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Cover Photo by Merzamie Cagaitan, UW McNair Alumnus

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From the
Vice President and Vice Provost for Diversity

One of the great delights of higher education is that it provides young scholars an opportunity to pursue research in a field that interests and engages them. The McNair Scholars Program offers support and opportunity for students to pursue scholarly research, and The *McNair Scholars Journal* plays an important part in that support by publishing their results. The Office of Minority Affairs and Diversity is pleased to publish the twelfth edition of *The McNair Scholars Journal* of the University of Washington.

The McNair Scholars Program offers opportunities to a diverse group of students—students who may not otherwise get the chance to work closely with a faculty mentor on in-depth research. The young scholars who participate in the McNair program are among the most motivated and dedicated undergraduates at the UW. Their hard work and accomplishments put them in a position to succeed in graduate school. The *McNair Scholars Journal* plays an important part in the career of these young scholars by publishing their research at an early stage.

Please join me in thanking the faculty, staff, and students who came together and made this journal possible.

Sheila Edwards Lange, Ph.D.
Vice President for Minority Affairs
Vice Provost for Diversity

From the
Director

I am very pleased to present the thirteenth edition of the University of Washington's *McNair Scholars Journal* to our reading audience. The collective excellence of these twenty-two projects is a testament to the hard work of our students and the unwavering support of faculty mentors who supervised these projects. As always, I want to extend my gratitude to the faculty, whose guidance and support has allowed our students to grow in meaningful ways, while giving our scholars the foundation to enter graduate school with confidence and solid research experience.

The McNair Program at the University of Washington strives to create meaningful academic experiences that will enable our students to succeed at the next level. The research component for McNair Scholars has two specific goals: First, engage students in the research enterprise at the undergraduate level so they develop the analytical and methodological skills, academic sophistication, and confidence that will make them successful students in graduate school. Second, provide students a unique opportunity to publish their undergraduate research, so the scholars gain an early understanding of the critical role that publishing will play in their academic careers. In this respect, the McNair Journal is a key component in the preparation of our scholars for careers in research and teaching.

Our journal involves the work of several people who work behind the scenes proofreading, editing, and preparing the final draft for publication. I would like to extend my appreciation to the UW McNair staff, Dr. Gene Kim, Associate Director, Rosa Ramirez, Program Coordinator, and our graduate student staff, Brooke Cassell and Raj Chetty, for their commitment to the McNair mission and for bringing this project to completion. They are an asset to the program and have been instrumental in preparing this high quality journal.

On behalf of the entire McNair Staff, I sincerely hope that you enjoy reading the thirteenth edition of the *McNair Scholars Journal*.

Dr. Gabriel E. Gallardo
Director, McNair Program
Associate Vice President, Office of Minority Affairs and Diversity,
Student Services and Academic Suupport Programs

From the
Vice Provost and Dean of the Graduate School

The disciplines, interests and pursuits that inspired the research papers within this journal are as diverse and impressive as the McNair Scholars who produced them. By reading these works, you will quickly see that our next generation of leaders and innovators is right here at the University of Washington.

As you know, the McNair Scholars Program supports traditionally underrepresented students in their undergraduate programs and prepares and encourages them to pursue graduate study. At the UW, we know that earning advanced degrees will propel these scholars into positions of influence within academic institutions, communities and businesses throughout our state, nation and world. For this reason, the UW Graduate School is honored to partner with the McNair Scholars Program and the Office of Minority Affairs & Diversity.

Clearly, these scholars already have the curiosity, intelligence and ambition that are essential to identifying emerging problems and finding innovative answers. Through graduate education, they will gain the additional experience, expertise and knowledge they will need for a lifetime of discovery and leadership.

Congratulations to the scholars whose work is published here and thank you to the faculty, staff and graduate student mentors who have contributed to this journal and to the success of the UW McNair Scholars Program. Your commitment has contributed to a legacy of outstanding scholars.

Dr. David L. Eaton
Vice Provost and Dean of the Graduate School
Professor, Environmental and Occupational Health Sciences

Journal Disclaimer

While the McNair Program Staff has made every effort to assure a high degree of accuracy, rigor and quality in the content of this journal, the interpretations and conclusions found within each essay are those of the authors alone and not the McNair Program. Any errors or omission are strictly the responsibility of each author.

