnessed around him, which clearly affected him psychologically.

Despite the unfortunate conditions throughout the country, the 1930's proved to be one of the most prolific artistic periods for Egas. During this time, he seemed to fully embrace his status as a painter of "Native American" subjects, and his work started gaining the attention it lacked in Paris and Ecuador. In 1931, Egas presented his first solo art installment, "Paintings of Indians of Ecuador (1931)," at the New School of Social Research. Shortly after, he took part in two collective exhibits with his works "Streets of Quito" and "Inca Indian Woman." His participation in these citywide exhibits furthered Egas's prestige as an Ecuadorian artist and paved the way for other Latin American artists in New York City. Similarly, Egas's status as an educator and symbol of Latin American culture led him to receive a commission to paint a mural for the New School that represented his Ecuadorian



roots and the institution's progressive attitude towards multicultural art. According to Egas scholar Dr. Michele Greet, the mural, "Ecuadorian Festival," aimed to represent a "generic celebration that integrates ceremonial dancers in native costumes, musicians playing traditional instruments, and scantily clad tropical-fruit vendors from different regions of the country."<sup>9</sup> Egas's worldview was to highlight the cultural richness of the indigenous people of Ecuador and, at the same time, provide parity with other Latin American indigenous cultures.



Figure 9: Festival Ecuatoriano

"Ecuadorian Festival" (fig. 9) generated a positive reaction, as noted by *The New York Times* journalist Edward Alden Jewell who praised Egas for his technical expertise on the execution of the work and his knowledge of Ecuadorian indigenous costumes.<sup>10</sup> By 1938, Egas had become an important contributor to the New York art scene and word of his accomplishments spread to the Ecuadorian government. Government representatives approached him and named him head of the Ecuador project for the New York World's Fair to work on a display that represented the diversity, cultural and geographical, that Ecuador had to offer. Egas, along with fellow Ecuadorian artists Eduardo Kingman and Bolivar Mena, who were also known as "Indigenist" painters, were commissioned to paint a set of portable murals that, according to Egas's artistic vision, represented the "land" based activities that indigenous people have participated in for centuries, including mining, weaving, and harvesting. The display in the Ecuador mural (fig. 10) is dominated by a large indigenous woman who appears in the center of the scene, as if trying to separate the harvesting and mining scenes. This creates a dramatic effect, leading us to believe she is rebelling against her people's unfortunate destiny.

This controversial representation generated polarized artistic interpretations in the United States and back in Ecuador.



Figure 10: Ecuador Mural

<sup>9</sup> Ibid., 54

<sup>10</sup> María Helena Barrera-Agarwal, "La Saga Vital y Crítica de Camilo Egas en Nueva York." *Revista Nacional de Cultura del Ecuador* September-November (2008): 67

On the one hand, in the United States, *The New York Times* proclaimed the mural was painted by the “best artist of the country”<sup>11</sup> and applauded Egas’s use of the indigenous theme to represent the country. On the other hand, the Ecuadorian government was not pleased with the mural because it failed to showcase Ecuador’s touristic destinations and conventional aesthetics of art, calling Egas’s work a “disgrace to the nation.”<sup>12</sup> After the World’s Fair, the mural was taken down and never returned to Ecuador



Figure 11: The Modern Don Quixote

as initially intended. Once again, the Ecuadorian public, in this case due to the careless attitude of government officials, missed seeing Egas’s vision and artistic contributions, which discouraged Egas from returning to Ecuador. This negative reception prompted Egas to take a different path away from indigenous themes, experimenting with abstract images that portrayed his deepest thoughts, which were more in line with the Surrealist movement.

This new artistic approach provided Egas an avenue of expression and philosophical exploration as noted in his painting “The Modern Don Quixote (1940)” (*fig. 11*). In this work Egas presents a malnourished Don Quixote and companion Rocinante arriving to a wasteland where skeletons and flying objects seem to come out of a horror story. These representations correspond to the allusion of the “unconsciousness” that was in vogue with the movement during the 1940’s. During this transitional period, Egas reaches an important milestone in his career when the Museum of Modern Art of New York (MoMA) acquires Egas’s painting, “Dream of Ecuador,” through the museum’s Inter-American Fund. This accomplishment legitimizes Egas’s contributions to modern art and his commitment to his Ecuadorian roots, which were elevated to international levels. Egas’s art was now among other artworks from famous European artists, such as “Miro, Picasso, Urtillo, Weber and other geniuses of modern art.”<sup>13</sup> By now, Egas had become a well-regarded artistic figure in New York City, and he continued to exhibit at different venues and teach at his beloved New School.

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11 María Helena Barrera-Agarwal, “La Saga Vital y Crítica de Camilo Egas en Nueva York.” *Revista Nacional de Cultura del Ecuador* September-November (2008): 67

12 *Ibid.*, 141

13 María Helena Barrera-Agarwal, “La Saga Vital y Crítica de Camilo Egas en Nueva York.” *Revista Nacional de Cultura del Ecuador* September-November (2008): 67

In 1962, Egas was awarded a distinction by the American Academy of Letters for his contributions to Latino art, and, that same year, the New School presented him the title “Doctor Honoris Cause” for his years of service and his contributions to shaping the school’s vision of cultural diversity and freedom of ideas. Shortly after receiving these recognitions, Egas died in New York, leaving behind his beloved indigenous subjects who played an important role in his career and contributed to a growing “indigenista” trend picked up by Ecuadorian artist Eduardo Kingman and renowned painter Oswaldo Guayasamin. Egas’s work left an important legacy at the New School, where he was remembered as an innovator and devoted instructor to new generations of muralists and painters.

Egas’s story is a classic example of the profound influence an environment can have on an individual. In the case of Egas, New York City and The New School provided him a welcoming environment to experiment with ideas and artistic influences that Ecuador lacked at that time. In recent decades, the Ecuadorian government has realized the importance of Camilo Egas’s legacy and has made efforts to make his art accessible to the public through the purchase of an important part of his collection that includes part of his early period paintings and others from his years in the United States. In 1980 the “Camilo Egas Museum” opened in the heart of Quito, which permanently displays his art and hosts community programs to introduce his work to new generations. Despite all these efforts to make Egas’s art more visible, Ecuadorians are still not familiar with Egas because he spent most of his life in New York and rarely promoted his art in Ecuador. This contrasts with the popularity of Ecuadorian painter Guayasamin whose art is recognized because he spent most of his life in Ecuador.

Fortunately, there is a glimpse of hope, and the current Ecuadorian government is taking small steps to create public spaces to promote art and educate the public. Some of these initiatives include The International Biennale of Cuenca, which started in 1987 and meets every other year in the city of Cuenca, presenting the works of local and international artists from different styles. Also, there are continuous art exhibits in the Metropolitan Center of Quito, ranging from photography and thematic art displays, and finally, a vibrant art community, who supports local art galleries throughout the city, which hosts numerous exhibits by Ecuadorian and international painters. In 2013, Ecuadorian President Rafael Correa signed a decree for the creation of the government-funded University of Arts in Guayaquil. This institution has become an important entity in the country and regularly hosts art exhibits, international guest lecturers, and has an international exchange agreement with well-known art institutes in France, Canada, and other Latin American countries.

On November 10, 2016, the Ecuadorian General Assembly approved legislation to grant Ecuadorian artists social security and labor benefits outlined in Articles 20-22 of the Inclusion in the Labor and Social Security Regime of the Cultural Sector Section. This law will grant artists better working conditions, similar to public servants, including social security benefits through flexible monetary contributions and different mechanisms of evaluation from hiring institutions to determine artist's competencies and merits based on artistic experiences. This holistic approach to evaluating competencies will enable artists, who lack academic degrees but have artistic experience, to work and access government benefits. This new law seeks to create a sustainable way of living for the artists in the country and provide incentive for younger generations to pursue art as a career. The case of Egas is unfortunate, because he had to relegate Ecuador to the periphery of his career, even though his indigenous subjects were always present, to make his art visible to the international community. Egas's journeys abroad were personal successes, because they were lessons in perseverance and constant artistic innovation. While living abroad, Egas achieved a high sense of national pride that new generations of Ecuadorian artists need to incorporate, whether they forge a career in Ecuador or abroad. His legacy continues to live on through the permanent display of his work at the Museo Camilo Egas in Quito, the different events and workshops hosted by the local government to educate the public, and the continuous work of Camilo Egas scholars such as Dr. Michele Greet, Dr. Trinidad Perez and Dr. Maria Elena Barrera-Agarwal who keep Egas's memory alive and his art relevant for new generations.

## IMAGE CITATIONS

**Fig. 1***Las Floristas***Camilo Egas**

Oil on canvas, 1916

150.5 x 2.39

Museo Nacional del Banco  
Central del Ecuador**Fig. 2**a. *Gregorio y Carmela***Camilo Egas**

Oil on canvas, 1918

74.8 x 1.85

Museo Nacional del Banco  
Central del Ecuadorb. *El San Juanito***Camilo Egas**

Oil on canvas, 1917

155 x 256

Diners Club Collection

**Fig. 3***Cabeza indígena***Camilo Egas**

Drawing, 1924

Location Unknown

**Fig. 4***Indígenas con Vasijas***Camilo Egas**

1922

97 x 165

Museo Nacional del Banco  
Central del Ecuador**Fig. 5***Caravane "Otavalo"***Camilo Egas**

Oil on Canvas, 1924

Location Unknown

**Fig. 6**a. *Three Women at  
the Spring (New York,  
Museum of Modern Art)***Pablo Picasso**

Oil on canvas, 1921

2.04 x 1.74

Estate of Pablo Picasso

b. *Large Bather***Pablo Picasso**Oil on canvas, 1921-  
1922

180 x 98

Paris, Musée de l'Orangerie

**Fig. 7***El Pintor de la Raza  
Indígena (Painter of the  
Indian Race)***Anonymous**

Reproduced in Helice, 1926

**Fig. 8**a. *El Desocupado***Camilo Egas**

1932

45 x 30

Museo Nacional del Banco  
Central del Ecuadorb. *Trabajadores Sin  
Hogar*, 1933**Camilo Egas**

85 x 109.5

Museo Nacional del Banco  
Central del Ecuadorc. *Calle 14 or  
Fourteen Street***Camilo Egas**

Oil on canvas, 1937

138 x 99

La Casa de la Cultura Ecuatoriana

**Fig. 9***Ecuadorian Festival***Camilo Egas**

Oil on canvas, 1932

269.2 X 500.4

The New School Art Collection

**Fig. 10***Ecuador Mural***Camilo Egas**

1938

Location Unknown

Displayed at the New York  
World's Fair 1939-1940**Fig. 11***The Modern Don Quixote***Camilo Egas**

1940

Location Unknown

Reproduce for the New School  
Art Clases Sept. 1946

## **THIRD PLACE SUBMISSION**

# **IMPERIALISM AND REBELLIOUS RITUALIZATION: FEMALE GENITAL CUTTING AMONG THE JOLA OF CASAMANCE, SOUTHERN SENEGAL**

**MICHELLE GASPARI**

Major: Sociology  
Class of 2017

### ABOUT THE WORK

Through an analysis of existing ethnographic and historic data, this paper explores Jola female genital cutting (FGC) in the Casamance region of Southern Senegal as a ritualized process of rebellion. Additionally, this paper addresses issues of scholarly imperialism in Western work on FGC.

In this paper, Jola FGC is conceptualized as a form of “ritualized rebellion” by Jola women in response to patriarchal social structuring. This theorization draws from multiple case studies by Liselott Dellenborg (2000, 2004, 2009), wherein Jola men are documented as critical of the practice, while women promote and carry on the FGC ritual. The paper then traces this ritualized rebellion back to gendered impacts of imperialist extension by both the Senegalese State and by France prior to Senegalese independence. Jola FGC is theorized as a rebellious ritual process in response to both patriarchal and imperialist extensions upon Jola women, two hegemonies that are implicitly intertwined.

FGC is a practice that often invokes panicked Western scholarship. Through drawing from postcolonial feminist theory, this paper critiques such reactions when founded without proper emic contextualization. The paper problematizes contemporary generalized intervention efforts and scholarship in societies that practice FGC as extensions of imperialist Western feminism. Instead, the paper promotes contextualized approaches when researching and working with cultures that practice FGC.



The inequity of imperialist power distribution frequently provokes rebellious and revolutionary response by those subordinated. This paper will analyze the relationship of ritualization and anti-imperialist sentiment, with a particular focus on the paternalistic and patriarchal nature of imperialism. This discussion of imperialism and ritualization, contextualized to the Jola FGC (female genital cutting) ritual, will urge a reflexive analysis of Western feminism/scholarship and intervention, as well as advocate for culturally considerate efforts upon interaction with cultures that practice FGC. I will propose that perceptions of imperialist extension motivate the assertion of ethnic identities by indigenous populations through ritualization; this is a process that will be referred to as “rebellious ritualization.” This process of rebellious assertion via ritualization will be examined under Walter Burkert’s (1987) interpretation of ritual as “a (patterned) form of nonverbal communication” (pp. 152) and used specifically in the context of the Jola FGC initiation ritual. I will analyze a series of ethnographic data collected by Liselott Dellenborg on the Jola ritual; wherein, Dellenborg observed the Jola society for several months, documenting notes and interviews with locals. For this purpose, imperialism is defined as:

“any social system in which the government and/or private property owners of one or more countries dominate the government and people of one or more other countries or regions politically, militarily, economically or socio-culturally (usually all four of those) to the detriment of most of the subordinated people’s welfare” (Gough 1993:280).

Additionally, imperialism often operates within the borders of exerting states, a distinction described as ‘internal colonialism’ — colonialism understood as the enacted practice of imperialism (Singh 2001). This term is employed in reference to multiple state exploitations internal to political territory (Hechter 1975; Hwami 2014; Pinderhughes 2010; Edo et al. 2009; Jennett 2011; Snipp 1986). Internal colonialism can be applied to the Senegalese extension of military and legislative powers against the Jola of Southern Senegal. Additionally, in this discussion, imperialism must be conceptualized in relation to patriarchy; whatever power the imposing state allows the subordinate group, this power will be allocated asymmetrically according to gender. In the context of the Jola FGC rituals, some women attain a “power base” that they otherwise do not possess. Imperialism, as faced by the Jola, disproportionately disfavors women. The FGC process is imbued with gender role contradiction, as men discourage women to engage in the practice and women do not comply. Contrary to presumptions of female victimhood, which

often dominate FGC discussions, Jola women act in direct defiance of patriarchal exertions through the ritual (Dellenborg 2004:81).

For the Jola, imperialism is perceived on two levels: 1) the aforementioned force extended by the Senegalese state over Casamance, which has inspired a separatist movement credited with the strengthening of Jola ethnic identities (Mark 1992 as cited in Dellenborg 2004:81), and 2) the force extended by toubabs ('the whites') over Africa (Dellenborg 2004:81). As Western imperialism is perceived by the Jola, this also necessitates a discussion of Western scholarly imperialism and FGC in this paper, and the potential consequences of Western discourse surrounding the practice. Due to the scholarly contention regarding FGC rituals, I chose to focus on the women's ritual; however, it is important to note that Jola men practice similar initiation rites (Dellenborg 2004:82).

This paper will take three parts (I) a discussion and critique of hegemonic Western perceptions and interventions of FGC, (II) a case background on the Jola FGC ritual and an exploration of it as "rebellious ritualization," and (III) recommendations to counter imperialism and encourage mindful interventionism.

## I. WESTERN IMPERIALISM AND FGC

### *Academia*

Kathleen Gough (1968) was among the first to note that "Anthropology is the child of Western imperialism," in critique of the extension of this foundation to modern anthropology (p. 12). When she revisited the topic almost 30 years later, she noted that the field had progressed towards self-correction; the influence of the imperialist anthropologist was "less menacing" than it had once been (Gough 1993:284). This observation reflected the divergence from material perspectives in anthropological thought, which focused on how material environments influenced culture, to interpretive perspectives. Interpretive anthropology, popularized in the 1960's and 70's, urged application of cultural relativism over utility theory (Sahlins 1976:76 as cited by Ruttan 2001:18). Cultural relativism is the idea that no culture can be fully understood by an outside perspective and, furthermore, that morals and values are based on one's individual social experience. Unlike material perspectives, this cultural relativism problematizes cross-cultural generalizations. However, often the popular position of moral advocacy "draw(s) the line" at FGC, arguing that "cultural relativism has its limits" (Konner 1990:5 as cited by Obermeyer 1999:80).



Linguistic approaches in academic discourse tiptoe towards interpretivism; still, the emotion that separates the empirical from the imperial hold fast. Recently, there has been promotion of the term “female genital cutting” by relativists in support of its value neutrality (Dellenborg 2004:79; Shell-Duncan et al. 2013:804), as opposed to ‘female genital mutilation’ (FGM), ‘female genital surgery/operation,’ and ‘female circumcision.’ Yet these alternative, value-laden terms are those most often employed in scholarship. Dellenborg (2004:79) and Shell-Duncan et al. (2013:804) argue that the alternative nominalizations of FGC are imbued with bias; the judgmental and violent connotation of ‘mutilation’ (Dellenborg 2000; Dellenborg 2004; Shell-Duncan 2013:804), the utilitarian medical connotation of ‘surgery/operation’ (Obermeyer 1999:84), and the implication of a mirroring of male circumcision that ‘female circumcision’ carries (Linares 1992:110) are often presumptively applied. ‘Female genital mutilation’ is the most often used. Legislature and academic discourse alike employ the term disparagingly; Obermeyer (1999) notes that this is, in most every case, an inaccurate translation of the native terminology (pp. 84). In the case of the Jola, for example, the practice translates as “eñakey” from the verb “eñak” — to pull (Linares 1992:109). The Jola who practice and support FGC take offense to reference to the rite as a mutilation (Dellenborg 2004:79).