Bi-Functional Peptide Based Single-Step Bionanofabrication of Patterned Gold Film Arrays

Selamawit Ainalem

Abstract

The fabrication of nanoparticles in an array structure with specific geometries is critical for a variety of nano- and micro-technologies ranging from electronics to photonics. Metallic nanoparticle arrays organized on surfaces as a thin film are particularly promising for construction of sensing devices and systems. Although there are currently a variety of methods in which control of nanoparticle pattern can be achieved, many come with drawbacks that range from requiring multiple step processing to the use of toxic chemicals that limit biological applications. This project focuses on a combined biological and material engineering approach to develop a bio-enabled single step fabrication method to control the nanoparticle arrays with desired geometry. Our research uses a bi-functional peptide sequence that is composed of gold and quartz binding peptides (AuBP-QBP) to create gold patterns using soft lithography and self-assembly techniques. The multi-functionality of the peptide, as well as its organic nature, enables the peptide to self-assemble on the quartz surface within a short time while the assembled biomolecule provides the control of the gold nanoparticle array geometry within the desired structures. Overall, different gold thin film arrays are achieved under aqueous environment via a single step bio-assembly process. The patterns were verified by dark field microscopy, scanning electron microscopy, and atomic force microscopy. Our results will contribute to the development of metallic thin film arrays using a simple biologically relevant method. Future studies will include developing a variety of patterns having different nanoparticle sizes and shapes to follow various cellular and biomolecular responses on solid substrates.

Introduction and Background

Fabrication of controllable inorganic nano or micro structures on solid substrates is highly desired and is widely applicable to multiple types of micro technologies. The most notable application is their use as sensing platforms. Arrays with gold nano-spheres are particularly promising as biosensors due to their unique photonic properties, biocompatibility, and cross-sectional area. Currently there are both physical and chemical approaches to creating these arrays by using common processes such as soft lithography. Soft lithography is a

complex process involving the advanced equipment stamping of a patterned elastomeric material onto a flat substrate (2), (3), (9), (10), and (11). However, its implementation in both physical and chemical processes comes with several draw backs such as the requirement for multiple step reactions using a variety of chemicals. The physical approaches such as e-beam, photo- and nano-sphere-lithographies are extremely expensive due to their requirement for advanced equipment to be used under special environments (4), (5), and (6). Chemical fabrications involve complex surface functionalization with thiol- or silane based self-assembly monolayer (SAM) molecules, which can be patterned through soft lithography (13) and (14). Although successful, this process has several issues that limit the resulting arrays' usefulness that include the type of materials that will bind, biologically harsh conditions, long stacking time, low yield and stability, and as result, high cost (1).

In this project we demonstrate a bio-enabled process of nanofabrication for metallic arrays as an alternative through the use of a bi-functional peptide. The engineered peptide offers versatility with its multi-material recognition and binding properties. Once properly engineered, the combined peptide building blocks can link and hold two different materials within close proximity (1) and (15). The genetically engineered peptide QBP-AuBP linked by a flexible poly-glycine has been previously selected in our labs from combinatorial and de novo peptide libraries. In our previous studies we confirmed their high-affinity and selective binding onto respective solid surfaces (8). Here we expanded the use of these peptides to form a variety of patterns, which are verified by dark field, scanning electron, and atomic force microscopy.

Methods
Peptide Synthesis

Our bio-enabled version of this process started with the synthesis of the peptide QBP-AuBP in the University of Washington's Material Science & Engineering labs via automated Fmoc peptide synthesis using CSBio 336s peptide synthesizer (CSBio Incn., USA). Attained crude peptides were purified by way of High Performance Liquid Chromatography (HPLC system, Waters, USA), confirmed by mass spectrometry, frozen with liquid nitrogen, and refrigerated for future experiments.

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Bio-Enabled Soft Lithography Bio-Fabrication

The elastomeric material used in our soft lithography process, polydimethylsiloxane (PDMS), was fabricated by molding a mixture of polydimethyl- siloxane and curing agent (10:1, Sylgard 184, Dow Corning, USA) on the surface of the patterned silanized master for 2 days in ambient condition before being used.

The stamps were then sonicated in a solution of detergent and deionized water (DI H2O) three times for five minutes each. This was followed by a gentle washing in ethanol and DI H2O before being dried with nitrogen gas prior to experiments. After cleaning the patterned side of the PDMS stamp, it was incubated with 100 μL of a 200 μM QBP-AuBP peptide solution for 15 minutes. The peptide solution was then removed from the stamp surface by careful pipetting and dried in place with nitrogen gas.
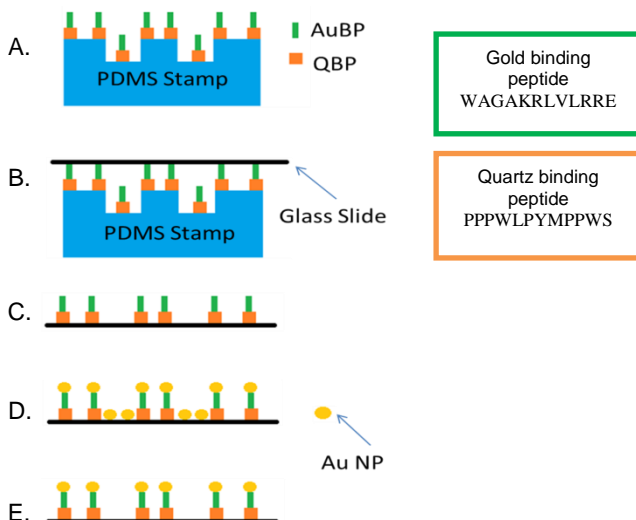
Figure 1. *Fabrication of gold nanoparticle film array (A.) Incubation of bi-functional peptide AuBP-QBP (B.) Incubation of silica glass slide onto peptide side of PDMS stamp and binding of QBP to substrate. (C.) Dried patterned peptide onto glass substrate (D.) Incubation of gold nanoparticles binding to AuBP (E.) Resultant gold array on silica glass slide bound by bi-functional peptide.*

The glass slides were cleaned through 5 minute sonications first in a solution of 1:1 methanol and acetone and then in DI H2O. They were stored in isopropyl alcohol and dried with nitrogen gas prior to usage. Clean silica glass slides were then placed on top of the peptide patterned surface and incubated for 15 minutes.

After the incubation was complete the glass slide was removed and put under 1 minute of gentle washing with DI H2O, dried with

nitrogen, and covered in 100 μL solution of pre-made 15nm gold particles (Ted Pella, USA). After an additional 15 minute incubation, the excess gold solution was gently pipetted off and the glass slides were washed gently for 1 minute with DI H2O. Finally, the glass slides were dried with nitrogen gas and were ready for microscopy characterization.

Results

In previous research the featured peptide was designed by linking silica- and gold-binding peptide sequences through a flexible poly-glycine linker. These components were selected using de novo approaches and both peptide motifs were selected based on their binding functionalities. In addition, there was careful avoidance of sequences dominated by amino acids known to interact with gold non-specifically, such as single cysteine residue. The synthetic peptide was purified by reversed-phase high-performance liquid chromatography and frozen for future experiments (1). We demonstrated and verified the ability of QBP-AuBP peptide to link two opposing materials, a metal and metal oxide by immobilizing gold nanoparticles (metal) onto a silica surface (metal oxide) using soft lithography. The resulting gold nanostructure arrays were characterized by dark field microscopy, scanning electron microscopy, and atomic force microscopy.

Dark Field Microscopy Analysis

At 50x magnification all patterns were characterized under dark field microscopy by the Nikon Eclipse TE-2000U Optical Microscope (Nikon, Japan). The dark field images, which were obtained from multiple different locations on each sample, were recorded through Metamorph imaging software (Universal Imaging, USA). Figure 2A of QBP-AuBP glass slides in varying geometries show a consistency in the patterns and assembly of gold nanoparticles proving that the self-assembling process will not be hindered by the size or change in shape of the pattern. Figure 2B illustrates our controls of a 5 μm circular patterned glass slide with DI H20, QBP, AuBP, and the bi-functional peptide QBP-AuBP. Here we can see dim or no patterns with QBP, AuBP, and DI H20; however, the bi-functional peptide is extremely clear and uniform in pattern. We demonstrated that the bi-functional peptide provides robust binding between the gold nanoparticles and the patterned surface.