Other sweeping Eurocentric arguments include the claims that FGC practices are centered on sexuality, that they are essentially religious, specifically Islamic, and that they are based in antiquity. Parker (1995) argues that Western anthropologists have over-emphasized sexuality in the discussion of FGC, missing relative components and origins of the ritual by generalizing the practice to male power over female sexuality (as cited by Dellenborg 2000:7, Obermeyer 1999:96). However, the rite may possess meanings as variant as “purity, fertility, maturity, identity, ordeal, aesthetics, etc.” (Dellenborg 2000:7). Generalizations of FGC as an Islamic issue are similarly flawed. FGC is not practiced by majority of Muslims in Africa and records of the practice date 2,500 years prior to the Islamic religion (Kassamali 1998 as cited in Dellenborg 2004:80). The practice has no mention in religious text, but is commonly used in a religious context by members of multiple faiths globally, including Muslim, Christian, Jewish, and tribal animism. FGC is practiced most prevalently in Africa (Dorkenoo 1994, Toubia 1995 as cited in Dellenborg 2004:80). This suggests that the practice is one concerning regional and ethnic identity building. Faith may be used in support of the rite, as faith often acts in determination of values. For example, the Jola who practice FGC view the rite as necessary or recommended in order to be a better Muslim (Dellenborg 2000:5,6); yet because religion is contextualized to culture and region — in fact, the Islamisation of the Jola is intertwined with imperialist causation (Mark

1992) — these rites must be seen not as inherently religious but as practices of complex and multifaceted identity assertion, often with secondary applied religious meaning. The perceived antiquity of FGC is countered specifically by the recent reintroduction of FGC in some cultural settings, the Jola ritual is an instance of this inconsistency in Western notions of outdatedness (Dellenborg 2004:80).

Unfortunately, some of the most overt offenses to scientific scholarship come from the feminist perspective. In broad arguments of a universally identical patriarchy, cultural contexts are ignored. It is wrongfully assumed that womanhood means the same thing across the globe, a standard set by Westerners (Mohanty 1988:64). The previously mentioned emphasis on male dominance over female sexuality is not only flawed in its generalization of the practice to sexuality, but also in its focus on the “fragi[lity]” of female sexuality (Bell 2005 as cited in Wade 2009:3). Bell (2005) argues that the indifference toward male genital cutting rites, in comparison to the outrage that surrounds FGC, is actually indicative of a discourse that itself generalizes femininity as fragile (ibid:3).

### *Western Interventionism*

Panicked scholarship surrounding FGC generates interventionist response. Resources are allocated to studies that focus on solving ‘the problem’ without studying the practice as it exists on a case-by-case basis; Obermeyer (1999) critiques this as an abandonment of scientific inquiry (p. 85). There is now a large body of literature that studies intervention success, but emic perspectives, or those of local participants, remain sparse. Intervention efforts that contain a strong presence of alien authority are met with hostility from locals who practice and support FGC, for obvious reasons; these extensions communicate to supporters of FGC that the politics of moral superiority are positioned against them (Østebø & Østebø 2014:95). The intervention process is given little individual analysis and is, far more often than not, approached through vertical means (ibid:89), with Western moral advocates occupying an imperial overseeing position.

## II. THE CASE OF THE JOLA FGC RITUAL AND “REBELLIOUS RITUALIZATION”

The Jola are the largest ethnic group inhabiting the Casamance region (Mark 1992 as cited in Dellenborg 2000:2). Over the course of 16 months, from December

1997 to July 1999, anthropologist Liselott Dellenborg conducted fieldwork among the Jola in Casamance, Southern Senegal (Dellenborg 2004:79). Much of the content discussed in this paper extends on her work, and the few preceding studies on the Jola by Mark (1992) and Linares (1982; 1985) cited within this work.

Complex regional, ethnic, and political histories must be considered when analyzing the Jola FGC ritual. The ritual is one that communicates identity as a Jola, as a Muslim, and as a member of the “secret society” of womanhood (Dellenborg 2004:80). For men and women alike, the coming-of-age ritual is a performance of Jola identity. This Jola identity exists among fluid tensions, thus the ritual itself becomes one of “negotia[tions] and renegotia[tions]” of what it means to be a Jola, a woman or man, and a Muslim (Dellenborg 2004:83). I do not argue that the Jola FGC ritual acts solely for the purpose of rebellious communication of anti-imperialist sentiment, because the ritual holds significantly complex meanings; I propose that this is simply one of them and will apply historical analysis in order to identify the processes that inspire rebellion via ritual action.

### *Imperialism and Ritual Origins*

French expansion into the Casamance region began in 1659 and ended with the 1960 removal of their occupation via Senegalese independence (BBC News 2016). After Senegalese independence from France, Casamance experienced a separatist movement that strengthened ties to Jola ethnic identity (Mark 1992 as cited in Dellenborg 2004:81). This anti-state sentiment developed to a point of formal organization in 1982, when separatists from southern Casamance established the Casamance Movement of Democratic Forces (MFDC). The situation militarized in 2006, as the Senegalese state launched an offensive attack against MFDC rebels. A ceasefire was finally declared in 2014 (BBC News 2016).

The reintroduction of FGC to the Jola was relatively recent. It coincided with a rapid Islamification beginning in the 1930s. French imperialism and the introduction of cash-cropping had integrated Senegal into the global economy. Upon the onset of the Depression, the Jola, who cultivated groundnuts/peanuts for income, were burdened by French demands for taxation, militarization, and forced labor, in addition to a drastic decline in profits. These circumstances instigated a wave of seasonal employment in the neighboring Gambia state for both men and women. Migration and newfound financial independence lessened the influence of traditional religion. The introduction to Islam became attractive to those who did not attain their desired status from the traditional religious structure (Mark 1978 as cited in Dellenborg 2000:3).

Mandinka, a specific sect of Islam, attracted Jola women who practice FGC. Among the Mandinka Jola, the initiation rite — excision being a vital part of that — is what marks the transition of a girl to a woman and grants her belonging in the secret society of women (Dellenborg 2000:11). Most commonly, the excision is performed many years prior to the elaborate initiation ritual, when a girl is about 4 years old (Dellenborg 2004:85). Years later, in adolescence, the initiation ritual in the secret forest takes place, but cannot be done if a girl has not been excised; the ritual must be understood as a process in this way. However, Dellenborg (2000) notes narratives of adolescent girls running off to be excised without their parents' knowledge, as well as adult women defying spouses for excision. These instances indicate that the rite is not always one done in young childhood (pp. 6,7).

### *Gender and Imperialism*

The traditional religion has secret societies for women as well, and admission to them also requires initiation. The traditional religion's female initiation, however, is much less elaborate than the traditional religion's male "*bukut*" or initiation ritual (Dellenborg 2000:10, Mark 1992). Female initiation requires male participation, as the marker of "real woman(hood)" is bearing a child (Dellenborg 2000:11). Mandinka Islam's female initiation is distinct from the traditional religion's in that it allows membership to secret societies for unmarried women and infertile women, creating a more inclusive identity of womanhood (ibid:6). Women practicing Mandinka Islam brought the ritual over from Gambia and ritualized initiation in a similar way to "*bukut*" with a genital cutting rite and a sacred forest as the ritual space (ibid:2,11). Dellenborg (2000) describes the ritual as follows:

"All the teenage girls in the surrounding villages come together in the women's secret forest and they stay there for weeks with the adult women, learning and experiencing things. All men and uninitiated women and girls are forbidden to participate. The day of the coming out, the initiates dance, beautifully dressed, covered with pearls and plaited hair, showing everyone what they have learnt. People give them compliments and throw money at them" (p. 6).

This elaborate assertion of autonomous gender identification through ritual indicates a defiance of norms, a ritualized form of rebellion from a more modest, traditional alternative. The ritual is a manifest rebellion against male dominance,

a structure encouraged by French imperialist occupation via labor distribution whereby men were given more lucrative roles (Linares 1985:83,84). The ritual is a latent rebellion against Western interpretations of female disempowerment through FGC (Dellenborg 2004:81).

Jola women introduced the ritual and are the most active supporters of the ritual. Dellenborg (2000) notes that women will often fight men in defense of their “right” to be excised and that men will sometimes resort to violence to prevent the women in their lives from undergoing FGC (p. 2). As men took alliance with the Senegalese state, which criminalized FGC in 1999 (Shell-Duncan et al. 2013), imperialism over Casamance by the Senegalese state intertwined with gender relations. These simultaneous exertions of power by the Senegalese state and local men are responded to by language of revolution; an interviewee of Dellenborg (2000) compared the women’s efforts to maintain their sacred ritual to those of Western women in their liberation movement (p. 16).

In the context of this ritual, the older women and some older men who support the ritual are the key actors, which makes determining where choice is made difficult (Dellenborg 2004). Peer pressure, notes Dellenborg (2000), is a major incentive (p.1). The festivity and excitement of the initiation ritual is attractive to the young women that choose to be excised in adolescence (ibid:4). This pressure, however, may not always be so superficial; stories of Mandinka women telling friends who were not excised that they were *solma* — “ignorant” and impure without excision detail a more coercive approach (ibid:5).

Young women often do accumulate social capital through FGC rituals (Shell-Duncan et al. 2011:1275); in many cultures, genital cutting secures marriage. However, it seems in some cases of Jola FGC that there must be something else at play, such as when women are divorced because of their choice to be excised. If a woman chooses to be excised against the will of men in her family, this indicates a reorientation of gender and power dynamics. Besides the power that the young women may assert through their choice to excise, there is certainly a “power base” and accumulation for older women through these rituals, as they are the ones who lead the process (Dellenborg 2004; Shell-Duncan et al. 2011). These women are the major defenders of the ritual, and they perceive all intervention efforts, both by the Senegalese state and by Westerners, as imperialistic threats to their secret societies (Dellenborg 2004:80).

### III. COUNTERING IMPERIALISM

To counter imperialism, both academically and in practice, self-awareness and cultural mindfulness are vital. I propose attentiveness toward 1) a rejection of materialist approaches, 2) a de-Westernization of feminism, and 3) an emphasis on emic approaches.

Materialism in anthropology draws upon utilitarian analyses as opposed to culturally relative approaches. Sahlins (1976) posits that when anthropology constricts its analysis to utility there is no way “to elucidate how different cultural constructions of reality affect social action” (p. 76 as cited in Ruttan 2001:18). Scholars must avoid studying culture under functionalism and instead take into account the individualized variances of those studied, in order to overcome generalizations and applications of bias.

Earlier in this paper, Western feminism was problematized. Mohanty (1988) presents an extremely important discussion of ethics when it comes to scholarship on women in non-Western contexts. She argues that scholars must do two things when researching and discussing women of the Global South: 1) we must challenge and dismantle hegemonic Western idealizations of feminism, and 2) we must formulate individualized concepts of feminism for each culture, so as to avoid the marginalization of non-Western feminisms. These guidelines are vital; feminism is a study that must not extend inequality unto other women through Westernized notions.

Emic approaches to cultural study must be valued. It is impossible to ethically understand a culture from an outside perspective; attempts at respectful immersion are necessary to cultural relativism. Social justice expert Bryan Stevenson advances this advice to social scientists: “get proximate” (2015). This means not only physically but also empathetically. It is necessary that researchers attempt to understand the individual’s total social experience within their cultural context. Similarly, Hernlund and Shell-Duncan (2007) advocate for attention to “contingencies” (p. 43), specifically referring to FGC research. They critique the neglect of contextualization and fluidity when it comes to FGC scholarship and an ignorance to the processes of decision-making. They study this concept of “contingencies — proximate social experiences and actors — that affect decision making” (ibid:43) and a general finding prevails: reducing local decision makers on FGC to “supporters” and “opponents” does not accurately reflect the complexity that surrounds negotiations of FGC’s acceptability per individual. As demonstrated by Dellenborg (2004), negotiations are constantly taking place; it is the job of scholars to identify and respect these contingencies as they research and influence intervention efforts.

## CONCLUSIONS

This case analysis is not to be construed as absolute nor generalizable; in fact, this delineation is vital to the argument that FGC rituals must be studied by consideration of cultural contexts. Additionally, I do not attempt to convey that all Jola women undergoing FGC do so without coercion. FGC practices are widely variant, some more physically extreme than others, some far more coercive than others. Variables including gender relations, the ritual exchange, and decision-making must be analyzed rather than a default discourse of helpless victimization. Studies such as Dellenborg's may provide more insight as to how and why these rituals become embedded in a culture's practices. In the case of the Jola, imperialist extension has an obvious relationship with the ritual. The tendency to broadly extend fear and gender politics to these rites is a Eurocentric application of violence to rituals that are often not considered to be violent within the practicing culture's context; likewise, interventionism without cultural mindfulness is the epitome of a Western-savior complex.

The persistence of imperialism is still met with denial by some scholars (Gough 1993:278). This paper's purpose is to encourage self-reflection upon Western imperialism as a subversion of proper scientific research. Ethnic identities (and, in this case, sub identities) persist because they hold meaning; intervention efforts are operating with limitation if they fail to realize as much. In the case of the Jola, who practice FGC as an initiation ritual and an assertion of multiple identities, there are clear implications that these rites and their continuation communicate an identity separation from imperialist forces. The rebellious ritualization of Jola FGC in response to imperialism demonstrates the importance of emic analyses of FGC rites among vast cross-cultural variances. Interventions, if practiced, must be informed by culturally relative scholarship in order to avoid further extensions of imperialism.



# PHOTOGRAPHY AND ENVIRONMENTAL ISSUES: BRINGING PLACES AND DISCUSSIONS INTO THE CLASSROOM

**BENJAMIN RHOADES**

Major: Environmental and Sustainability Studies  
Class of 2020

## ABOUT THE WORK

This project began in an Honors College research course, which focused heavily on methods rather than content and allowed for a very free approach to a research question. As an Environmental Studies major and advocate for education, I hoped to uncover the best practices in the field of environmental education that did not involve heavy classroom instruction and rather took students outside of the classroom. After reading *The Failure of Environmental Education (And What We Can Do to Fix It)* by Blumstein and Saylan, I became intrigued by the idea of place-based learning and fixated on the notion that without effective environmental education a climate catastrophe could be more imminent than previously expected. My research began with the desire to link photography with environmental issues. I have previously used photography as a tool to combine educational and sociological research in a photojournalism research course. This research began with the question: *How can educators best use photography to teach environmental education?* From that came researching the basic reasons behind teaching environmental science and sustainability, followed by how the subject is currently taught. From those two basic points, I looked for successful cases of using alternative forms of education to teach environmental education topics. Much of this research focuses on the photovoice aspect of photography in education, which consists of giving research subjects cameras. I also investigated the use of digital cameras in actual data collection, as well as forms of art besides photography, and how those can be brought into the environmental education model to improve retention and change post-education behavior.

From that review of current scholarship on environmental education, place-based education, art education, and photographic education, I tried to find a practical way to implement this in a classroom but found that there is no research that examines the actual best way to implement a place-based, photography-centered, environmental education curriculum or project in schools. From this research my desire is to find a link between photovoice or a participatory photography method or education that, rather than talking about the environment in a classroom, takes students to it and encourages thoughtful discussion about it.



## ENVIRONMENTAL EDUCATION

Earth day 1970 sparked what would become the modern notion of environmental education. While initially a radical idea, associated with counter-culture and hippies, environmental education has become one of the cornerstones of contemporary science education. Not only does environmental education bring together key scientific concepts from numerous disciplines under one important and relevant application, but its implementation also has a unique goal of behavioral change. Environmental education means creating environmentally conscious and sustainable citizens, and in that sense, it is as civically driven as it is scientifically driven.

While educators widely accept environmental education as necessary, some find faults in the implementation of environmental education and the methods used to teach students sustainability. According to Blumstein, linear cause and effect explanations of environmental issues provide one such example of a popular, but ineffective, method. Many educators use place-based education, researching how places and experiences that students have lead to a cultivation of a sustainable mindset and a better environmental education experience (e.g. Green and Somerville). However, these investigations of place often lead to overly broad pedagogical (relating to teaching) statements about psychology or lead to overly specific case studies of classes taking field trips. This paper aims to investigate a way by which educators can generally connect students to place and the environment by using photography as a method of expanding the learning experience and to answer the question: *How can educators best use photography to teach environmental issues to students in a Kindergarten to 12th grade setting?*

Past studies have suggested the efficacy of photography in an educational setting as both a sociological tool to create discourse amongst students and as a research tool for students. Researchers have also shown photography to be a method for students to communicate scientific concepts and to create a sense of ownership of their scientific work. Photography in environmental education, however, remains widely unexplored by researchers, as the idea emerged with increased access to digital photography in the early 2000s (Rivet and Schneider). This paper explores critiques of modern environmental education by proponents of sustainability and the reasoning behind improving it, in this case with photography. Moving on from arguments for a focus on sustainability, this paper uses those points to evaluate place-based or experiential education, creating a connection to the use of visuals in education. A synthesis follows from an educational context and delves into contemporary literature on photography in environmental education. By connecting photography, place, and the environment, this paper aims to give readers a sense

of what the literature needs to improve upon and how educational scholars and teachers could better blend current scholarship in order to create a methodology that best examines photography in the classroom.

## SUSTAINABILITY

In their work on the improvement of environmental education, Blumstein and Saylan outline seven key methods to improve environmental education, all of which result in more sustainable citizens (0974). By changing the way educators teach global environmental issues, students become more environmentally minded citizens. Rather than simply bringing up concepts, or as Blumstein and Saylan put it, “simply bumbling around” with ideas (0976), science educators teaching about the environment should put sustainability at the top of their list of objectives, thereby empowering students to create change. The measurable impact of environmental education is what will inspire students to act sustainably. Therefore, this paper will accept any form of education that aims to empower students by changing behaviors outside of the classroom, by promoting critical thinking about the environment, and by encouraging a sense of ownership of a sustainable environment. Of the seven recommendations, four could possibly be remedied by using a visual education approach (Rivet and Schneider; Cook et al.; Lipponen et al.). The four include the use of “before-after treatment control designs” for new environmental education methods; the revision of curricula to shift focus from cause and effect relationships to non-linear relationships, which provide more accurate depictions of natural systems; the consequences of conservation-minded legislation; and critical thinking in the context of relationships our actions have with the environment (Blumstein and Saylan 0975).

## PLACE-BASED EDUCATION

Educators often find place-based education (also referred to as experiential education or engaged learning) to be an effective tool in contextualizing environmental issues. Green and Somerville, using elementary-aged students, engage this idea of place-based education in the context of rural Australia. The two educators argue that the schools they study overturn existing architectures of sustainability education by effectively engaging students in place. They state:

The overarching argument is that until the architectures that hold existing practices in place are changed, teachers will remain reluctant to engage in sustainability education. Therefore, understanding the practice of teachers in sites where the practice architectures support sustainability education has potential to inform the field. (834)

Basically, the current momentum of education needs to change in order for a more interdisciplinary approach to sustainability education to be implemented. However, some schools (in this study schools in Victoria, Australia) already support sustainability education. Green and Somerville use these schools as a starting point to expand knowledge of the implementation of sustainability education (834).

In providing context for the use of place, Green and Somerville refer to their own previous work, the work of other educational scholars, and the research of indigenous scholars in the field of sustainability and place education. This study refers heavily to those indigenous scholars, as Green and Somerville have previously found that “place” (as a concept) has long been a powerful notion in aboriginal ontologies and epistemologies (834). Green and Somerville’s research covered a region of Victoria known as Gippsland and incorporated six schools in that region. The researchers selected the region for its unique and diverse environmental challenges, from rising sea level to high unemployment. The teachers selected by Green and Somerville, in order to best represent the benefits of education for sustainability, all shared an interest in the environment and sustainability (835).