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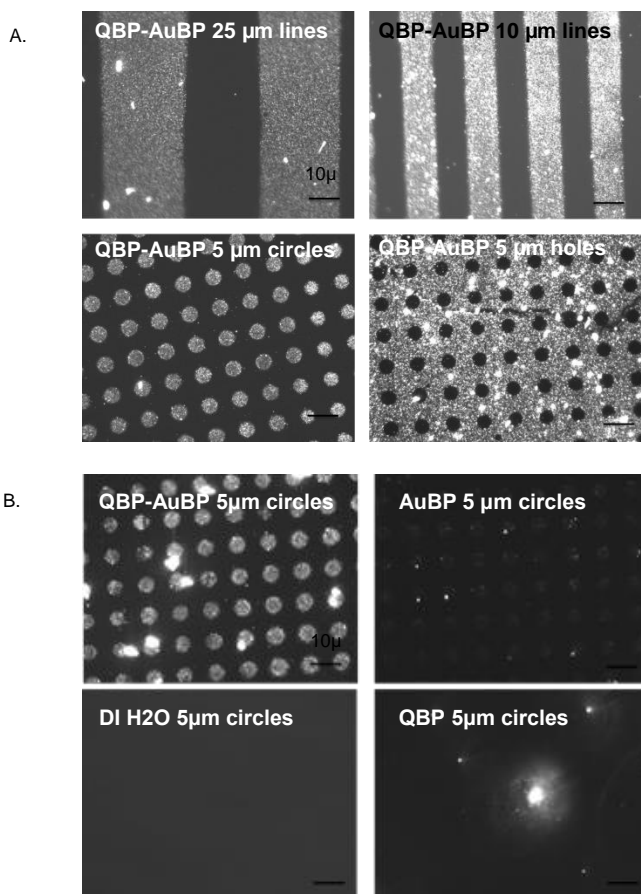
Figure 2. *(A.) Multiple geometries of QBP-AuBP bound metallic arrays under 50X magnification. (B.) Control experiment featuring quartz binding peptide (QBP), gold binding peptide (AuBP), DI H2O, and bi-functional peptide QBP-AuBP. From the images we can clearly see that the bi-functional peptide significantly increases the assembly of the gold nanoparticles.*

Scanning Electron Microscopy (SEM)

Samples viewed under SEM were coated with platinum using an SPI sputter coater (SPI supplies, USA) and observed using a JSM 7000F SEM (JEOL Ltd., Japan) at 10 kV beam voltage. Figure 3, shown under 1000x magnification, further illustrates the extent of uniformity in our patterns and the control we have over the gold nanoparticles assembly. It is clearly seen how well each slide maintains its respective pattern.
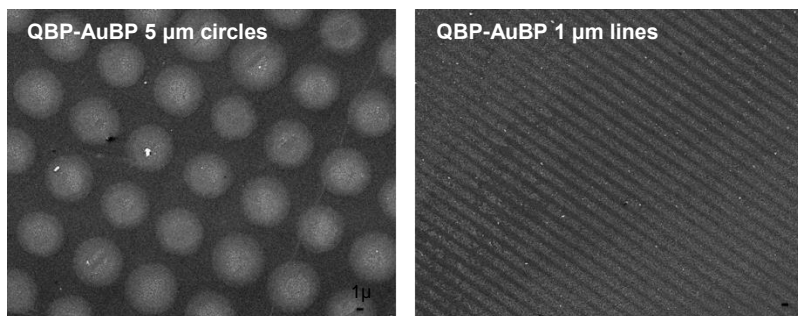
Figure 3. *These images further illustrate the extent of uniformity in our patterns as the gold nanoparticles clearly assemble in the respective linear and circular patterns even under extreme magnification.*

Atomic Force Microscopy

From previous research we have an AFM image on a Dimension 3100 SPM (Veeco, USA). The scan verifies nanoparticle thickness, immobilized dispersity, and was obtained at a maximum 30 μm with the maximum possible scan range of 90 μm (1). Figure 4, shown below, is of a 5 μm array pattern illustrating nanoparticle dense packing, and the recorded thickness of immobilized nanoparticle layer ~ 15 nm corresponds to single layer of nanoparticle immobilized on a patterned peptide layer.
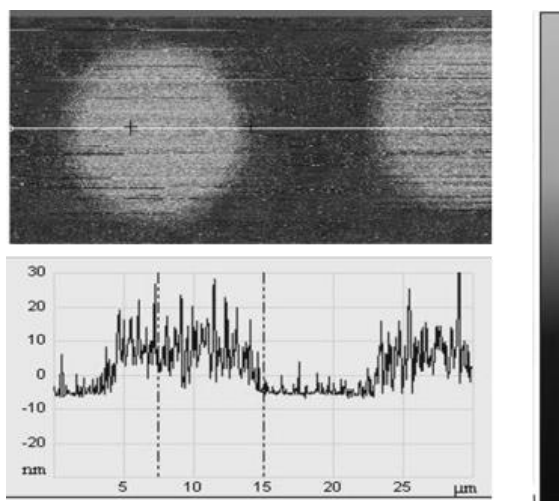
Figure 4. *Atomic Force Microscopy image for a 5 μm circular pattern was used as an additional method to confirm the size of the gold patterns.*

Conclusions and Application

Through Soft Lithography we demonstrated that a bi-functional peptide displaying silica- and gold-binding regions is fully functional and can control the assembly of gold nanostructures on silica surfaces. Additionally, we know that through the featured peptide we can design complex nanoparticle arrays with different patterns via a simple protocol consisting of a single step carried out in aqueous solutions. In fact, as demonstrated in this study, the peptide can be used in surface functionalization, creating hierarchical assemblies and co-assemblies of various nanostructures in fabricating functional devices for bio-sensing such as protein/peptide arrays, single cell biosensors, and cell engineering (12), (16), and (17). We will continue with this application by creating another layer of immobilized bi-functional peptide molecules on the metallic array that will contain the gold binding amino acids motif to further explore the reliability of the peptide's self-assembling characteristic. Other opportunities for metallic arrays are in tissue engineering research. A possible application could be in immobilizing stem cells to study and guide their differentiation under the varying geometric arrays. These are just a few of the wide range of applications for metallic arrays as their unique photonic characteristics can further develop research areas across disciplines.

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Acknowledgments

Selamawit Ainalem
Material Science & Engineering, Dr. Candan Tamerler and Dr. Marketa Hnilova.
Selamawit15@hotmail.com

My future plans for graduate school are to pursue a PhD in either Mechanical or Materials Engineering with a focus in nanotechnology and advanced composites research.

New Insights into the Effects of Slope on the Dynamics of Dilute Pyroclastic Density Currents from the May 18th, 1980 Mount St. Helens Eruption

Sylvana Bendaña

Abstract

Pyroclastic density currents (PDCs) are ground hugging hot clouds of gas, pulverized magma (ash and pumice) and rocks ripped up from the walls of the volcanic vent (lithics). The combination of particles and high velocities produce currents with dynamic pressures capable of destroying most obstacles in their path. This dynamic pressure combined with their ability to surmount topography makes PDCs the most dangerous hazard associated with explosive volcanism.

PDCs are density-stratified due to the segregation of particles by size and density during transport (e.g., Valentine, 1987). The basal region of a PDC typically has a higher concentration of dense particles, and as such is confined by topography. The upper portion of the current is more dilute and contains only fine-grained particles, and as such can decouple from the basal region and flow over topography. The goal of this work is to explore the influence of topography and depositional slope on the dynamics of the decoupled, dilute PDC. This work will be used to gain a better understanding of the dynamics of transport and deposition of these density stratified currents and to use this knowledge to better mitigate hazards, such as rapid flow transformation of PDCs as they interact with topography around the volcano.

This work explores the well-exposed deposits from the concentrated, column collapse-derived PDCs that occurred several hours into the May 18th, 1980 eruption of Mount St. Helens, Washington (USA). The concentrated portions of the afternoon PDCs followed topographic drainages down the volcano and travelled across the shallow-sloping topography (~5°) up to 8 km north of the volcano. The dilute overriding cloud partially decoupled to develop fully dilute, turbulent PDCs that travelled over and across on the steep flanks (10°-30°) of the volcano. The objective of this project is to (1) compare the deposits from the crater and along the steep flank of the volcano (proximal-bedded deposits) with deposits of the pumice plain to understand overall transition of the currents with distance from the vent, and (2) use deposit characteristics along the volcanic flank to investigate the influence of slope on transport and depositional mechanisms within dilute PDCs. This project incorporates data from the proximal-bedded deposits along the flank and massive deposits within the crater and

eastern pumice plain. Granulometry, componentry, depositional features and bedform (dune) wavelength and amplitude were collected as a function of slope and distance from source. This data will help us interpret flow and emplacement mechanisms.