Green and Somerville found four different and commonly used place-based processes in their research. These include the use of the physical school grounds as a base of learning, containing all of the aspects needed to teach students about sustainability. For example, school ground soil provides a place to create lessons about decomposition and waste, which can be expanded upon to teach microorganisms and plastics in the ocean (836-839). Broadening from the school grounds, Green and Somerville describe a teacher’s use of local wetlands to engage students. At these wetlands, and other walkable locations from the school, teachers instill in their students a sense of ownership and responsibility due to the proximity of the place and the human influence on the place (838-839). Transitioning from place as location to place as community, teachers created partnerships with local government leaders and town planners and connected with Aboriginal elders in order to “[produce] an active social ecology of place that underpins sustainability education practice,” as Green and Somerville explain (840). Finally, the study details the use of creative and artistic processes by the teachers. By creating interactive works of art that cross disciplines between science (images of local biodiversity)

and art (murals, interactive ecology trail drawings, sundials), teachers encourage the ideas of risk-taking and innovation in these children. By placing these works of art near the places that students have engaged with (such as playgrounds and forests), the creative works by students act as a reflective tool (Green and Somerville 841).

While this paper may pose a barrier to other readers who seek a quantitative measure of student understanding, Green and Somerville provide a thoughtful narrative evidence (qualitative, language-based, and story-led) of how teachers best engage students. By explaining what sustainability can mean in an educational setting and by focusing on place rather than curriculum, this research contributes to larger questions of how to best teach sustainability in a way that avoids the “bumbling” that Blumstein and Saylan describe (0976). While Green and Somerville never explicitly discuss the combination of visual and place education, opting instead for a focus on student-led discussion and experimentation, their study inspires the use of photography as a tool to expand on or explain the importance of the environment to students. Photography has the potential to achieve similar goals by having students engage with their communities and by presenting places in a familiar context.

## PHOTOGRAPHS AND EDUCATION

In order to understand the potential of photography, the methods by which photography acts as a learning tool must first be investigated. In outlining and examining the use of student-created picture books Burke and Cutter-Mackenzie engage with children and assesses their perceived connection with nature, therefore, putting numerous sources into conversation regarding the ties between environmental education and art. Broadly, Burke and Cutter-Mackenzie conclude that art and the environment have strong pedagogical connections, in that each promotes creative thinking and requires development of connections between the seemingly unconnected. Student-created picture books allowed students to examine their own world, and in turn, gave the researchers the chance to examine the students’ understanding of environmental issues (Burke and Cutter-Mackenzie 327). What Burke and Cutter-Mackenzie leave out of the conversation about environmental education, Lipponen et al. pick up by examining the educational methods by which photographs act as a tool for education, like any other artwork.

The study by Lipponen et al. on the effects of using the photographic process with Finnish preschoolers reveals the process by which education and photography are connected and also illuminates possible uses of photography in the classroom.

Furthermore, this qualitative data review interestingly views the relationship between research and education, as researchers originally collected the data for a separate study but later found it to be of value in terms of education. This study does not focus on environmental education at all, yet provides key answers to questions regarding the ways in which teachers may use photographs taken by children to understand their thoughts and promote certain conversations.

The questions posed by Lipponen and fellow researchers are: “How can the multi-voiced nature of visual artifacts be conceptualized?” and “How does this conceptualization help in the understanding the functions of visual artifacts in research with children?” (3). In order to answer the questions, Lipponen et al. articulate two methods of conceptualizing photos, the most effective of which is the ability of cultural symbols and artifacts (in this case photos) to mediate between children and adults. When asked about moments of joy, students used photographs as “central tools” in their conversation about joy, according to the notes provided: “[photographs] also supported the children in making sense of and reflecting on their experiences.” (Lipponen et al. 6). In an environmental education setting, enriched conversations, by having students photograph subjects and engage in reflection based on prompts, could provide a source of non-traditional student assessment for educators. The promotion of student-led reflection on places visited via photographs, such as those described by Green and Somerville, could prove to be an effective classroom tool in terms of interactions between students.

Lipponen et al. also investigate the numerous ways the photos taken by preschoolers were used in their study, both by the researchers and by the children. In some cases, children used the photographs themselves as avenues of discussion, making them “primary artifacts” or objects used to directly initiate discussion. However, in the same setting, photographs would also provide inspiration for the children to create their own similar images.

According to the conclusions of Lipponen et al., educators can use photographs to focus conversation, and educators can use photographs to continue discussions of place after a field experience. While this study focuses on early childhood education, not environmental education, the conclusions of these researchers illuminates a conversation about the role of photography in the classroom, especially in terms of conversation and basic methodology. The methodology of Lipponen et al. originally intended photographs and conversations from the study to act as data, connecting it to the photovoice method of research, which researchers have only recently begun using in the classroom (Cook and Buck 35).

## PHOTOVOICE

Since Wang and Burris (1994) developed the photovoice method of research (then termed “photo novella”), it has emerged as an effective tool to engage community members with a topic and create discourse around the topic. The method emerged as a way to break down power dynamics (race, class, language, or gender) that may exist within certain conversations between researchers and students and give researchers a sense of participants’ thoughts that interviews may not capture (Wang and Burris 171). The process of photovoice consists of giving research participants, or students, cameras and providing a topic that their photographs will address. In the classroom, those power dynamics look more like the barrier between teacher and student, and by giving the students a voice, recording student input, and using that to shape the course, students become empowered. Cook has been researching photovoice in science and cross-cultural educational settings for over six years, and her 2010 work “photovoice: a community-based socioscientific pedagogical tool” provides some of the first significant multidisciplinary insight into the incorporation of photovoice as a pedagogical tool, rather than simply a research method. In a classroom setting, learning comes in the form of facilitated conversation centered on the photographs, which provides a starting point for organic, student-led conversations that educators or researchers may have a hard time creating (Cook and Buck 35).

In terms of education, photovoice provides students and educators an effective mode in which they can create conversations around certain issues – in this case, sustainability and other environmental issues. Not only does photovoice provide an avenue of dialogue, but when used in the context of community sustainability it also has the ability to impact both students and community members, as illustrated by Cook et al. (63). Cook’s students engaged in a study abroad program wherein they interacted with the local coffee industry and in a joint photovoice project the two groups created an all-inclusive conversation about sustainability. Students with backgrounds in sustainability and environmental science had the ability to practice their knowledge in terms of topical community issues and exchange comments and photographs about sustainability, locality, and branding at a photovoice event hosted by the researchers. Eight students and ten Costa Rican community members with connections to the local coffee industry gathered, and students shared what they, for example, found to be visible and acute effects of climate change in the community members’ environment (Cook et al.). The cross-cultural conversations (between students and monolingual coffee industry community members) that occurred in this study allow for applied scientific knowledge (identification of local



environmental issues). This implies that teachers can use photovoice as a teaching method within an experiential learning setting in a place that practices sustainability and that feels the effects of climate change.

However, discussion of Cook et al. about photovoice and science learning synthesizes the use of visuals to engage discussion about environmental issues within a place-based educational setting. By engaging with local communities facing climate change related issues, the combination of visual-based discussion and place-based education could be replicated within a K-12 school's surrounding community. Despite the focus on sustainability issues and student/community photography, this study includes participants above eighteen years old, not K-12 students, and though the discussion of place provides exciting data and stories, the experience analyzed is a study abroad trip, inaccessible to most K-12 students (Cook et al. 63).

## DIGITAL PHOTOGRAPHY

Deviating from a student-led approach and focusing entirely on environmental education, Rivet and Schneider's 2004 "Exploring the Role of Digital Photography to Enhance Student Inquiry in a Local Ecosystem" discusses the analogous use of photography in the science community and in science education and how digital photography and its connection to other technologies can enhance learning (49). The study focused on forty-one seventh graders in a Midwestern independent school and involved a project on stream ecosystem health.

Rivet and Schneider concluded that photography increased student interest in environmental science and that the photographic process makes students feel more connected to their work. When their teacher introduced photography, many students desired to continue their projects after school and requested more in-class time to photograph (55). Rivet and Schneider compare the use of digital photography to scientific probeware in that students need little training, and teachers can use it in most qualitative studies that have quantitative indicators (60).

Students find photographs useful in testing hypotheses made about stream health and status; however, more relevant to a discussion of place, the students started to use their photographs to refer to experiences at the stream. The study discusses how students became further engaged with the experience of collecting data and observing the stream after the initial experience due to the photographs. By having photographs of this stream and using them for analysis and web page building, students felt a sense of ownership for this stream (Rivet and Schneider 60).

However, this study provides only an overview of photography in an environmental context and does not make any explicit suggestions or outline any lesson plan for future use of photography in an environmental setting, nor does it provide any useful assessment data or narrative to compare it with photovoice methods or any other classroom environmental education methods.

## ENVIRONMENTAL EDUCATION & PHOTOGRAPHY

In “Conservation Photography as Environmental Education: Focus on the Pedagogues,” Farnsworth analyzes the use of conservation photography as an educational tool. In his paper he formulates a concept of conservation photographers acting as teachers practicing a specific educational philosophy. Farnsworth’s discussion touches on the aesthetic value of conservation photographs and argues that both the photographer’s intention and the image’s composition combined create a compelling narrative (770). Farnsworth’s original narrative strings together interviews of two conservation photographers and two photojournalists, using the difference to illuminate the teaching ability of the conservation photographer (772).

Farnsworth’s research is not solely literature-based. His study follows a sociological qualitative method of “in-depth, semi-structured interviews and observations” (771-72) in which he asks photographers in the study questions regarding their preparation for a shoot, motivations behind a shoot, knowledge of the shoot’s subjects, and goals for the shoot. Farnsworth collects this qualitative data (interviews before, during, and after photographic shoots dealing with conservation) and then uses qualitative research coding software to determine the four themes he outlined in his article.

The first theme, “understanding of ecologies” (773), presents two of Farnsworth’s photographers, exemplifying the need for conservation photographers to understand the ecologies that the photograph to create effective narratives. The second theme, “interpretive-conceptual orientation” (Farnsworth 775), incorporates how the photographs are conceived, and what aspects of those images are educational. Farnsworth describes a visual theory known as “gestalt,” which explains the ability of a photograph to relate to the subjects within it, creating a narrative within the frame of the photograph that allows the image to be used as an educational tool (777). The third theme identified by Farnsworth is “collaborative knowledge,” wherein photographers (in much the same way as teachers) must become experts about either the environmental issue that has become their subject via local knowledge or become experts about the species they will photograph (776). Finally, Farnsworth identifies



“critical stewardship” as the fourth theme to have emerged from his research: the idea that conservation photographers commit themselves to preserving wildlife that humans have put in a critical condition (778).

The conservation photographers embody what Farnsworth (borrowing a phrase from Burke and Cutter-Mackenzie 2010) describes as “immersion and embodiment” (778), through which their photographs represent highly emotional, physical experiences as effective two-dimensional educational tools. Photographers bring forth this emotion by creating images of wildlife in compromised positions, both in their environment and in the frame, or by leaving out wildlife and presenting the lack of environmental stewardship on the part of a community. By creating these photographs, the conservation photographers in the study followed a similar educational process that environmental educators use when creating lessons. The photographs, like a traditional classroom lesson, have a high educational potential when presented (Farnsworth 781-82). With a practical knowledge of Farnsworth’s identified themes, students and teachers could use photography to better understand the world around them. However, the article focuses on conservation, and though conservation is an environmental issue, this paper approaches environmentalism more generally than Farnsworth’s study does.

## NEXT STEPS FOR ENVIRONMENTAL EDUCATION

While attempting to discover the best use of photography in an environmental education classroom, this paper failed to find any study that could quantitatively prove the efficacy of photography in the classroom. This lack of research within the community of environmental education scholars supports Blumstein and Saylan’s critique of environmental education. None of these studies and articles implement controlled methods when devising new, non-traditional assessments or teaching tools, such as photography, just as Blumstein and Saylan warn. However, certain recommendations for future research can be made. For example, a comparison between student-directed photographic projects (Cook et al.) and teacher lead projects (Rivet and Schneider) could provide interesting data on which method affects student behavior in accordance with Blumstein and Saylan’s recommendations (0975). This paper also considers issues of age and the use of visual methods to teach environmental education. While the research of Lipponen et al. provides an interesting look at the function of photographs in education, it limits itself to preschoolers. In the same vain, in Green and Somerville’s work on place and its connection of creative education, the limited age of students did

not reveal much about when teachers should implement creative and place-based education tools. Finally, the question of efficacy of photography in environmental education, central to this paper, has not been answered by quantitative data or by the cause and effect style qualitative data produced by any of the researchers in this field. All of these questions may be answered by future studies and could definitively support the benefits of a photographic education that current researchers suggest.



# **THE NILE RIVER: A MONUMENTAL FORCE**

**BRIANNA RUSSELL**

Majors: Anthropology and History  
Class of 2018

## ABOUT THE WORK

During the fall semester, I wrote a research paper for my Anthropology 370 class, and it was called *The Nile River: A Monumental Force*. This paper discusses the hydro-politics of the Nile River through the lens of the Aswan High Dam. The topic was selected during class discussions of the dichotomy between nature and culture. I wanted to incorporate nature with ancient civilizations and how it intertwined with each other. My personal interest in Middle East and North African studies was also an inspiration for my paper. The anthropological methods that were used throughout the synthesis paper were data collections and revisions from multiple sources.

## THE HYDRO-POLITICS OF THE NILE RIVER THROUGH THE LENS OF THE ASWAN HIGH DAM

Throughout human history, rivers have been known to be strong forces of nature. Civilizations thrived from powerful rivers such as the Indus, Tigris, and Nile. The construction of the Aswan Dam in Egypt was an example of man controlling natural waterways. The dam was not successful at first, but the Egyptians were able to fix the problems associated with the dam. The newer dam is considered successful due to the overwhelming benefits for the communities that lived around the river. This paper explores the importance of the Nile River historically, economically, and spiritually in Egypt and Sudan through the lens of the Aswan Dam project. The paper answers several questions that address the historical, economic, political, and spiritual importance of the Nile: *Why was the Nile considered the longest and most powerful river in the world? How was the Nile essential to the livelihood of the ancient and modern civilizations that thrived on its riverbanks? Can the Nile be controlled by man?* The paper will discuss the impact of the Nile River throughout human history, the creation, trials, and reasons of the Aswan Dam, and the impact of the Aswan Dam project on the Egyptians and Sudanese.

### THE LIFELINE OF ANCIENT AND MODERN CIVILIZATIONS

Celebrate, O ... the Nile with song,  
 the oldest river which queen Tethys begot  
 or one of the sacred waters of encircling Ocean,  
 blessed, life-giving water of holy Egypt.  
 5 Hearken, father of rivers, and hasten upon your land,  
 the sun calls you to bring the wave growing in summer,  
 and the earth, naked,  
 leaning out its back awaits the water of fruitful marriage streaming with gold.  
 Men standing at the river mouth  
 10 invoke the beloved water of divine Nile  
 and children singing all together the annual hymn  
 in prayer invite you to manifest yourself most perfect,  
 for through hopes of you the life of mortals is sweeter.  
 No longer do ships sail forth with their sailors(?), but on land  
 15 with ships all the pilots go.

*Lines 1-15 from A Hymn to the Nile (Cribiore 1995).*

The importance of the Nile River was portrayed in a poem that was written by a student during the late 3rd century A.D. (Criboire 1995). The Nile River has been a topic of discussion for years due to its majestic flow and complex system.

The Nile River is considered the longest river in the world, measuring over 4,000 miles. It is formed by two minor rivers, the White and Blue that flow from Lake Victoria in Uganda and Lake Tana in Ethiopia. The two rivers merge in Sudan and flow north, emptying into the Mediterranean Sea along the coast of Egypt. The Sudanese and Egyptian civilizations thrived on the banks of the Nile because of its agricultural benefits. Egypt depended on the yearly inundation of the river for irrigation, when waters from rains in Ethiopia sent floods to the Nile River Valley. The river picked up sediment over hundreds of kilometers and then deposited in the floodplain and the Nile Delta. For many millennia, the Nile's penchant for flooding had been both boon and bane, bringing nutrients to the soil (Nixon 2004). The average yearly flow of the Nile fluctuates between 40 and 140 milliards of cubic meters of water with an annual average of about 90 milliards (Garretson 1960). The rich nourishment was essential to the Egypt's agriculture and economy.

The Nile was a momentous force for the cultures that flourished around the river, as it was mainly used for water supply and transportation. The channel of the Nile served as an artery circulating food and goods from one part of Egypt to another and linking Egypt with its neighbors to the south, north, and east (Hassan 1997). The temples and palaces were built alongside the banks.

The river had a spiritual importance during times of the Pharaohs. Although it was not a part of religious beliefs, the river was tied to either Osiris, the king of the gods, or Hapi, the god of inundation. According to Egyptian myth, Osiris became the King of Egypt when he was slain by his brother Set. The pieces of his body were flung into the river, and his sister-wife, the goddess Isis, collected his remains and brought him back to life. The story of Osiris' insurrection was one of the important stories of ancient Egyptian's naturalistic religion, and the ancient Egyptians associated water life, and the ritual act of lustration, with the Nile, signifying rejuvenation and immortality (Delia 1992). The inundation of the Nile symbolized rebirth each year because of the re-nourishment of the soil. The ancient Egyptians believed that inundation was signaling that the land would be soon nourished and blessed by the gods.

The richness of the Nile sparked debates about the control of the Nile. Hydro-politics have been discussed for thousands of years, beginning with the rise of modern civilizations, and are still discussed today. States that shared a common river, such as the Nile, usually harmonized their policies for the purpose of establishing agreed regimes (Kendie 1999). During the 1600s-1800s, African countries were

forcefully taken over by European powers, and at the height of the 19th century, France and Britain were fighting over territories in Northeast Africa. At the end, Britain gained control over most of eastern Africa. After gaining effective control of Egypt in 1882, they struggled for a little over two decades to subdue the sparsely populated Sudan and to race other colonial powers to find and secure control of the Nile. After gaining freedom from British rule, Egypt and Sudan debated over time about the control of the long river; most debates were about the constant floods and the industrialization within the countries. The government agreed to a treaty that was ratified in 1959. The treaty provided for the construction/formation/development of the Aswan High Dam in Egypt and a dam on the Blue Nile in Sudan (Dellapenna 1996).