The proximal-bedded deposits are thin, cross-stratified and stratified in nature, suggesting deposition by dilute, turbulent currents. The proximal-bedded deposits differ greatly in depositional characteristics from the thick, massive, poorly-sorted, block-rich deposits associated with the rapid sedimentation of the more concentrated portions of the flow as seen in the pumice plains (Brand et al., in review). We first compared the massive deposits within the crater to the massive deposits in the eastern pumice plain. The massive crater deposits (~1.92 km from vent) are very poorly sorted with an average sorting value of 2.77ϕ. Sorting is a measure of the range of grain sizes present; when the range of grain sizes is small then the particles are around the same size and the layer from which the sample is taken is described as well-sorted. If the range of grain sizes is wide then a variety of particles sizes are present and the deposit from which the sample is taken is considered poorly-sorted (Boggs, 1995). Average componentry consists of 28.7 wt% pumice, 32.5 wt% lithics and 38.7 wt% crystals. The deposits in the eastern pumice plain (~5km from vent) are also very poorly sorted with an average sorting value of 2.91ϕ. The componentry was collected from (1) an unstratified, massive, lithic rich layer consisting of 8.0 wt% pumice, 60.3 wt% lithics and 31.6 wt% crystals, (2) a massive lapilli tuff consisting of 17.4 wt% pumice, 41.6 wt% lithics and 37.7 wt% crystals, and (3) a pumice rich massive layer consisting of 22.1 wt% pumice, 33.6 wt% lithics and 44.1 wt% crystals. The depletion of wt% pumice and increase in lithic rich layers as well as the relative depletion of pumice in the massive lapilli tuff at the farthest outcrop suggest segregation of the clasts by size and density during transport 2-5 km from source.

The proximal-bedded deposits are finer-grained (average Md ϕ is 1.04ϕ with grain size ranging from -2ϕ to 4ϕ) and better sorted (1.9ϕ) in comparison with the massive crater and eastern pumice plain deposits. The grain size distributions and cross-stratified, dune bedded nature of the flank deposits distinguish them as deposited by the detached, upper dilute portion of the current.

There is a correlation between slope and bedform amplitude and wavelength. With increasing deposition slope (e.g. from 10° to 26°), the wavelength of the bedforms increase by tens of meters. Amplitude increases as well but not on the same magnitude as wavelength. As the depositional slope decreases, the amplitude and wavelength of the bedforms decreases. Because of gravity, a flow will naturally increase in

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velocity down a steeper slope and slow down when encountering a shallower slope. The longer wavelength and higher amplitudes seen in the deposits on steeper slopes suggest that bedform morphology is directly related to flow velocity. This relationship is an important finding since the controls on bedform wavelength and amplitude in density stratified flows remains poorly constrained.

The Froude number is the ratio of inertial forces to gravitational forces:

Eq. [1] $Fr = u /\sqrt{gd}$ where u is velocity of the flow, g is acceleration due to gravity, and d is the depth of the flow.

This number quantifies the hydraulic conditions necessary to different types of sandwave bedforms (Boggs, 1995). When the Froude number is <1 the flow is in the lower flow regime (subcritical); the flow is thicker and has a lower flow velocity. A flow that has a Froude number >1 is considered supercritical (of upper flow regime); the flow is thin and fast-moving (Boggs, 1995). Progressive bedforms are asymmetrical dunes that are produced out of phase with the current waves on the surface and migrate downstream with deposition on the downstream side (Boggs, 1995). They are commonly produced in subcritical flows with Froude number <1. Regressive bedforms are symmetrical dunes produced in phase with the flow waves that migrate upstream with deposition on the upstream side. These are produced when the flow regime increases to a sheet-like, rapid flow (supercritical with Froude number >1).

At Mount St. Helens, it is noted that progressive bedforms dominate the lower degrees of slopes (12°-16°) on the volcanic flank between 1.92 km and 4.94 km from vent. In contrast, regressive bedforms dominate higher degrees of slope (12°-26°) on the volcanic flank. The occurrence of different dune bedforms between lower depositional slope (shallow) and higher depositional slope (steeper) further attests to the control of velocity and flow regime on bedform morphology. The occurrence of upper flow regime bedforms on steeper slopes also suggests that the relationships and interpretations for open channel flow diagrams that show succession of bedforms that develop during unidirectional flow of sandy sediment in shallow water (Blatt et. al., 1980) can be cautiously used to interpret flow regime criticality of density stratified currents.

Chute and pool features are also common within the proximal bedded deposits. These features occur where a current that has reached a

super-critical state (Froude significantly >1) abruptly transitions from that supercritical to a subcritical condition, known as a hydraulic jump (e.g., Jopling and Richardson, 1966). The sediment deposited on the upstream side of the jump develops high-angle backset beds that migrate upstream (Cole, 1991). While rarely preserved in the fluvial record, chute and pool features are common features in the deposits of dilute PDCs (e.g., Schmincke, 1973). This finding further suggests that the criticality of PDCs controls the nature of depositional features.

From the observations and analysis we conclude that slope and topography has an effect on the flow regime dynamics of dilute PDCs. The combination of chute and pool features and regressive bedforms on steeper slopes strongly suggests supercritical conditions at the time of deposition. This supports the assertion that bedform morphology in dilute PDCs is controlled by flow velocity and thickness. The ultimate goal is to accurately interpret flow dynamics, such as flow regime, based on depositional characteristics. This work suggests that bedform size and shape are a function of flow velocity and criticality of the current, similar to fluvial environments. However, more work is needed to fully understand the controls and mechanisms of bedform deposition and migration in density stratified flow. The findings observed can be used as a base for experimental work and future modeling that can increase the basic understanding and better constrain the dynamics of such current. With better knowledge we can then grasp a better understanding of how PDCs can behave in different topographic settings and thus effectively mitigate hazard presented to civilizations living near a volcano.

A manuscript detailing the complete results of this study is in progress and will be submitted to the Bulletin of Volcanology in the autumn of 2013.

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Sylvana J. Bendaña
Department of Earth and Space Sciences, Dr. Brittany Brand
sjbendana19@gmail.com

I am interested in physical volcanology and magma chamber processes. I will begin my Masters program in the department of Geosciences at Central Washington University in Fall, 2013.

Behind the Veils of Industry: Contesting the Victim Discourse Surrounding Filipino Mail-Order Brides

Merzamie Sison Cagaitan

Abstract

The modern mail-order bride industry is just one component encouraging migration in today's increasingly globalized world. Each year, the industry facilitates thousands of international marriages between men from mostly Western countries and women who predominantly come from Latin America, Eastern Europe, and Southeast Asia. My research contends with a discourse of Filipino women as victims issuing from their cultural and oriental identity as mail-order brides, and seeks to recast women's role in this international marriage-scape as agents who, despite institutional and structural limitations on their mobility and quality of life, manage to achieve forms of women empowerment through strategic participation in the international marriage market. In particular, I focus on women marriage migrants from the Philippines, a country of origin which, in being "formerly colonized by the United States, and currently neocolonized by U.S. corporate capital, best illustrates how colonial and military dominations are interwoven with sexual domination to provide the "ultimate Western male fantasy." Part of an orientalist discourse, this "fantasy" posits Filipino women as politically passive, sexually exotic, and domestically compliant. My research utilizes the theoretical frameworks of Intersectionality and of Social Construction to examine how this "fantasy" combines sexualized racial stereotypes with racialized gender stereotypes to the harm of particularly Asian women. Despite the various harm this colonial sexual mythology engenders, case studies and a literature review reveal Filipino marriage migrants to be empowered women who are strategically, creatively, and, oftentimes, successfully, utilizing the same colonial fantasy to their economic, social, and national advantage – a counter-narrative marked by processes of self-construction and the production of a corollary female fantasy.

Introduction: The Philippines and the Filipina

Despite its negative associations with criminalized activities such as human trafficking, sex tourism, and prostitution, the modern mail-order bride industry continues to flourish – facilitating thousands of international marriages between "American men" (a category that includes all "Caucasian" or "Western" men (Lauser 88)) and foreign women (the majority of whom originate from Latin America, Eastern

Europe and Southeast Asia (Hughes 38)). For the purposes of this research, I use the same definition of the "mail-order bride" industry/marriage as the Philippine Women Centre (PWC) of British Columbia—that being a "formal transaction between a man and a woman from different countries," usually brokered by an agent, but one that could also encompass situations where men go to the Philippines to seek a wife, and where Filipino women are introduced to prospective husbands through informal networks of friends and family (1). However, unlike the PWC which asserts that the hotly-debated "trafficking of women" include any and all Filipino women who are "forced to emigrate" as part of globalization (nurses, domestic workers, prostituted women, and women labeled as mail-order brides), my paper does not dwell too long upon a victim discourse. In considering the life experiences of marriage migrants, I acknowledge that while there are legitimate factors tying the industry to the aforementioned criminal activities, ending the conversation here would be an unproductive, incomplete, and unjust representation of the thousands of women whose actions and self-perceptions show them to be active and strategic participants within the industry and within their marriages.