### THE ASWAN DAM: THE “GRAND BUILDING PROJECT”

Plans about the dam were made in the late 1880s when the Egyptian government wanted to control the unpredictable flow of the Nile. Many questioned the new project: *Where would the dam be located? What would be the purpose of the dam? How much will it cost?* The first dam was built in the city of Aswan, Egypt in 1889. The dam was raised in 1912 and then again in 1933 due to mechanical failure (Hassan 2007). After the failure of the dam in 1946, the government decided to create a newer dam four miles upriver. A loan of 400 million rubles to the United Arab Republic from the Soviet Union made the new project, the Aswan High Dam, possible (Mallakh 1959).

Preparatory work began as early as the second half of 1952. However, it was not until after Colonel Gamal Abdel Nasser wrested control from General Mohammed Naguib, in 1954, that the ‘full speed ahead’ signal was given to the planners. After the preliminary research had been completed and evaluated, the international experts presented their final report to the Nasser Government on December 4, 1954. Before construction, the scientists tested the geological formations of the Nile riverbed, which was about 113 feet deep at this point and determined whether it could carry the tremendous weight of the High Dam. Under the original plan, drafted by German and other Western experts, seven large diversion tunnels were cut in the rock of the east bank of the Nile to divert the water flow during the construction period. The tunnels were designed to enable the passage of the natural supply during a high flood and to also control the flow of irrigation waters throughout the year (Joesten 1960).

At the dam’s completion, it measured 111 meters high above the Nile River, and the structure of the dam was made of granite, sands, and alluvium (Hassan 2007).

The reservoir that was created with the dam (also known as Lake Nasser) held 130 billion cubic meters of water, which was the largest manmade lake ever built, about three times the size of the Hoover Dam's Lake Mead in the United States (Mallakh 1959). The dam was completed in January 1971 with an inauguration, and the project cost about one billion U.S. dollars (Hassan 2007).

## WHY BUILD THE DAM?

The dam was developed by the government for multiple reasons. Many involved in the project believed that the dam would be beneficial to irrigation and hydropower. One of the reasons for the development of the dam was flood control. By the late 19th century, flooding conditions were worse than before. From the late 1890s to mid-1930s, fields that were used for agriculture were threatened or thoroughly destroyed by the yearly inundation. The flood of 1946 nearly breached the first Aswan dam. Engineers decided to create the High Dam upriver (Nixon 2004), which was able to control the dangerous floods.

The dam was created to meet the demands of a booming economy and the growing industrialization of Egypt. The government was dependent on exploitation of the natural resources as a step of the development process (Feiner 1952). Egypt, an important exporter of foodstuff for a considerable period of history, was increasingly dependent on imports of grain. At the time before the dam, the overriding problem was raising more food. The population was growing at an alarmingly high rate of about 2.5 percent every year, while the gross national product increased at an annual rate of only 1.5 percent, resulting in the need of more food for consumption. (Mallakh 1959).

The advantages of the High Dam were significant in growing the industrialized jobs and sustainable energy in Egypt. The economic benefits were essential for the economic growth: The High Dam project meant an addition of about 25 percent to the national income which was estimated at 856 million Egyptian Pounds (Mallakh 1959). The principal benefit was a considerable increase in the country. The increase of profit was astonishing since the national income of Egypt was much lower than the United States (Mallakh 1959). While providing protection against flood and drought, the dam redirected the flow of the Nile and lowered the water table (Mallakh 1959). The significance of the lower table was the water could be distributed evenly to places along the river that needed it. Access to water was an important issue, and the dam made it accessible for citizens that were in need of fresh water. The dam also provided cheap electric energy for machinery, such



as irrigation and drain pumps, which assisted in decreasing production cost and animal power. People were able to work faster in the fields and cut production time (Mallakh 1959).

The positive benefits from the dam projects outweighed the challenges that the project faced. One of the challenges related to the dam project was the manipulation of the Nile River, and the precipitation of silt in the basin. The loss of the beneficial nutrients in the soil was met using more fertilizers and greater care in farming practices. The dam made it possible for the expansion of chemical fertilizer output through the increase in hydroelectric power (Mallakh 1959).

### THE EFFECTS OF THE DAM

The Aswan High Dam had positive and negative effects on people and their respective cultures, the economy, and agriculture along the river. The Nile is a large source of different varieties of seafood. For millennia, people made a living off the river, and economies flourished because of successful fish markets; fish was also a main staple in many Egyptians and Nubians' diet. The construction of the High Dam had both positive and negative effects on the fisheries along the Nile River. Lake Nasser became a source for fish, producing over 40,000 tons a year (Hassan 2007). The manipulation of the Nile's flow made it easier for fisherman to collect fish. Although the fisheries benefitted tremendously from the dam, they also suffered. The Nile flowed freely for millions of years before man began controlling the natural currents. During the yearly inundation, there were "Nile blooms" or upsurges of phytoplankton, which was food to many varieties of fish. When the High Dam closed for further construction, the bloom and fisheries collapsed. The situation was an example of how a grand construction controlled so much of the fish industry. A positive outcome was the fisherman's techniques of maintaining their businesses and reviving their fisheries themselves (Nixon 2004).

The main effect of the Aswan High Dam on the yearly inundation was the displacement of the Nile's discharge and sediments. The free-flowing Nile stopped when the dam was built, and scientists studied the change of measurement of the discharge and sediments prior and after the dam was built. Before the construction of the Aswan High Dam, an annual mean of  $34 \times 10^9 \text{ m}^3$  of Nile water was discharged into the Mediterranean throughout the flood period from August to November, with the peak in September. The average total discharge of the 5 years (1959-1963) was  $42.9 \times 10^9 \text{ m}^3$  of freshwater (el Din 1977).

The last normal discharge of floodwater into the Mediterranean was in 1964.

Before that, the freshwater discharge and sediment loads coming through the Nile branches provided fresh water and beneficial sediments for agriculture of the coasts of Egypt and the Levantine Sea. The sediment discharge in a single year depended on rainfall during previous years, the time of year rainfall occurred, and the intensity and duration of individual showers. The sediments carried by the Nile and discharged into the Mediterranean were deposited near the Damietta and Rosetta branches of the river, producing the Nile Delta and were sometimes carried further away by ocean currents. In general, the sediment loads increased with the influx of river discharge. The sediments transported varied from year to year, in the range 60-180 million tons. The freshwater budget from the Nile also varied from year to year. The discharge and sediments that were displaced from 1961-1973 by the Aswan Dam were placed into Lake Nasser (el Din 1977).

The construction of the Aswan also affected the cultures along the river. The Nubians, who lived in Aswan, were affected both positively and negatively by the dam. When the dam was constructed, flood waters threatened inhabitants in the Aswan region. The Nubians were forced to relocate four times in less than a century (1902, 1912, 1933, and 1963) due to of the construction of the first Aswan Dam and the increase in the heights of the dam. The Nubians of Lower Nubia included the Kunuz, the Fadeja, and the Nubianized Arabs of Koresko. An estimated 100,000 Nubians were relocated from Lower Nubia farther north to Kom Ombo in Egypt, losing their ancestral land and their social fabric based on joint ownership of waterwheels and palm trees. The Egyptian government provided 25,000 houses, 138 stores, 33 mosques, and 36 schools. The Nubians, however, found the houses aesthetically lacking and hastened to decorate them with traditional Nubian motifs (Hassan 2007).

Hussein Fahim constructed cultural research on the Nubian village of Kanuba. The village was created in 1934 during the construction of the dam. The creation of the village was the aftermath of the inundation of the lands next to Aswan, and people were removed from their homes. The aspirations towards industrialization corresponded with the Egyptian government's development plans. Fahim's cultural research was on the religious practices and the impact of village life on social and economic life. During his study, the inhabitants of Kanuba questioned the presence of the researcher and his team, because they did not know the team's intentions beforehand, but then they became welcoming towards them (Fahim 2010).

One of the negative effects of the Aswan Dam was the continuous threat of the ancient Egyptian and Sudanese stone structures. During the building of the Aswan Dam, ancient structures, such as Abu Simbel, were endangered by floods from the growing lake. Joesten wrote in his journal article, *Nasser's Daring Dream*:

The Aswan High Dam, that “doomsday was near for one of the most imposing monuments ever built: the famous Rock Temple of Abu Simbel...would lie submerged under the waters of a gigantic flood unleashed by man” (Joesten 1960, p. 55). He expressed the same concerns that other archaeologists and Egyptologists were expressing.

A campaign was created to preserve the ancient structures, and many sponsors and organizations got involved, including the United Nations Educational, Scientific, and Cultural Organization (UNESCO). Hassan discussed the purpose of UNESCO and their role in preserving the structures. The initial funding from UNESCO was \$110,000 for a preliminary study on the salvage of Abu Simbel, and \$16,000 to send W. Adams from the U.S. and H. Nordstrom from Sweden to assist in archaeological surveying and to study the aerial photographs of the reservoir area. Towards the end of the campaign, UNESCO estimated the total campaign cost was \$80 million. (Hassan 2007).

There were economic benefits with the Nubian campaign, as it brought revenue and cultural fascination into the Egyptian and Sudanese countries. One bonus within the tourism industry was the improvement of river navigation throughout the year, which allowed Nile-cruise tourism to flourish. Other than Abu Simbel, most tourist itineraries were restricted to Philae and visits to the Aswan High Dam and other monuments and museums in Aswan, some include a cruise to Kom Ombo (Hassan 2007).

## CONCLUSION

The production of the Aswan Dam was an example of man trying to control a force of nature by shifting the natural flow for the convenience of people that lived along the river. The whole project cost millions of dollars and by altering the natural course of the Nile, it provided positive aspects of industrialization, while drastically changing landscapes and displacing people from their ancestral lands. The project, which lasted for a 70-year span, displayed many man-made mistakes but also triumphs. Even though man could “control” the Nile River, the Nile would remain the same powerful river that dominated the Egyptians and Sudanese for millennia.

# ORIENTALISM AND THE PERPETUATION OF STEREOTYPES IN THE NUTCRACKER

LEILA MIRE

Major: Dance Performance  
Class of 2018

## ABOUT THE WORK

I have recently become more interested in dance research as a realm of academic study. In my studies, I've discovered a huge shortage of dance research in response to the stigmas that wrongfully suggest dance is not an academic pursuit. I hope to continue scholarly research to expand upon the wealth of knowledge dance offers and the cross-cultural potential it maintains. In doing so, I hope to advance the way society views dance so we as a culture may recognize its vitality.

This paper was written for a writing intensive Dance History course. Over the semester, we studied the development of Western dance. At the end of the course, we were instructed to submit research on a topic of our choice. Around this same time I had been receiving several hate letters criticizing my Middle Eastern heritage. The letters often used unfair Middle Eastern stereotypes that persist in the West. These periodic letters ostracized my heritage; thus making it clear that racism toward the Middle East was widely based on the perpetuation of orientalist stereotypes. This inspired me to research “the Arabian Dance” in the ballet, *The Nutcracker*.

Having grown up as a Lebanese-American, Middle Eastern dance has always been a large part of my life. However, I also grew up in the realm of Western Dance and watched as I was cast in the “oriental” roles that had little to no similarities to traditional Middle Eastern culture. Naturally, I chose to study the Nutcracker, as it is undeniably the most iconic and recognizable ballet in the Western world. In my research, I analyze the famous “Arabian Dance” to see how it has changed over time. I received materials from my professor, Linda Miller tracing the evolutionary process of the Nutcracker and took my base knowledge of Middle Eastern dance to compare the two styles. After doing so, I researched and watched footage of the most recognizable renditions of “the Arabian Dance.” I familiarized myself with different theories and studied research on Middle Eastern stereotypes that persist in the mainstream of American culture. I viewed the footage three times each to interpret it from the perspectives of Laban Analysis, Feminist Theory, and finally Orientalist Theory. In my findings, I make discoveries toward how the Western World views the East and how it influences public perception. By presenting my research, I hope the scholarship will ignite further research in the field.

Marius Petipa and Lev Ivanov first choreographed *The Nutcracker* with a score by Pyotr Ilyich Tchaikovsky in 1892 at the Mariinsky Theatre in St. Petersburg. The libretto (text of the work) is adapted from ETA Hoffman's fairy tale, *The Nutcracker and the Mouse King*. Since then, the Nutcracker has gained tremendous popularity as a Christmas necessity, predominantly in North America. The focus of this analysis will be on the "Arabian Dance" or "Arabia, the Kingdom of Yemen: Coffee," a short divertissement (or short dance within a ballet that does not contribute to the plot) that occurs in the second half of the ballet. Since its inception, the piece has evolved to insinuate several connotations toward the Middle East. By analyzing "the Arabian Dance" from *The Nutcracker* and tracing how it has changed over time, I contend that it negatively fantasizes the Orient by suggesting imperialistic superiority to perpetuate racist stereotypes.

In *The Nutcracker*, a young German girl named Clara encounters the Middle East for the first time through the Arabian Dance. This takes place in the 19th century where Clara is introduced to a fantasy world featuring different "cultures" from around the world. The cultural dances are divertissements Petipa and Ivanov incorporated into the libretto despite its insignificance to Hoffman's original tale. The piece is largely based on Western choreographers' interpretation of stereotypes of exoticism, sensuality, and an uncivilized society.

Before these stereotypes are discussed, however, it is important to consider Orientalist theory and its role in the "Arabian Dance." In "Oriental Imagery and American Attitudes toward Asia," authors Patrick T. Vargas and Carla A. Santos describe Oriental theory as "scholarship on relationships in the Middle East based on imperialistic tradition" (Santos and Vargas 168). In Jennifer Fisher's "Arabian Coffee in the Land of Sweets" she adds that it commentates on the Western longing for "an imagined, exotic Eastern realm" (Fisher 150). In doing so, it influences the American psyche to legitimize Western superiority and assert a new brand of Arabianism entirely unrelated to the actual culture. Its negative connotations reflect "the political subjugation of the East by the West through colonization" (Fisher 153). This Orientalist fantasy is actually a reflection of Western train of thought. It implies a sensual, innately inferior status toward the East under the pretense that this sensual, lawless East is in need of Western guidance and rationale. It recommends a liminal perspective on Orientalism. Fisher explains, "Through the Orientalist gaze upon the East is full of longing, its vision is myopic, limited by preconceived notions" (Fisher 154). In response, Orientalist imagery implicated to Western thought suggests the East is anything outside the norm.

In the "Arabian Dance" divertissement, Orientalist theory is immediately applicable by the initial notes of music heard. Clara is first exposed to this "strange"

Arabian culture by the melody that summons the dancers onto the stage. It is a slow, soft piece of music with an insistent rhythm. It uses an English horn and sounds reminiscent of the song a snake charmer might play to lure his prey. Despite the divertissement full name, “Arabia, the Kingdom of Yemen: Coffee,” the music is a folk tune from the region of the Caucasus known as Georgia. As Lisa Wynn explains in the *International Journal of Middle East Studies* this already points out the tendency to “homogenize entire regions” under Orientalist stereotypes (Wynn 454). The Eastern languor in the music features “cloying, bewitching music” unlike the rest of the ballet (Fisher 155). Already the mysterious aura and Clara’s surprise toward the dancers implies it is an uncivilized culture, as shown by the sexualized movement quality making it a curious oddity to witness.

After the music cue, the audience watches the dancers enter the stage in their “Oriental” costumes, which sharply contrast the rest of the ballet. The costumes have a Western interpretation that stigmatizes the Orient. Typical costuming includes gauzy, harem pants with jeweled headdresses for the women. As Fisher points out, even though bare midriffs did not originate in the Middle East, they become wrongfully associated with Orientalism on stage to create a fictitious culture of sexually available women and lazy, avaricious men (Fisher 156-157), implying an uncivilized, morally lax culture of sexualized women and greedy men.

This brings us to the choreographic versions and how they have evolved over time. While no definitive version of *The Nutcracker* exists, the general motifs of the “Arabian Dance” follow similar principles. They each maintain a sexually explicit, perverse culture. Fisher explains, “Western colonists produce a version of the Middle East that they could dominate...a place of romance, exotic beings to reflect the dichotomies that homogenize and essentialize identities” (Fisher 160). The divertissement is most often a heterosexual duet with a fixation on sexuality to suggest certain connotations toward gender and morality in the East.

Choreographically, the woman becomes an ornament of the court as her “consort picks her up and swirls her arched body transfixed by a great power” while she assumes a supine posture, relying on excessive indulgence and acting as a sexual slave to her stealthy mate (Fisher 162). The woman’s role in the duet has a stately entrance with an impassive, internal facial expression to suggest sexual subservience as juxtaposed by the male’s control over the woman. Unfortunately, racist prejudices persist with modern day interpretations that perpetuate false illusions of the culture. The women in the Arabian Dance of the ballet rarely travel on their own accord and are enslaved to their male counterpart. While there are occasional deviations from this stigma, such as Mark Morris’s comical “Morris of Arabia,” most ballets rely on Orientalist stereotypes. A common interpretation features an abusive,



hookah-smoking, turban-wearing male that is sexually dominant to his submissive concubine. From a feminist perspective, this demeans women and strips them of their vocal agency. Orientalist theory would also contend that it is making bold assertions toward the Orient and Islamic culture as it uses domineering, uncivilized stereotypes to act as a foil to the West while wearing Islamic attire.

The evolution of the “Arabian Dance” is also essential to consider. For instance, in *The Nutcracker Ballet* by Jack Anderson, he discusses several different interpretations on the piece. Lew Christensen produced the 1952 divertissement in which a Turkish magician who makes a dancing girl disappear using dark magic (Anderson 125). In doing so, the religion and superstitions toward the Middle East are reinforced. In 1954, George Balanchine of the New York City Ballet’s “Arabian Dance” redesigned the piece featuring a female belly dancer with a diamond in her navel rather than a male solo (Anderson 126); this delegitimizes the culture behind belly dance and sexualizes women as the form of dance was actually coed before colonial intervention forbid men from partaking in the craft. Just a year later in 1955, David Lichine choreographed the duet with the male drinking coffee as he danced and balanced the cup upon his partner’s upraised foot; thus objectifying her and using her as a literal servant (Anderson 126-127). Nearly 30 years later, the stigmas failed to improve. Rudolph Nureyev’s version in 1988 features a sultan lording over his harem while eating sweetmeat fed to him by his multiple wives when his bag of gold is stolen from his pocket by a group of belly dancers (Anderson 128). His later versions still employ a gullible, old sultan who is tricked by distrustful women.

Meanwhile the Bolshoi Ballet found the “Arabian Dance” to be interchangeable with Indian Dance by using traditional Indian attire and finger work reminiscent of Bollywood. This misconception is common considering that prayer gestures from India with bobbing walks from the classical Indian dance known as “Bharatanatyam,” the kowtow bow of subservience practiced in China, and angled Egyptian walks are frequently seen in “Arabian Dance” interpretations despite their misplacement (Anderson 129). Finally in 1990, the Disney version of *The Nutcracker* is set underwater where the fish wink seductively; thus, comically acknowledging the overt sexuality in the piece in comparison to the rest of the ballet (Anderson 129). Today, these stigmas are common in modern day interpretations that have included forms such as strip tease and burlesque renditions of the “Arabian Dance.”

It is important to recognize the negative repercussions Orientalist stigmatism creates in Western society. The interpretations often revert to stereotypes of “low-others” with biblical, Salome-like connotations. The history of typecasting has certain ethnocentric implications that inaccurately represent the culture regarding

false stereotypes. The dark, seductive lighting and cliché scenery sets an ambiance of sultriness. Likewise, the backwards representation of genders recommends the East acts as a foil to the West to oppose the West's moral, civilized, and proper lifestyle. As John Wiley Roland points out in "On Meaning In Nutcracker" it is important to note that despite a popular misconception, Clara in *The Nutcracker* is not dreaming, so the "inaccurate representation of the East" has greater gravity (Roland 6). Despite the Arab culture's modesty and conservatism, the West feeds on a fantasy of "how Arabs dance in private spaces" (Roland 8). In John W. Mackenzie's book *Orientalism, History, Theory and the Arts*, he eloquently explains that it becomes a tactic to subtly attack the East, suggesting "a sharp bifurcation between a Western culture of domination" (Roland 94). In doing so, certain innuendos inevitably ingrain themselves in Western society.

In a recent study conducted by Patrick T. Vargas and Carla A. Santos in the *Journal of Tourism and Cultural Exchange* that asked people over at random to ensure a wide demographic to identify adjectives they associated to Oriental imagery. The study found three categories that consisted of "Contempt, Curiosity, and Fear." The most popular words associated to "Contempt" were "uncivilized, inferior, lazy, underdeveloped, and heathen." The second category, "Curiosity" resulted in the words "exotic, mysterious, and sensual." Finally "Fear" used adjectives like "strange, backwards, barbaric, and alien" (Santos and Vargas 180). Unfortunately, the validity of these adjective stereotypes remains true to "the Arabian Dance" as it failed to evolve in the ballet and continues to reinforce these unfair clichés.

The "Arabian Dance" from its inception to modern day interpretations continues to encourage prejudices that persist in the mainstream. By analyzing the relationship between common motifs in a variety of interpretations one can conclude that stereotypes continue to manifest themselves in the famous ballet. As a result, the divertissement reflects the Orientalist racism inextricably linked to the Western psyche.





# TRANSFORMING THE CHILD: REINTEGRATING FORMER CHILD SOLDIERS OF SIERRA LEONE

**HAWATU DAVOWAH**

Major: Integrative Studies  
Class of 2020

## ABOUT THE WORK

The following research paper was originally written for a question-based Honors research course. It is intended to introduce and convey the importance of rehabilitating and reintegrating former child soldiers of Sierra Leone into society following an eleven-year civil war, while taking into consideration several significant confounding variables that may hinder this objective.

The Sierra Leonean civil war was one of the most scarring and defining events of Sierra Leone's history and current state of affairs, yet the need remains to address its devastating realities and effects on individuals and communities. Inevitably, this has posed negative ramifications for victims, perpetrators, and their descendants alike, leaving many civilians further marginalized than they were prior to the war. As international (specifically Western) efforts have been made to facilitate the rehabilitation of former child soldiers that participated in the war, it is important to understand social mores and other important cultural aspects that define the communities of Sierra Leone and how they might hold stark contrast to those of the Western world. By understanding such contrasts, these international voices will not only be able to effectively address the needs and demands of communities in Sierra Leone, but also better influence the circumscribing narrative of violence that is placed upon former child soldiers of Sierra Leone.

The fieldworks to be analyzed are those of several researchers who have made significant contributions to understanding this subject. All studies done focus on the time after March of 2002, when the UN declared an official end to the war. This paper will deal extensively with ethnographic surveys, with some sources experimenting with introductory reintegration programs by using a sample population of a traumatized community. However, in observation of ethics and the delicacy of the participating populations' psychological states, control groups also operated as experimental groups. It is also important to note that the studies conducted are presented largely through the Western voices of child psychologists, sociologists, and anthropologists who have conducted psychosocial studies funded by intergovernmental organizations, such as the United Nations.

The following paper is intended to introduce and convey the importance of rehabilitating and reintegrating former child soldiers of Sierra Leone into society after an eleven-year civil war, while taking into consideration several confounding variables that may hinder this objective. As many international (namely Western) efforts have been made to provide relief on a capital and psychosocial level, it is important to understand preexisting cultural norms, notions, and social mores that surround Sierra Leone and how they might hold stark contrast to those of the Western world. By understanding such contrasts, these international voices will effectively address the demands of Sierra Leone, a developing, post-conflict nation in which traditional beliefs pervade everyday life, as well as allow these international voices to better shape the narrative placed upon former child soldiers of Sierra Leone.

This paper will analyze the cross-sectional fieldwork of several researchers who cover the post-civil war era of Sierra Leone, meaning the time after March 2002 in which the United Nations (UN) declared an official end to the war. This scholarly discussion will deal extensively with ethnographic surveys (studies that focus on individual people and cultures). Some surveys will experiment with introductory reintegration programs, with one using the same population sample as both a control group and experimental group. This was done in observation of ethical guidelines and the fragility of the participating populations' psychological states. The studies to be discussed are presented largely through the Western voices of child psychologists, sociologists, and anthropologists who have conducted psychosocial studies funded by intergovernmental organizations, such as the UN.

In the first section of this paper, a brief history of Sierra Leone will be given to contextualize the civil war; this will introduce the demographics that generally comprise the child soldier population in Sierra Leonean society and describe how they were used amongst all fighting intrastate groups throughout the war. The second section will serve to analyze the aftermath of the eleven-year civil war and the new challenges that former child soldiers face. It will also delve into several major effects that certain factors (gender, traditional cultural attitudes concerning familial roles, societal stigma, and intercommunication issues) may have upon former child soldiers as they try to relate to their respective communities and make steps toward healing and reconciliation in a developing post-conflict nation.

## I. BRIEF HISTORY: CHILDREN BEFORE AND DURING THE CIVIL WAR

To understand Sierra Leone's current post-conflict state and how this has

affected its population, it is important to understand the dynamics leading up to the war, including familial, societal, governmental, and interstate relations. Sierra Leone is a small country on the coast of West Africa, situated between Guinea to the northwest and Liberia to the southeast. Its capital, Freetown, was founded in the late 1700s by freed black Nova Scotian slaves with the aid of British abolitionists. Sierra Leone remained colonized by Britain until 1961, when it officially declared independence. However, successive post-colonial governments established in the new nation failed to implement policies that would serve to represent and benefit the collective wants of its people (Rashid, 2016). Sierra Leone fell into years of political unrest characterized by electoral violence and corruption. Furthermore, some children reportedly suffered abuses at the hands of government authorities themselves, inciting them to feelings of frustration that made them more prone to violence (Shepler, 2005, p. 197). During this time of dissatisfaction, the rhetoric of an emerging political party and insurgency known as the Revolutionary United Front (RUF) gained traction amongst disenfranchised youth and radical college students of Sierra Leone (Rashid, 2016).

The Sierra Leonean civil war is best categorized as a spillover war, with its roots stemming from the civil war of Liberia that started in 1989 after Charles Taylor and the National Patriotic Front of Liberia (NPFL) launched a coup against Samuel Doe, former leader of Liberia (Dorrer et al., 2011, p. 41). In an attempt to replicate the successful coup that took place in Liberia and with support from Taylor's NPFL, the RUF waged an insurgency in Sierra Leone in 1991. (Notably, the campaign slogan of Charles Taylor, a leader of the RUF who later became president of Liberia read: "He killed my ma, he killed ma pa, but I will vote for him"— suggesting that the RUF's target audience was the younger generation of that time (Goodwin, 2008).) The resulting war of shifting alliances and bloodshed left 50,000 civilians dead and over 1 million people displaced, raped, and/or mutilated (Shah, 2001), with at least 75 percent of the population being forced to flee at least once within the eleven-year time frame (Shepler, 2005, p. 197).

Child soldiers were used to mobilize the war on all sides. For purposes of this paper, a child soldier will be defined as a child under the age of 18 who was affiliated with warring parties in any way, shape, or form, be it by force/abduction or by their own free will (Betancourt et al., 2010, p. 2). Though they comprise over half of the total population of Sierra Leone (Maclure & Denov, 2006, p. 120), the UN estimates that in 2001 about 25 percent of soldiers fighting under the Sierra Leone government were children below the age of 18 (Shah, 2001). Similarly, the RUF used children to wage attacks on government-owned resources — diamond mining centers in particular — along the eastern and southern regions of Sierra Leone.

In the eleven-yearlong war, it has been estimated that between 5,000 and 10,000 children were involved in the civil war (with other estimates reaching as high as 48,000) (Betancourt et al., 2010, p. 3), serving as “combatants, porters, cooks, sex slaves, and ‘bush wives’” (Doerr et al., 2011, p.42).

Following the war, many children attempted to locate and return to the families and communities they were wedged from. International (and primarily Western) nongovernmental organizations (NGOs) and intergovernmental organizations, such as the United Nations, have aided in reunification, a process that falls under the umbrella term of reintegration. Reintegration occurs “when the victim or offender can become active and productive parts of their communities” (“Reintegration”). For this to occur, both victims and offenders must find communities that provide:

- (1) mutual respect for those in the community, (2) mutual commitment to others in the community, and (3) intolerance for— but understanding of— deviant behaviour by members of the community (“Reintegration”).

For former child soldiers of Sierra Leone, reintegration is an umbrella term for disarmament and demobilization, reunification with former family and community members, and successful reconciliation. However, as previously mentioned, at least 75 percent of the population was displaced during the war, leaving many of these children with no other option but to begin a new life without family and/or community members (Shepler, 2005, p.197). These youths have faced extensive ostracism from locals, whose “day-to-day interactions... reminded [the former child soldiers] that all was not forgotten” (Betancourt et al., 2010, p. 3). Although many attempts have been made by international organizations, little progress has been made in terms of improving the reintegration process of these former child soldiers, as many of the conditions that catalyzed the war still exist (Shepler, 2005, p.198). This introduces the question: *What factors have served to hinder the reintegration process of former child soldiers of Sierra Leone following the end of the civil war in 2002?*

## II. REINTEGRATING FORMER CHILD SOLDIERS: CURRENT DISCUSSIONS

The following factors to be examined are considered to ubiquitously affect former child soldiers in an adverse way. Even so, it is important to note that these very impacts are also enmeshed with confounding variables that naturally result

from varying demographics and thus, manifest themselves differently in each individual child's reintegration process.

### *Concept of the Child*

Sierra Leone has a rigid age-based social hierarchy that places an emphasis on filial piety. Consequently, children are situated at the bottom of family structure, expected to humble themselves and contribute to the family to prove their worthiness of things such as education, which are considered inherent rights of western children. Children in Sierra Leone are “government pikin [dem],” meaning that they belong to the government (Zack-Williams, 2006, p.122). However, per Tunde B. Zack-Williams (2006), child protection legislations in Sierra Leone have remained weak due to the fundamental beliefs that in childhood, “‘There is no success without hardship’ (Bledsoe, 1990); implying that hardship is an inherent part of child rearing.... [and more importantly,] ‘A child should be seen and not heard’” (p. 121). Due to these principles, Zack-Williams highlights that it fell upon the failing state to champion children's rights and advocate for the neglected child. However, the government used children instead to support its militia as a “social welfare program” (Goodwin, 1999).

Because of this rigid societal structure, “the everyday life of Sierra Leonean children was often quite difficult” as they labored to support their families as active yet silent participants in social life (Shepler, 2005, p. 199). During the war, many children made difficult choices and performed difficult acts for the necessity of survival — but their role in the war dramatically inverted the social hierarchy (Shepler, 2005, p. 205); many civilians now perceived these children as dangerous adults due to their experiences. During Susan Shepler's case study, she spoke to a Sierra Leonean NGO worker who described the goal of the NGO as helping former child soldiers involved with the NGO to return to their rightful place at the bottom of the social hierarchy, stating that these children “...have carried guns and terrorized people, they have experiences past their age. They think like older people, they act like older people” (Shepler, 2005, p. 205). Shepler (2005) goes on to note that in her ethnography a former child soldier known as “Sorie” stated in an interview that “he was easily reintegrated because even the smallest child could ‘send him [on an errand]’; in other words, he made himself humble” and invoked the Sierra Leonean “core value of humility” (p. 205). This shows that for former child soldiers to win the favor of communities that view them as perpetrators, they must assimilate back into the bottom of the social

pyramid. Whereas it is culturally inappropriate for children to speak out in front of powerful adults, the contrasting goal of western initiatives, such as the United Nations Convention on the Rights of the Child (CRC) treaty, often encourages the right to self-expression, leading some to note that “in some ways child rights discourse and the practices of the child protection NGOs make reintegration more difficult” (Shepler, 2005, p. 205).

As a result of these conflicting notions, child soldiers must navigate the complexities of their new identities as both “perpetrators and innocents” (Shepler, 2005, p.198). To former child soldiers themselves, their new identities and the resulting implications are fluid as they achieve reintegration “across a variety of contexts using a variety of strategically adopted identities” (Shepler, 2005, p. 199).

Among their friends and fellow soldiers, they try to maintain the status that being part of the fighting gives them. They wear combat clothes and sunglasses and brag about firing rocket-propelled grenade launchers. With NGOs they adopt the persona of the traumatized innocent, usually requesting aid in furthering their education. With community members and in school they act like normal kids, never mentioning the past (Shepler, 2005, p. 198-199).

Acknowledging this nuance is vital to accurately gauging the practicality of reintegration programs as different situational contexts affect the behavior and mindsets of former child soldier, thus affecting their identities, and vice versa.

Because these children were affiliated with warring parties led by adults with political agendas, they are met by an inherent ostracism by local communities, who see these children as adults. Children who do not assimilate back into the bottom of the social hierarchy and behave how they are expected to face additional levels of stigma that serve to further hinder their successful reintegration.

### *Stigma*

As children’s participation in the war went against all definitions of what childhood in Sierra Leone should look like, being viewed as “defiant” and “belligerent” is a stigma that former child soldiers face. According to Betancourt and colleagues (2010), stigma occurs “when an individual is labeled, negatively stereotyped, categorized as separate, and experiences discrimination by someone who is in a position of relative power” (p. 4). Betancourt and colleagues, who have specifically studied the reintegration process of former child soldiers in Sierra



Leone, posit that stigma and discrimination directed at former child soldiers varies greatly depending on context (p. 3). “These stigmas can be for reasons ranging from HIV to mental illness” (p. 2). In another study covering four African countries in conflict that includes Sierra Leone, Foster and colleagues place an emphasis on “salient types of exposure to violence,” such as stigma, during war and everyday community life afterwards (p. 6).

Supporting this assertion, Betancourt and colleagues state that “the degree of acceptance encountered in families may also vary from that of the broader community” (p. 3). Nonetheless, they found that higher rates of exposure to violence were correlated with lower levels of community acceptance. This proves detrimental to the progress of 31 percent of females and 35 percent of males of a sample population who reported having killed or injured a stranger or loved one (p. 2). This issue is further contextualized in terms of dominant theories of stigma and discrimination through the social stress theory, in which “stress and resources act as mediators in the relationship between social structure and poor health outcomes” (p. 4). The social stress theory suggests two things: “First, that social structure patterns both stress and resources. Second, that stress due to one’s status has a causal relationship to mental health outcomes, while resources (internal and external) serve to buffer this risk (Aneshensel & Phelan, 1999)” (4). When former child soldiers return to their communities, the fears and prejudices of said communities lower their social status. This discrimination creates greater experiences of stress while reducing access to protective resources, which may, alongside internal distress, further deteriorate mental health (p. 4). As a result of these circumstances, a vicious cycle thus ensues in which both traumatized parties, former child soldiers, and the communities victimized by their violence, unwittingly carry the mindsets they adopted to survive the civil war into a post-war environment that calls for collaborative and restorative justice. Thus, a youth’s psychosocial adjustment may also influence the degree to which they are stigmatized (Betancourt et al., 2010, p. 13). These findings indicate that although wartime experiences and trauma affect former child soldiers once over, perpetuated stigma can continue to exert this influence over these children. Some accounts of these former child soldiers affirm,

‘...for every little mistake one makes, some people will have to attribute it to [being a] former RUF.’ (Male former child soldier, Kono)...

‘... if you quarrel with them, they will say you still have the rebel blood in you that means you are still acting like a rebel’ (Female former RUF, Kono) (Betancourt et al., 2010, p. 12).

However, the stigma facing girls and boys beyond that may differ (Betancourt et al., 2010, p. 13), with female child soldiers reporting marginally significant perceived discrimination (p. 10). According to Dorrer and colleagues (2011), “fighting groups are less likely to release women and girls, so the number of demobilized female soldiers and women associated with fighting forces is not a true indication of how many women and girls are held by, or otherwise associated with, armed groups” (p. 45). Due to the incorrect statistics concerning female child soldier involvement in the war, there is likely a disparity between successful male and female reintegration. Furthermore, “women and girls relied on men to confirm their grade or status” before, during, and after the war, and “even females who did have access to weapons or ammunition were often discouraged by male members of their armed groups from participating in the DDR [demobilization, disarmament, reintegration] process” (Dorrer et al., 2011, p. 45).

In the same sample population previously surveyed by Betancourt and colleagues in 2010, 44 percent of females and 7 percent of males reported being a victim of rape (p. 9). Girls and women faced higher rates of sexual assault, and upon returning to these communities were viewed as defiled and sexually “loose” (p.13); they “may further suffer from the dissonance of knowing they were victims, while perhaps also being treated by community members as perpetrators (p. 12). These perceptions “create obstacles to marriage and other markers of community acceptance” that may not be as pertinent to the acceptance of a male former child soldier (p. 13). Consequently, the female gender was negatively associated with adaptive post-conflict behaviors and attitudes (p. 11). Additionally, according to regression models, created by Betancourt and fellow researchers, being raped significantly increases depression rates over time (p. 10), noting that “stigma most attenuated the association between... surviving rape and depression while being raped continued to exert independent effects on anxiety and hostility” (p. 11).

Foster and colleagues (2015) suggest that more context must be given to children’s mental (and physical) health in sub-Saharan Africa. This includes aspects that may exacerbate and/or mitigate child trauma, such as perceived discrimination and resiliency, positive school climate, and family support (p. 6). In other words, demographics play an integral role in a child’s wartime experiences and their experiences moving forward. As NGOs, intergovernmental organizations, and other international voices continue with reintegration processes, these factors must be considered, as well as another major hindering factor of successful reintegration: intercommunication issues.

Human rights, specifically, child rights, are largely considered a Western concept. As a developing nation that used children on both sides of the civil war, Sierra Leone has a history of violating these rights due to fundamental differences in family structure and familial roles. This is a fundamental problem for Tunde B. Zack-Williams (2006), as he argues that current Western reintegration practices take on a patronizing humanitarian complex to the extent that a former child soldier observed: “We feel like animals in the zoo, people come to talk to us, but our plight remains the same” (p. 121). Zack-Williams (2006) explains this in context of Ferdinand Tonnies’ analytical dichotomy of “Gemeinschaft’ / ‘Gesellschaft” the former, meaning community, emphasizes skills that underpin the traditional organic, non-statutory forms of organization” that are commonly seen in local and extended family and communities and are useful for communication between people who share a common culture (p. 120); contrarily, the latter is characterized by “scientific, juridical and administrative skills,” and while they work “efficiently independent of cultures... they create problems of another kind as they do not take cultural values into account” (Zack-Williams, 2006, p. 120). This assertion can be supported by Susan Shepler’s 2005 case study, in which she observed that “power is reconfigured locally... Sierra Leoneans strategically use the CRC — in particular its construction of childhood as apolitical — in contradictory ways” (p. 198). As she notes,

The NGO workers steered the discussion toward the problems of children in the community; they seemed to have specific answers already in mind... It seemed to me the NGO representatives were not really listening to what people were saying, because most of what they were saying had little to do with children... (Shepler, 2005, p. 204).

Although Shepler admits that the sensitization process was pedagogic in terms of teaching the right psychology terms to the local Sierra Leonean communities, she emphasizes that it inadvertently taught these communities how to voice their own needs in context of the child. This means that contrary to meeting the needs of the very children they aim to reintegrate, NGO and intergovernmental efforts indirectly contribute to further ostracism as these children come to be understood as the means to an end rather than members of the community. As Shepler noted, neighboring communities would voice their opposition towards child soldiers, “who inflicted so much suffering on so many innocent people,” benefiting from

the school that they had built (p. 202). In fact, some would ask, “How can we be expected to help these children when we cannot even help ourselves” (p. 202)?

In a similar vein, Tunde B. Zack-Williams (2006) argues that these efforts being made by Western groups typify “a global, but more impersonal society” that unconsciously perpetuates Eurocentrism (p. 120). Zack-Williams notes that during his study, he won over many skeptics by establishing prior contacts with considerable numbers of people in the NGO community that could help him, making interviews with these former child soldiers informal and as non-disruptive as possible and entering the domain with previous socio-political knowledge and the ability to speak Krio, the local “lingua franca” (p. 122). This contrasted with Shepler’s experience, where she felt that her presence fed into the NGOs program of using “a white person [to make] them [the sensitization meeting] more legitimate,” sensing that it was all a performance (Shepler, 2005, p. 204).

Zack-Williams and Shepler’s observations and evaluations suggest that if international aid groups, social psychologists, and social workers do not make sure to understand the culture of the communities they intend to aid and adapt programs accordingly, they do so not only to the detriment of traumatized children and communities, but also “at their own peril” (Zack-Williams, 2006, p. 121).

### III. LOOKING FORWARD: POSSIBLE SOLUTIONS

This discussion serves to raise more questions than it helps to answer; however, several possible solutions can be proposed to address these issues. Though long-term blueprints must be instated to successfully integrate former child soldiers that were also sexually abused during the war, it is more viable in the short run to create same-gender rehabilitation programs until both genders (particularly female) are ready to reintegrate into a mixed-gender society. It is also important to consider the dichotomized nature of the genders represented in sample populations studied, as they do not acknowledge that the non-heterosexual and/or non-binary gender identities of some victims may have made them more vulnerable to violent war crimes of a sexual nature.

Further, it is imperative that at least proficient levels of cultural competency be reached to best interact with these local communities. Cultural competency may include, but not be limited to, an understanding of: significant historical events that have shaped the country’s present day outlook, government-civilian relations, major religions (if an official one does not exist), family structure and dynamics, the histories of different ethnicities as well as interethnic relations and conflicts, and

the ability to speak the lingua franca. Recognizing the importance of these cultural influences will foster trust and help establish a cooperative relationship between intervening groups and local communities, thus making reintegration programs more effective.

On a relevant note, it may also help for these NGOs to make efforts towards improving infrastructural issues in targeted communities to eliminate hostility towards former child soldiers with access to better resources. If these children return to a society that is mentally and logistically ill-equipped to handle the process of reintegration, let alone sustain it, disenfranchised groups may once again find in social movements and insurgencies what they cannot find elsewhere, and history will repeat itself.

This discussion has examined three of the biggest factors that serve to hinder the successful reintegration process of former child soldiers of Sierra Leone following the end of the civil war in 2002 and has offered several solutions to offset their influences on former child soldiers and the communities to which they reintegrate. These factors include: traditional conceptions of childhood and the implications thereof; multilayered stigma due to the intersectionality of socioeconomic and identity factors, such as gender and class; and finally, intercommunication issues that can be attributed to cultural clashes and an imposition of power from the West through humanitarian efforts.



# **ELECTROPHYSIOLOGICAL ASSESSMENT OF SODIUM CHLORATE ON SPINAL CORD NEURONS *IN VITRO***

**ZACHARY BAKER**

Major: Bioengineering  
Class of 2018

## ABOUT THE WORK

I began this area of research during an internship in the summer of 2016. During this time, I became skilled at many of the procedures necessary for carrying out this experiment. These include conducting a surgery to extract spinal cord neurons from embryonic mice, culturing these neurons on micro-electrode arrays, feeding these cultures to keep them alive, and recording electrophysiological activity from the neurons.

During the fall of 2016 I became interested in researching why spinal cord injuries can result in permanent disability. During my research, I discovered that scar tissue produced in the spinal cord after injury generates elevated levels of chondroitin sulphate proteoglycans, or CSPGs. These CSPGs are shown in many experiments to inhibit neuronal reconnection. I realized that removal or degradation of CSPGs could lead to new discoveries that may help treat paraplegia. After more background research, I read that the chemical sodium chlorate is known to interfere with the natural biosynthesis of CSPGs, stopping their production.

Sodium chlorate is a very cheap chemical, and I had the ability to obtain embryonic spinal cord neurons from mice in other ongoing experiments in my lab. I decided to put my research to the test. I wanted to determine how sodium chlorate impacts the reconnection of spinal cord neurons. Unfortunately, I did not have the capability to visually assess spinal cord neurons in my lab. Instead, I developed a protocol for assessing how sodium chlorate impacts the electrophysiological activity of spinal cord neurons. During my experiment, I operated under the assumption that a higher level of electrophysiological activity would correspond to a higher degree of neuronal connectivity.

I believe that my experiment re-visions scholarship by showcasing my academic abilities in the sciences, as well as my creativity in experimental design. I created my procedure by re-applying protocols in my lab to test my own hypothesis derived through extensive background research.



Spinal Cord Injury (SCI) currently affects approximately 282,000 individuals in the United States (National Spinal Cord Injury Statistical Center, 2016). SCI can result in permanent damage to the nervous system, causing a significant compromise to patients' quality of life. In many cases, the permanence of SCI lies in the Central Nervous System's (CNS's) inability to functionally regenerate. Recent studies have striven to understand why the CNS seems to lack regenerative qualities in order to realize true therapies for SCI treatment. One possible explanation for why the CNS struggles to heal itself is the presence of Chondroitin Sulphate Proteoglycans (CSPGs). Proteoglycans are complex molecules found in various types of tissue. They are associated with a large number of cellular processes, including cell adhesion, growth, receptor binding, cell migration, and barrier formation. CSPGs are a subset of these proteoglycans and are highly prevalent in the embryonic brain; they are theorized to be axon-guidance molecules, which operate through axon-inhibitory properties (Rhodes & Fawcett, 2004). The axon-inhibitory properties of CSPGs supposedly guide axons by repelling them into the correct direction during development. These properties have been shown in many studies that found CSPGs to limit the plasticity of CNS neurons, including neurons derived from the spinal cord; it has also been shown that the degradation and/or inhibition of CSPGs may cause a higher degree of axonal regeneration in CNS neurons (Bradbury & Carter, 2011; Massey et al., 2006; Shen et al., 2009; Yick, Cheung, So, & Wu, 2003). Understanding methods of CSPG inhibition may lead to new approaches to inducing the CNS to regenerate, resulting in novel SCI treatments.

Sodium chlorate is known by many as a "global inhibitor of proteoglycan sulfation" (Phamantu, Fagnen, Godard, Bocquet, & Bonnamy, 1999; Shannon et al., 2003). As proteoglycan sulfation is a necessary biological process in the natural production of CSPGs (Mikami & Kitagawa, 2013), it was hypothesized that the inhibition of CSPG synthesis via sodium chlorate should result in a reduction of CSPGs and their corresponding impact on the CNS. Based on CSPGs' axon-inhibitory properties, a compromised level of CSPG production should yield a higher degree of axonal regeneration. In keeping with this assumption, multiple studies have found significant levels of axonal regeneration after CSPGs were degraded (Bradbury et al., 2002; Chau et al., 2004; Moon, Asher, Rhodes, & Fawcett, 2001; Yick et al., 2003). Since the assessment of neurons' morphology was outside the scope of this study, it was hypothesized that sodium chlorate would significantly change the amount of electrophysiological activity observed from spinal cord neurons.

This study demonstrates an *in vitro* protocol that evaluates whether sodium chlorate has an impact on the electrophysiological activity of spinal cord neurons

derived from embryonic mice. In order to quantify their activity, neurons were cultured on Micro-Electrode Arrays (MEAs). These MEAs allow for spontaneous electric activity of the cultures to be repeatedly observed and recorded *in vitro*. Through these ‘activity checks,’ the electric activity of the cultured neurons is recorded periodically over the course of 10 days. Afterwards, the data from the cultures exposed to sodium chlorate is compared to the data from the cultures that were not exposed to sodium chlorate (the controls).

## METHODS

This experiment explores the impact of sodium chlorate on spinal cord neurons cultured *in vitro* and is modeled after an investigation by Karus et al. (2012). A notable difference in methodology is that Karus and colleagues’ procedure procured neurospheres (a three-dimensional, spherical culture), while ours created a two-dimensional culture of neurons, known informally as a ‘carpeting effect.’ This was done with respect to our method of data collection: by recording electrophysiological activity from MEAs (modeled after Hamilton et al., 2015). For this to be successful the neurons must be adhered to the bottom of the MEA; three-dimensional cultures such as neurospheres were not feasible. Protocols for ‘Cell Culturing on Micro-Electrode Arrays’ and ‘Extracellular Recordings’ were followed as described in Hamilton et al.’s experiment (2015), with modifications.

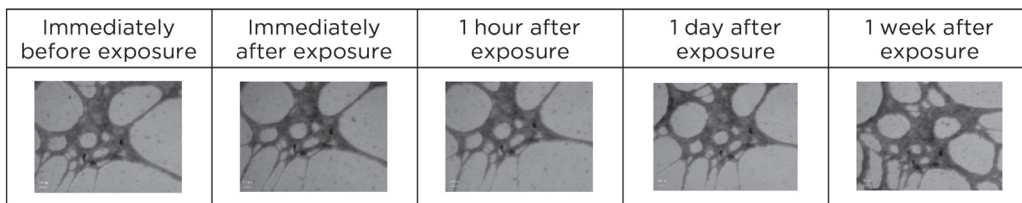
Spinal cord neurons were extracted from E17 ICR mice. These cells were then enzymatically and mechanically dissociated before being plated on either 64-channel MEAs at a density of approximately 125,000 cells per array, or 35 x 10 mm style Petri dishes at a density of 250,000 cells per dish. Immediately after plating, the cells were cultivated in a feeding media composed of 88% Minimum Essential Medium Eagle with Earle’s Salts and L-Glutamine, 2% B-27, 5% Horse Serum, and 5% Fetal Bovine Serum, along with 100 $\mu$ L 4mg/mL Ascorbic Acid added per 50 mL of media. Cultures in MEAs were given 1 mL of media, while culture in Petri dishes were given 2 mL. Following the initial feeding, the cultures were given a 50% media exchange 3 times per week; exchange media was composed of 98% Minimum Essential Medium Eagle with Earle’s Salts and L-Glutamine, and 2% B-27, along with 100 $\mu$ L 4mg/mL Ascorbic Acid added per 50 mL of media. The cultures were incubated at controlled temperature (37°C) and humidity (10% CO<sub>2</sub>).

Nine MEAs and 13 sterile 35 x 10 mm Petri dishes were cultured with the dissociated neurons for 4 weeks before the experiment. One week before the experiment, the effects of sodium chlorate were assessed qualitatively. 30mM of

sodium chlorate (Karus et al., 2012) was dissolved into exchange media to create a ‘modified exchange media.’ A 50% media exchange was then executed on a Petri dish culture using the modified media, exposing the culture to sodium chlorate. Images at 40x magnification were taken of the culture immediately before and after the exposure, as well as 1 hour, 1 day, and 1 week after exposure.

After 4 weeks of culture, the same ‘modified exchange media’ was made as previously described. The modified media was introduced into 5 of the 9 MEAs through a 50% media exchange. The other 4 MEAs were given unaltered 50% media exchanges. Three minutes of spontaneous activity was recorded from all 9 MEAs 5 times over the course of 10 days (28, 31, 33, 35, and 38 days after plating). During the experiment, the 5 MEAs initially exposed to sodium chlorate were subsequently given additional 50% modified media exchanges, 3 times per week. The other 4 MEAs were given unaltered 50% media exchanges, 3 times per week.

## RESULTS



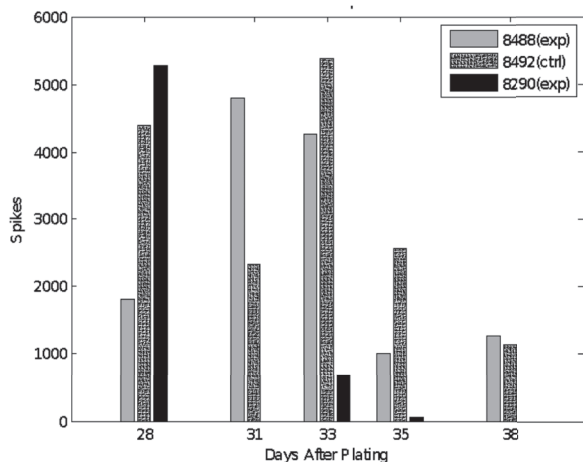
**Figure 1:** Images Captured of Neurons Relative to Sodium Chlorate Exposure  
*Signs of cell growth are clearly visible after exposure to sodium chlorate*

Images used for the initial qualitative assessment of sodium chlorate’s effects are shown in Figure 1. The images show a ‘web’ of cells, which does not shrink or break apart over time. This intuitively suggests that there was no loss in cell density, even 1 week after exposure to sodium chlorate. Additionally, the image taken 1 week after exposure to the modified feeding media shows clear signs of cell growth, as expected. The lack of any discernable cell decline indicated that the modified feeding media was safe for cultures, allowing for the main experiment to be conducted.

The number of spikes observed in the span of 3 minutes was recorded from each MEA. This was done 28, 31, 33, 35, and 38 days after plating. Of all the MEAs plated (N=9), 5 were used as an experimental group, while 4 were used as a control group. Six MEAs showed no sign of activity, while the other 3 showed at least some level of activity. Of the 3 MEAs that showed activity (n=3), 2 reliably

showed activity on every recording, while 1 showed activity on 3 of the 5 recordings. One of these regularly active MEAs was exposed to sodium chlorate (8488), while the other one was not (8492). The irregular MEA was exposed to sodium chlorate (8290). Exact amounts of activity are shown in Figure 2.

A t-test was conducted in order to determine if there was any statistically significant difference between the average number of spikes recorded from the 2



**Figure 2:** Number of Observed Electrophysiological Spikes

regularly active MEAs. A t-value of 0.4897 was obtained from the calculations. A minimum t-value of 1.86 was needed in order to state with 95% confidence that the average number of spikes recorded was significantly different. From this analysis, it is unlikely that the recorded data from the 2 regularly active MEAs shows significant difference, despite one of the cultures being exposed to sodium chlorate.

Days after plating	Experimental (8488)	Control (8492)	Experimental (8290)
28	1797	4394	5272
31	4801	2318	0
33	4274	5379	676
35	989	2555	38
38	1247	1140	0

*Cultures 8488 and 8492 were reliably active while culture 8290 was not*

## DISCUSSION

Karus and colleagues' results found neurons' longest extensions to have a significantly shorter length when exposed to sodium chlorate (2012). While the morphology of neurons was not evaluated in this experiment, it was assumed that compromised neuronal outgrowth would result in a different number of spikes recorded from the MEAs. The 2 compared regularly active MEAs showed no significant differences in activity. 2 of the 5 MEAs exposed to sodium chlorate showed some level of activity, while 1 of the 4 controlled MEAs showed some level of activity. Given the small scale of this experiment, the hypothesis that sodium chlorate encourages neural growth cannot be confirmed or denied. However,

considering the background research, this experiment may cause some to question Karus and colleagues' results, which surprisingly found sodium chlorate to be an inhibitor of axonal growth. This experiment's inconclusive results could have stemmed from several factors, such as the choice to use 30 mM of sodium chlorate as the 'dosage' for the experiment. 30 mM of sodium chlorate might not be potent enough for any electrophysiological effects to be realized. Furthermore, the effects of sodium chlorate were not evaluated for more than 1 week at a time in this experiment. It is likely that additional time exposed to sodium chlorate is needed before its impact may be assessed. Additionally, sodium chlorate was only exposed to cultures 4 weeks after culturing began. Karus and colleagues' experimental cultures of neurospheres were exposed to sodium chlorate during their entire cultivation period (2 weeks). Since sodium chlorate is allegedly an inhibitor to CSPG production, it may be necessary to inhibit CSPGs during initial culturing, or during the entirety of cultivation, rather than only after the cultures have 'matured.'

## CONCLUSION

The question of whether sodium chlorate significantly impacts the electrophysiological activity of spinal cord neurons cannot be answered at this time. While the t-test used in the analysis is valid for comparing 5 recordings from 2 MEAs, basing claims off of one experimental group and one control group is not advisable. Normally, at least 3 trials are required in experimentation. Therefore, in order to answer this question, it is recommended that at least 6 active cultures are procured for future work. Reproductions of this experiment should strive to culture more than 9 MEAs especially if cultures in MEAs are liable to be inactive. Additionally, if 6 active MEAs are procured, then analysis may be extended to scrutinize each of the 5 recordings, rather than all of them together. In this experiment, there was not enough data to conduct a statistical analysis of each recording with respect to time. With 6 active MEAs, a t-test may be conducted for each of the 5 days of recordings rather than just the set of all recordings.

Additionally, as future work, the sodium chlorate 'dosage' of 30 mM may be increased, the amount of time that cultures are exposed to sodium chlorate could be lengthened, or the time before initially exposing the cultures to sodium chlorate may be lowered. Any of the aforementioned changes may amplify the effects of sodium chlorate enough to draw conclusions.

Finally, research in this field would be greatly benefitted by the use of immunofluorescence in order to determine if sodium chlorate acts as an inhibitor

to proteoglycan sulfation. The rationale behind sodium chlorate's possible benefits to axonal regeneration lie in its supposed ability to limit CSPG production. A 'debunking' of this notion would encourage researchers to explore other more promising options for limiting CSPGs, such as Chondroitinase ABC or Interferon- (Bradbury & Carter, 2011; Fujiyoshi et al., 2010).

This experiment attempted to find a relationship between sodium chlorate and electrophysiological activity of spinal cord neurons. It was expected that sodium chlorate would block proteoglycan sulfation (Phamantu et al., 1999; Shannon et al., 2003), which would inhibit CSPG synthesis, which would in turn counteract the axon-inhibitory properties of CSPGs (Rhodes & Fawcett, 2004), leading to increased axonal regeneration, resulting in higher levels of electrophysiological activity being recorded from the MEAs. However, electrophysiological activity recorded from the regularly active MEAs did not show any statistically significant difference, regardless of exposure to sodium chlorate. Despite these results, future work is needed in order to conclude that sodium chlorate does not operate in the manner theorized. A group of 6 active MEAs (3 experimental and 3 controls) is recommended for future work, and the experimental group should be exposed to sodium chlorate during the entire cultivation period (immediately following plating). These measures will ideally provide a more significant set of data that reflects the impact, or lack thereof, that sodium chlorate has on electrophysiological activity of spinal cord neurons.

## ACKNOWLEDGEMENTS

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# REPRODUCTIVE HEALTH CARE ACCESSIBILITY: HOMELESS AND LOW- INCOME WOMEN IN WASHINGTON, D.C.

**MICHELLE GASPARI**

Major: Sociology  
Class of 2017

## ABOUT THE WORK

This paper details initial sociological research done on the question: *“How accessible is reproductive health care to homeless women in Washington, D.C.?”* Through methods of intensive interviewing, findings indicate evidence of disproportionate reproductive health vulnerabilities and barriers to care access faced by this population.

This critical literature review addresses existing academic work on homelessness and analyzes multiple relevant intersections within the population. The theoretical framework draws primarily from literature on stigmatization processes at the systemic, interpersonal, and individual levels. It is posited through the culmination of existing literature and interview findings that multi-level stigmatization is a primary determinant in homeless women’s access to reproductive health care.

The District of Columbia has had a 37.2 percent increase in the homeless population between 2007 and 2015. This growth has disenfranchised 1,978 individuals (Henry et al. 2015:13). At 42 percent, D.C.'s rate of chronic homelessness is nearly twice the national average (62). 2015 point-in-time estimates report that 30 percent of D.C.'s total homeless population are women (Chapman et al. 2015:53). This study concerns the topic of reproductive health care accessibility for homeless women in Washington, D.C. Reproductive health care is defined as preventive, diagnostic, and treatment services that are related to the reproductive system's functions and processes. These services include contraception, tests for sexually transmitted infections (STIs)/sexually transmitted diseases (STDs), and screening and treatment for cancers of the reproductive organs and breast (Heisler et al. 2015:1). Sociological literature on homeless women's accessibility to reproductive health care is sparse. D.C.'s population, in particular, is notably absent in published research on the topic.

The question raised in this research is: *How accessible is reproductive health care to homeless women in Washington, D.C.?* As this research is inductive, opportunities to explore additional, more focused, research questions have developed, these include: *What is the geographic accessibility of reproductive health care for homeless women in D.C.? What is the perceived reproductive health care accessibility for these women? Do these women prioritize reproductive health care?* Though the short time frame of this project has not permitted extensive investigation of these questions, what has been found presents prospective topics for further research.

The explorative nature of this study limits the creation of detailed hypotheses. Although based on findings of related literature, it was hypothesized that stigma towards the homeless functions as a barrier to reproductive health care accessibility. The initial phases of research, conducted through interview facilitation, support this hypothesis. These findings address some stigmatic barriers to reproductive health care accessibility for homeless women in D.C. at the individual, interpersonal, and systemic levels.

## LITERATURE REVIEW

### *Multi-level Stigmatization of the Homeless & Intersectionality*

There exists a multi-leveled stigmatization that perpetuates homelessness. Conditions of stigma towards the homeless are exacerbated when they exist in intersection with other vulnerable identities. Homelessness, as it is publically conceptualized, is an image of deviance and destitution (Wasserman et al.

2012:339). This dominant narrative reduces a complex and intersectional group to a faceless image of social degradation.

The first hypothesis presented above requires a conceptualization of the term “stigma” as it will be utilized in this piece. Popularized in 1963 by Erving Goffman, stigma took its first and most cited definition as an “attribute that is deeply discrediting” that reduces the individual “from a whole and usual person to a tainted, discounted one” (p. 3). As the concept garnered consideration throughout the social sciences, this definition was deliberated. In criticism of Goffman’s definition as overly-ambiguous, Link and Phelan took on a reconstruction of the term, defining stigma as the combined effect of “labeling, stereotyping, separation, status-loss, and discrimination” (2001:63). This paper will refer to stigmatization of the homeless as a process in which labeling, stereotyping, separation, status-loss, discounting and discrimination, based on class, contribute to a tainted and discounted identity. The stigmatization of the homeless occurs systematically, interpersonally, and intrapersonally.

Systematic stigmatization of the homeless is observable in U.S. criminalization policies that disproportionately affect the homeless. An increase in policies that criminalize sleeping, camping, and panhandling in public spaces are reflective of a hegemonic discourse, also apparent in sociological literature that frames the homeless as a collective issue (Bauman et al. 2014:8, 9). Wasserman, Clair, and Platt (2012: 333) concisely refer to this as “making people into problems” and criticize literature on the homeless that belies progressive response to inequalities while conceptually reinforcing de-individuation of the homeless. Concurrently, the presence of interpersonal stigma towards the homeless is near irrefutable, as demonstrated by Harris and Fiske’s (2006) psychological experiment on the dehumanization of “extreme out-groups.” When subjects of the study were shown an image of an individual associated with homelessness, the image failed to activate the medial prefrontal cortex, the part of the subject’s brain that recognizes human interaction, indicating a cognitive dismissal of the homeless individual’s humanity.

The deindividualization of the homeless at the systemic level and dehumanization of the homeless at the interpersonal level leads to the internalization of public stigma, termed “self stigma,” within the homeless individual. Documented reports of homeless individuals holding negative feelings towards the collective homeless can be understood through Dubois’ (1903) theorization of “double consciousness,” a conflictive self-stigmatization in which individuals reinforce social values that contribute to their own oppression. Public stigma, when applied to the self, exacerbates low feelings of self-worth and damages self-efficacy. This detracts from one’s will to pursue jobs and housing. This process of immobilizing

self-stigmatization is called the “why try” effect, in which the individual believes effort at situational improvement is futile in the face of their alienation from society (Corrigan et al. 2009:75-77). This is demonstrated in recurrent narratives of homeless individuals who report feeling at peace with their homelessness, as if that is where they are ‘meant to be’ (Rayburn 2013).

Self-stigmatization can also often result in defensive attempts at establishing autonomy in order to assert one’s identity apart from the stigmatized group. This is noted as a reason many homeless individuals will deny services (Wasserman et al. 2012:341), including medical services such as reproductive health care. Through interviews with homeless individuals, Rayburn and Guittar found that these individuals react to stigma in a number of ways: distancing themselves from their homelessness, focusing on what brought them to homelessness, or telling embellished stories of their pasts and their plans for the future (2013:165-171). These strategies suggest that the homeless individual is aware of the public perception that to be homeless is to be abnormal. The detrimental effect of this status on feelings of self-worth are illustrated by coping strategies that suggest disassociation with an ascribed master status. Internalizations of stigma in concurrence with systemic and interpersonal stigmatic barriers comprise a cyclically destructive circumstance of homelessness that suggests to the homeless person that they are not individual and that they are not worthwhile.

Overly present in academic discourse is the ‘facelessness’ or reductionism applied to the homeless population. This reductionism inhibits progressive response to homelessness and encourages generalized stigmatization. The experience of homelessness is, more often than not, an intersectional co-occurrence of multiple discriminated identities. The congregate ‘homeless’ consists of a matrix of vulnerable populations; there is notable overlap of gender and racial hierarchies, mental health/drug addiction, physical disabilities, and HIV/AIDS within this population (Henry et al. 2015), each of which individualizes each experience. Therefore, it is problematic that the public stigma toward a singular dominant image of deviance affects the self-identification of a highly variant group of individuals. To make matters worse, the intersectionality of the homeless, when recognized, often functions as a means to decide who does or does not receive service

In reference to the population of this study, the intersection of patriarchy and homelessness is vital to explore. Women occupy an increasing portion of the national homeless population (Goodman et al. 2011:1). Several studies and reports observe that the vulnerability of homelessness is exacerbated for women (Goodman et al. 2011; Zugazaga 2014; Crossroads 2011; Colorado 2012). Conditions of patriarchy, such as wage inequality, higher poverty rates, and higher rates of domestic violence

toward women, contribute to women's susceptibility to homelessness (Colorado 2012:1, 2). In application of Marxist feminist theory, capitalist class relations function to oppress the non-wealthy, and women are disproportionately burdened as patriarchal oppressions function in tandem — a parallel known as the dual systems theory (Bradley 2013:42). In a position of extremely low class status, homeless women face barriers embedded in patriarchal culture to a heightened degree; these include incidences of domestic violence, coercive sex work, and sexual abuse (Goodman 2011:1). A greater population of single homeless women experience significant stressful life incidents than their male counterparts, including sexual abuse, domestic violence, family separation, and divorce (Zugazaga 2014:1). Additionally, an overwhelming majority of women who are homeless for 6 months or more experience violence and/or sexual assault (Colorado 2012:3). Incidents of violence and sexual assault toward homeless women occur both on the streets and in shelters, perpetrated by both strangers and intimate partners (Goodman et al. 2011:1). The vulnerability of homelessness in convergence with patriarchal oppressions distinguishes the hostility of the homeless woman's social experience.

Survival in this social context is difficult. A woman who is worrying about where to next sleep or eat is unlikely to think about her health. Even more unlikely is the chance that reproductive health will get the proper amount of attention (Gelberg 2004:88). Wasserman notes that homeless women with children, who qualify as a homeless family, have the most health care availability of all homeless individuals; this fact itself reflects patriarchal values of female dependency and can be interpreted as counter-effective at a systemic level when childless women are considered (2012:339). Services are disproportionately available to women with children, as opposed to those without, reflecting a patriarchal valuing of women based on their reproduction. This availability is not provided to the women who wish to avoid becoming the head of a homeless family. Attacks on reproductive health, namely family planning services, that women face, especially those of low-income, are systematically ingrained in patriarchal fundamentalism. Furthermore, availability can be significant, but women's perceived accessibility is what determines whether or not services are used.

Another relevant intersectionality to this study is the overlap of homelessness and HIV/AIDS. The National Alliance to End Homelessness estimates that 3.4 percent of homeless people were HIV-positive in 2006, compared to 0.4 percent of those in the general population (National Coalition for the Homeless 2009:1). Homeless individuals are at higher risk for contraction of HIV/AIDS and a stigma towards those living with HIV/AIDS persists. In what Wolitski and colleagues refer to as the "layering" of stigma, individuals facing multiple circumstances of

discrimination show heightened feelings of disgust and shame towards themselves and their condition (2009). This concept of stigma “layering” can be applied to the various intersectional oppressions that the homeless face.

### *Stigma and Perceived Barriers to Reproductive Health Care*

Perceived stigma has a direct correlation to women’s accessibility to reproductive health care. A study by Gelberg et al. (2004) found that homeless women perceived that their medical treatment was poorer due to the providers’ attitudes towards their homelessness. In addition, the women showed increased sensitivities regarding reproductive health providers, implying a need for trust that was not fulfilled due to feelings of stigmatization (95, 96). This distrust of medical providers is potentially heightened by factors of race. In Washington, D.C., 72.3 percent of the homeless population are Black Americans (Chapman et al. 2015). Afrocentric attitudes of distrust in medical care, stemming from historical abuses (Kennedy et al. 2007), likely factor into the pursuit of medical care in general, including reproductive services.

Partner attitudes have notable influence over the reproductive health of women as well, a trend reflective of gendered power imbalances. Interview research found that a homeless woman’s likelihood of contracting STIs and STDs, such as HIV, via risky sexual behavior can be correlated to her partner’s attitude regarding use of contraception. Often when male partners were perceived as unwilling to use contraception, it was due to expectations to conceive (Cabral et al. 2001). However, pregnancy intention among homeless women is almost nonexistent; homeless women often hold strong desires not to get pregnant (Kennedy et al. 2014; Ensign 2001). Still, contraceptive use among homeless women is highly inconsistent due to a multitude of perceived barriers. These barriers include a lack of safe place to store contraception (often it is stolen), de-prioritization of general health among the homeless, feelings of stigmatization in healthcare facilities, and power dynamics in sexual relationships that render women less likely to assert themselves within the relationship and therefore less likely to advocate for the use of contraception (Kennedy et al. 2014). Further issues arise when women partake in risky sexual behavior, such as sex work. Homeless women often participate in what is termed “survival sex” or sex in exchange for a place to stay, food, money, drugs, cigarettes, etc. This “survival sex,” in combination with a unfavorable gendered power dynamic, detracts from a woman’s assertiveness concerning use of contraception. (Ensign 2001) The prioritization of health care is low for homeless women; they are

often more concerned with getting through to the next day (Gerberg et al. 2004).

Whether or not a woman can access housing is determinative to their use of resources such as health care. Unsurprisingly, Yee Wei Lim and colleagues found that among interviewed homeless women those considered the most vulnerable (who had spent the past 60 nights primarily on the street) had the least access to medical care. Other factors of vulnerability also made great impact on whether or not these women used medical services; for example, having insurance was a great determining factor of whether or not women used health services when needed (2002). Accessibility to primary resources, such as housing or day centers, is a key determinant of whether or not a woman will pursue health services.

Literature recognizes the vulnerability of homeless populations, as well as the lack of accessible medical care, and therefore reproductive care, for the homeless. Additionally, evaluation of interpersonal and intrapersonal factors that derive from macro-level issues helps explain the behavioral and attitudinal effects of stigmatization of the homeless. Women are uniquely affected by homelessness in a patriarchal society, introducing barriers that further distance them from access to services.

## RESEARCH METHODS

A total of 5 interviews have been conducted. Interviews were open-ended and lasted between 45 minutes to 2 hours. Interviewees were chosen purposefully based on occupation. They have all worked with homeless women in D.C. Some of the sample was obtained using snowball-sampling methods, whereby an interviewee would direct me to other potential interviewees. The size of the sample and the way it was chosen limits the generalizability of the findings presented below. Additionally, the inability to interview those experiencing homelessness, due to their status as a vulnerable population, introduces a significant bias. The sample choice is not reflective of the population of this study; the interviewees have simply observed the population more closely than I was able to. The population of this research is homeless women in D.C., while the sample used are those who have worked with homeless women in D.C.

## RESULTS

Interviews were conducted with individuals who work or have recently worked with homeless women. The content of these interviews support the hypothesis



that stigma towards the homeless functions as a barrier to reproductive healthcare accessibility. These interviews suggest that options are available for homeless women, though limitedly so, for both housing and health care — reproductive health care included. The three interviewees that worked in case management noted that it was very rare to receive questions from clients concerning reproductive health. One of the participants working at N. Street Village (the largest women’s shelter in D.C.) said that “the services are there, the women just need to go after- you know, want them.” This brings up the question: *Why don’t homeless women ‘go after’ these services?* The findings of these interviews suggest a variety of stigmatic barriers that inhibit homeless women’s pursuit of reproductive health.

Previous findings that homeless women are more vulnerable to violence and sexual assault were supported by these interviews. All three case managers who have worked with homeless women, two of whom also worked with homeless men at some point, expressed that violent and/or sexual trauma affected almost all of their women clients and that women were affected by sexual and violent assault disproportionately. To illustrate the severity of this, Maggie, who works with extremely vulnerable, streetbound women, recalls clients who have urinated themselves by choice in order to ward off sexual assault.

In regards to systemic stigmatization, two of the interviewees mentioned that the Medicare/Medicaid application process was overly difficult to navigate. Kelly, who worked with clinical care case management and helped prepare insurance applications, said that often applications would have to be sent two or three times before being processed — something she viewed as the government “making sure (the woman) really needed it.” Michele (all names used are pseudonyms, except for Michele, who requested that her real name be used) who is a low-income, HIV positive woman currently living in subsidized housing, co-facilitates HIV prevention classes at N. Street Village. Michele mentioned how her own insurance application process was difficult and how many of her friends, some homeless, had trouble with theirs. Systemic neglect of the lower-class is perceived not only by Michele, a directly affected individual, but also by Kelly, who works through this system to help homeless women access health care. Research indicates that homeless women with insurance are far likelier to seek out health care services than those without (Lim et al. 2002).

Practices of risky sexual behavior within the population was mentioned by every interviewee, including sex with multiple partners, unprotected sex, and sex work, often simultaneously. Participation involved in risky sexual behavior heightens their chances of STIs and STDs, as well as unplanned pregnancies, which indicate the importance of reproductive healthcare accessibility for the population. All of the

interviewees who dealt with case management recalled cases of sex work among their clients, specifically “survival sex.” Maggie, who currently works with some of the most vulnerable homeless women in DC at Miriam’s House (a low-barrier, mixed gender facility), said that she has spoken with several homeless women who exchange “sexuality for drugs or a place to sleep.” Kelly, who worked with mostly older women at N St. Village, said that often women would mention past practices of survival sex with feelings of regret. Evidence of risky sexual behavior and dismissal of care seeking among the population can partially be attributed to apparent lack of reproductive health education. The two interviewees who work as co-facilitators of an HIV education course at N Street both noted that homeless women who sign up for the course often come in with no previous knowledge. Myths such as “if she’s on top she can’t get pregnant” or that HIV can be spread by sneezing were cited by Anne, the lead facilitator. Michele, who helps out with the HIV prevention course, shared her own story and previous lack of education. As an HIV positive individual, she volunteers to help teach about the disease, feeling an obligation to let people know:

“I didn’t know nothing (about HIV)! Nothing! We was having sex and he told me he found out he’s got it, and that I’ve got it too. I didn’t believe him. I started cursing and told him to get out. I said, I don’t have no HIV, you’re crazy! I went on going like usual.”

Michele says her mother never talked to her “about that stuff,” and that she wishes she had been educated. Anne and Kelly both noted that often women display signs of misinformation or lack of education concerning reproductive health, an obvious barrier to prioritization. Susan, the head of permanent supportive housing services at N Street said “I think they’re scared too, that they’ll find something out that they don’t want to know,” explaining that many women, even when advised by a case manager to utilize health services, will deny them.

Circumstances of homelessness often put women in what Maggie calls “crisis mode,” where they focus on simply surviving. Immediate prioritizations of food, sleep, shelter, and sometimes substance use, result in low prioritization of health and, especially, reproductive health. Stigmatic barriers that reduce the value of the homeless individual act in coalition with gendered power imbalances to worsen conditions of vulnerability. As demonstrated by these interviews, the overwhelming oppression of dual systems constitute a broad social setting that does not prioritize the homeless woman or her health care needs.

## CONCLUSION

This research focuses on the stigmatic barriers to accessible reproductive health care by exploring the question: *How accessible is reproductive health care to homeless women in Washington, D.C.?* The initial stages of this research were conducted through interviewing. It was found that incidents of trauma specific to women, distrust in ‘the system,’ distrust in medical providers, and dominant attitudes toward both the poor and women are all reflective of stigmatization of this population. When the above processes work in tandem, reproductive healthcare is significantly deprioritized on both the structural, and inevitably, the individual levels.

# DANGEROUS FLOWERS: THE THREAT OF IDENTITY IN PLATH'S "TULIPS"

**ARYELLE YOUNG**

Major: Creative Writing  
Class of 2018

## ABOUT THE WORK

The provided paper was written as the final project and research paper for an advanced composition course, which is designed to teach students how to identify topics of scholarly conversation in their fields, find gaps in the pre-existing conversation, enrich their field's conversation by addressing those gaps, committing quality research, and writing critically. Because the class consisted of mixed majors, each student was allowed to choose a topic relevant to their field of study. Each student was required to produce an end-of-term paper in which they identified their chosen topic through a research question, showed where a possible gap in conversation existed around that topic, presented their own independent scholarship on the topic, and properly cited and used scholarly sources which were collected throughout the semester.

As a Creative Writing major, I chose to provide an analysis of a Sylvia Plath poem. After selecting a particular poem and beginning to gather relevant scholarly sources, I was able to identify a gap in the literary conversation surrounding Plath that I knew I could begin to address. I used this gap to form a research question. I continued to collect scholarly sources while also writing a rough outline for my analysis and paper. Through in-class peer reviews and consultation with my professor, I was able to determine a title and write an introduction which provided an overview of the paper to come. From there, I independently wrote my analysis using supporting points and statements from the sources I found that expressed similar perspectives and analyses; the contradictory sources I used to provide points of contrast. In this way, I acknowledged alternative perspectives and interpretations, showed how one source in particular differs from my own analysis, and provided examples of scholarly authors who bring in the context of Plath's life without letting it determine their entire analyses.

Sylvia Plath has earned a place of infamy in the literary community, being seen as a feminist icon, a mentally ill and suicidal woman, and an author of great skill all at once. As Stephanie Ford tells us, “one of the first things that many people think about when Sylvia Plath is discussed is her dark poetry, depressive nature, and her death by suicide at a young age” (Ford 300). It is common for critics and scholars to consider Plath’s works primarily in terms of her tumultuous life. Her experiences and thoughts are well-documented by the letters that Plath wrote and posthumous testimonies from persons she knew, including her husband and mother. While examining her life is a valid approach that yields insights into Plath’s writings and her personal goals for her works, it is also a limited perspective, which can often fall short of a full consideration of the skill and artistry in Plath’s poems. To quote Elena Ciobanu, “...I do not think that the two levels (the empirical and the artistic one) of [Plath’s] identity should be considered as running parallel to each other” (127). Furthermore, such a limited approach carried through the years can result in a gap in the pre-existing literary conversation surrounding Plath. In an effort to address that gap, this essay will offer an analysis of “Tulips” without a consideration of Plath’s life or circumstances; it will be shown that the poem has relevant emotional themes that can resonate with readers regardless of what they know about Plath. Finally, an analysis of “Tulips” that takes a conventional interpretive approach through Plath’s life will be considered and compared to the analysis offered by this essay in order to demonstrate the differences in result.

## THE THREAT OF SELF

As the speaker in “Tulips” rests in the hospital, she seeks to deny and relinquish her inherent selfhood. She does this by dehumanizing herself and the people around her while simultaneously personifying objects around her. Marjorie Perloff calls this the “central paradox” of Plath’s poetry, “that human beings are dead, inanimate, frozen, unreal, while everything that is non-human is intensely alive, vital, potent” (57). Indeed, the speaker continuously and adamantly distances herself from any sense of unique identity; in the first stanza, she directly states “I am nobody; I have nothing to do with explosions.” (Plath 18). Moreover, the speaker revels in this loss of personhood because it removes her from the mundanity of familial obligations. Although the speaker was “Stubbornly hanging on to [her] name and address,” the nurses “have swabbed [her] clear of [her] loving associations” (Plath 18). There is a sense of euphoria in this loss for the speaker, and she finds herself to be “pure” and “free” after surrendering her identity to medical professionals (Plath 18-19).

The speaker's divestment can bring her such elatedness because, as Anna Dillon stated, she is now a self "which has been annihilated, and yet survives; arguably, in a purer form than before" (122). Neither Dillon nor the speaker can escape the idea that something which endures being destroyed must achieve purity in that destruction.

In seeking to deny her sense of self, the speaker must also reject the selves of people around her. She does this by referring to the nurses around her as "no trouble" because "They pass the way gulls pass inland in their white caps, / Doing things with their hands, one just the same as another" (Plath 18). There is no threat to the speaker's "numbness" and "peacefulness" from the nurses because the speaker has made them selfless as well; the nurses tend to the speaker "as water / Tends to the pebbles it must run over, smoothing them gently" (Plath 18). The nurses, and by proxy the doctors and other hospital staff, are no more than objects and natural forces that aid in the speaker's acquiescence of identity.

However, if all persons can be reduced to objects and forces by the speaker, then by that same logic, all objects must necessarily have an innate personhood, and herein lies the conflict of the poem. The personification of the tulips forces the speaker to reflect on her own personhood, initially by reminding her of the injury that has put her in the hospital. "The tulips are too red in the first place, they hurt me. [...] Their redness talks to my wound, it corresponds" (Plath 19). Already, the speaker assigns the flowers more agency than she attributes to herself or the nurses. Where the nurses are reduced to nothing more than a fluid continuum of impersonal care, the flowers are presented as having intent and action. The tulips stand sentinel over the speaker, and in being caught "Between the eye of the sun and the eyes of the tulips," she is forced to see herself as "flat, ridiculous, a cut-paper shadow" (Plath 19). The unwanted bouquet interrupts the depersonalizing "peacefulness" of the speaker by filling the air "up like a loud noise" and forcing her to "concentrate [her] attention, that was happy / Playing and resting without committing itself" (Plath 19).

In the final stanza, the conflict between the speaker and tulips resolves in the speaker's realization of her own heartbeat. As M.D. Uroff points out, she cannot escape her identity any longer because "when the speaker claims a correspondence between the tulips' redness and her own wound, her manipulative mind begins to function again," and she is forced to reintegrate the personhood that she had previously cast off (108). This moment is dramatized by the speaker seeing the tulips as "dangerous animals" that are "opening like the mouth of some great African cat" (Plath, 20). This spreading redness reminds the speaker of "[her] heart: it opens and closes / Its bowl of red blooms out of sheer love" (Plath 20).

By finally facing the danger and threat of the personified flowers, the speaker reconnects with her own humanity. “Because they become flesh and blood in the speaker’s imagination, the tulips force her out of her earlier whiteness, her passive extinction,” and this is a sobering experience for the speaker (Perloff 70). She is brought back down into her body, and the poem ends as she cries tears that are “warm and salt, like the sea, / And come from a country far away as health” (Plath 20).

## RELEVANCE

The emotional experience in “Tulips” is not a remote one for readers today; the poem expresses the desire to be free of societal and familial responsibility and expectations. Currently, there is a broad cultural discussion on the relationship dynamics within families and what can be appropriately expected by and among family members. For the LGBTQ+ community, people of color, and women, the subjects of societal expectation and personal identity are constantly being explored in the mediasphere. Seeking to lose one’s identity for a period of time would not be an unreasonable emotional response to the weight of obligation that can be put upon a person. The special strength of “Tulips” is that it acknowledges the desire without passing any moral judgment on the feeling. The poem is raw and honest, and it offers a cathartic outlet to readers, whether or not they are aware of the circumstances of Sylvia Plath’s life.

## COUNTER-VOICE

Diana Curtis offers an interpretation of “Tulips” which is heavily based on the fact that it was written less than a year after Plath had given birth (177). Curtis suggests that the poem is evidence of Plath’s “repressed antipathy and — more important — guilt” at having to care for her children at the expense of her own self-determination and with little help from Ted Hughes, her spouse (179). However, it is worth noting that Curtis mentions neither the miscarriage nor the appendectomy which Plath experienced a month before writing “Tulips.” While feelings like the baby blues, or postpartum depression in more serious cases, are common for women after giving birth, and it is true that such feelings were widely repressed by the society and modernist era in which Plath lived, Curtis’s narrow interpretation of “Tulips” limits the audience of the poem to women who have given birth or who



feel unable to pursue their personal prospects while being a mother. However, a reading of “Tulips” which sees it as a poem about the voluntary surrender of personal identity widens the appeal of the poem to a broader audience and also maintains its emotional relevancy through time. Today it is more acceptable for women to talk about how they feel after giving birth and for them to consider their lives in terms of being both mothers and professionals; if “Tulips” is only relevant and meaningful in an environment where women were more oppressed, then this poem, and perhaps other poems of Plath, should fade from the artistic view. The plight of the speaker in “Tulips,” however, is more universal than that of a depressed mother; it is an emotion that anyone who feels overloaded by responsibility can empathize with and take comfort in.

It should be noted, though, that it is possible to reach an open and accepting interpretation of Plath’s poetry while still considering aspects of her life. Adrienne Kalfopoulou considers the first-person nature of the speakers in three Plath poems in her essay “Endangered Subjects: The First-person Narrator in Sylvia Plath’s Hospital Poems “Waking in Winter,” “Tulips,” and “Three Women.” Although she acknowledges the fact that “Tulips” was “written in March 1961, a month after [Plath’s] own miscarriage and appendectomy in February,” Kalfopoulou does not let the circumstances of Plath’s life dictate her interpretation of the poem (365). Kalfopoulou instead chooses to explore how “Plath’s speakers’ interactions with the sense nature of their worlds become the occasion for naming or engendering a subject sense” (363). In “Tulips,” this is illustrated by the intensity with which the speaker views and personifies the flowers. Similarly, Ralph Didlake, M.D., in his examination of medical imagery throughout Plath’s poetry, is informed by Plath’s real-life interactions with disease and illness, but he views those experiences as merely a justification for the authority with which Plath uses medical language. Didlake states that “one might consider her disease-associated imagery to be less about life and death than it is about the boundary between life and death, or the boundary between existence and non-existence,” and it can be argued that it is this very boundary which is explored in “Tulips” (140).

## CONCLUSION

“Tulips” is a poem of dichotomies: red and white, person and thing, pain and numbness, being and not-being. It takes readers through the speaker’s relinquishment of her identity in order to embrace emptiness, and the interruption provided in the form of a bouquet of flowers. The poem reconnects the reader with

their own mortality through the speaker's revelation in the redness of the tulips and the warmth of her heart. When the works of Sylvia Plath are considered with a critical and impersonal eye, the themes and lessons that reveal themselves are more impactful and more complex than what is immediately apparent through the lens of her life. "[Plath] uses her immense technical control to manipulate the tone, the rhythm, the rhyme, the pace of the speakers' language in order to reveal truths about the speakers that their obsessive assertions deny" (Uroff 115). This control is what gives Plath's poetry that timeless effect by which a reader unaware of Plath's life and circumstances may still pick up a book of her poetry and find themselves within the pages.





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BY MICHELLE GASPARI

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## DANGEROUS FLOWERS: THE THREAT OF IDENTITY IN PLATH'S "TULIPS"

BY ARYELLE YOUNG

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# FACULTY GUIDE

## GMR IN THE CLASSROOM

*The George Mason Review (GMR)* provides prime examples of undergraduate scholarship that can be used to teach students about the characteristics of good research writing, inspire them to explore new ideas, and provide a sense of personal confidence that results from publishing their work for a campus-wide audience of peers and professors. Exposing students to the work of their counterparts can act as a mirror, reflecting undiscovered personal potential. Incorporating *GMR* into your classroom can take many forms: develop a lesson plan around analyzing one of our published works; utilize the concepts and ideas contained in these pages as a brainstorming tool for students unsure of what topic to explore; offer extra credit to students who submit their work for publication; or come up with your own innovative application.

## MAKE GMR THE ASSIGNMENT

Some professors have found success in raising student achievement by making submission to *GMR* a course requirement. Students who write with a wide and diverse potential audience in mind tend to put more thought into their work, leading to improved academic outcomes and higher levels of critical thinking. This is a valuable exercise in producing a paper that is accessible to those from varying backgrounds without comprising academic integrity. Knowledge that your work will be publicly available can be a powerful motivator, and publication in an academic journal is a great addition to any résumé or portfolio.

## GETTING STARTED

Mason's INTO program, the English Department, and UNIV 100 classes already use *GMR* in a variety of ways. We would be happy to make a brief presentation to your class or meet with you one-on-one to create a tailored approach that complements your curriculum.

*GMR* is available electronically via [www.gmreview.gmu.edu](http://www.gmreview.gmu.edu)  
To request hard copies, email us at [gmreiveiw@gmu.edu](mailto:gmreiveiw@gmu.edu)

## NOTE FROM THE ADVISOR

*The George Mason Review (GMR)* began life as “an annual collection of English 101 and undergraduate writing” in 1992, publishing under the name *GMU Freshman Review*. That first edition’s introduction reveals the motivations of its creators as they sought to “create a sense of community by publishing work that reflects the cultural and academic quality of GMU’s undergraduate population.” Their clear intent was to present “models of writing” that could serve as a “learning tool that crosses the curriculum” for both faculty and students:

*“We want this anthology to help undergraduate writers with what seems to be one of their biggest difficulties — generating ideas and just getting started... When students know their work is being taken seriously beyond the classroom, they may very well aspire to a whole new set of standards and, with purpose and focus, aim at the highest quality possible in their writing... Instructors can find in the collection a sense of what to prepare themselves for and what kind of standards they should set for themselves and their classes... We hope that the essays are useful — whether you are ‘stuck’ [on an assignment] or an instructor looking to show your students how a research paper ‘works.’”*

Some 25 years later, our mission remains the same: seek out and publish exemplary undergraduate writing across the curriculum with the conviction that students grow as scholars by publishing their work for a campus-wide audience and faculty members gain a valuable classroom tool that can help improve academic outcomes.

Since those early days as a freshman English anthology, *GMR* has evolved into a modern, peer-reviewed, undergraduate research journal that accepts scholarly submissions from all years and all majors. By exploring and challenging the boundaries separating disciplines from one other — the humanities from the sciences, the academic from the creative — *The George Mason Review* exists as a unique platform where scholarship, creativity, and critical thought can co-exist.

Mason has experienced rapid evolution as an institution over the past several decades, but the lodestar that has guided us through each step (or leap) along the way is our shared commitment to academic excellence, meaningful innovation, and cutting-edge research. *The George Mason Review* embodies each of these noble pursuits while providing all Mason undergrads with opportunities and

experiences that pave the way for greatness in the classroom and prepare them for successful careers in the future.

I am extremely proud to serve the Mason community as the faculty advisor for *GMR* and continue the rich traditions established by that first cohort of educators who recognized the need for this type of forum and made it a reality. Participation is vital to our continued growth as an academic journal, so I strongly encourage all students to submit original work for publication and all faculty members to consider integrating *GMR* into their curriculum.

Please feel free to reach out directly to me ([jbartsel@gmu.edu](mailto:jbartsel@gmu.edu)) with any questions you may have, requests for extra copies of *GMR*, or with examples of how you have utilized our publication in the classroom.

Reflecting on the history and evolution of this journal has only strengthened my belief in its value and purpose; I look forward to collaborating with the outstanding students, faculty, and staff of George Mason University to share the amazing things we accomplish together with the world.

Sincerely,

**Jason Hartsel**  
*Faculty Advisor*



# STUDENT MEDIA

## THE LARGEST CLASSROOM ON CAMPUS

Student Media offers Mason students the opportunity to directly apply academic skills in a hands-on environment, and we believe that faculty collaboration is integral to our mission of student success.

Here are just a few of the ways faculty members can partner with Student Media:

- ✓ **STUDIO RENTALS** — Reserve one of our state-of-the-art radio studios for interviews or student projects (*ISDN-equipped*).
- ✓ **onMASON.com** — Utilize our free online blogging platform in the classroom for student portfolio projects or to post writing assignments for group discussion.
- ✓ **CLASS VISITS** — Schedule a class visit so your students can learn about exciting media opportunities available to them.
- ✓ **FOR-CREDIT OPTIONS** — Help students earn internship credit through one of our 12 unique media groups or encourage

them to submit original work for credit.

- ✓ **SAMPLE CONTENT** — Use content from one of our scholarly or literary journals as source material for readings or critiques.
- ✓ **CO-CURRICULAR COURSES** — Refer students to one of our six 1-credit courses offered through Mason's Communication Department:
  - COMM 347 (Cable TV)
  - COMM 346 (Yearbook)
  - COMM 148/348 (Radio I & II)
  - COMM 145/345 (Newspaper I & II)
- ✓ **RECOMMEND A STUDENT**
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