Focusing on Southeast Asia and, more specifically, women marriage migrants from the Philippines, my research challenges and complicates an image of Filipino women as hapless, passive victims. I attempt to recast their role in this international marriage-scape as agents who, despite institutional and structural limitations on their mobility and quality of life (Tung 312), manage to achieve forms of women empowerment through strategic participation in marriage migration. I narrow my focus on women marriage migrants from the Philippines because it is a country of origin which, in being formerly colonized by the United States, and currently "neocolonized by U.S. corporate capital" (Parrenas 274), best illustrates how colonial and military dominations are interwoven with sexual domination to provide the "ultimate Western male fantasy" (Cho 166). Using the theories of Intersectionality and of Social Construction, my paper will examine this "ultimate Western male fantasy," especially noting the ways in which it combines sexualized racial stereotypes with racialized gender stereotypes to the particular harm of Asian women, and it will argue that Asian women (particularly those from the Philippines) are creatively, actively, and, oftentimes, successfully, utilizing the same colonial fantasy to their economic, social, and national advantage. In the literature review to follow, I show how these theories have been traditionally used to promote the discourse of Filipina victimhood; however, what I am doing in this essay is using Intersectionality and Social Constructionism in order to forward a new

reading of existing research. Expanding on the work of previous scholars, I argue that, though the Philippine transnational marriage-scape conforms to the popular conception of brides from poor countries and grooms from wealthier ones (Lauser 88), the migrations of Filipino women are not only motivated by economic factors but are also informed by desires and fantasies to self-create. This essentially carves out space in the literature for Filipino women to not only create and redefine their identities but also transform the new spaces they occupy as transnational citizens.

Oriental Girls as the "Ultimate Western Male Fantasy"

While the mail-order bride industry has existed for centuries (if not millennia), it was not until the end of World War II that Filipino women came to dominate the transnational bride scene (Merriman 84). According to Merriman, U.S. troops "liberated" the Philippines from the Japanese at the end of the war, and, upon coming into contact with Filipino women, wanted to bring the women to the United States for marriage. The servicemen's demand for Filipina women, "along with many Filipinas' desire to leave the war-ravaged Philippines," spurred the creation of marriage brokers. Merriman notes that for the first time, "men were 'purchasing' brides outside their ethnic group" (84). While it is tempting to end this tale with the Filipina "damsel in distress" being romantically whisked away to safety, Christine So reminds us that there is a more ominous overtone to this seemingly simple rhetoric of rescue than first meets the eye. According to So, global capitalism has enabled the re-articulation of "U.S. patriarchal and imperial desires to 'rescue' women from 'Third World' poverty and men" (396). She argues that those operating the business of mail-order marriages primarily stand to profit from "U.S. imperial fantasies about Third World women as well as from global capital's relentless incorporation of Third World women's bodies as labor" (397). So's incisive explication of the political and economic forces working together to produce "the body" of the mail-order bride (397) inspires a re-evaluation of rescue narratives like the one above which positions U.S. men as "liberators" and Filipino women as "damsels in distress."

Military involvements in Asia converge with the region's colonial and neocolonial history, establishing uneven power relations between Asia and the West that then inform the racialized particulars of the "ultimate Western male fantasy" (Cho 166-7). Sumi Cho cites Tony Rivers' article "Oriental Girls" in order to illustrate that colonial military domination must be accompanied by sexual domination in order to realize this "ultimate" fantasy.

> "Her face – round like a child's…eyes almond-shaped for mystery, black for suffering, wide-spaced for innocence, high cheekbones swelling like bruises, cherry lips…She doesn't go to assertiveness-training classes, insist on being treated like a person, fret about career moves, wield her orgasm as a non-negotiable demand…She's a handy victim of love or a symbol of the rape of third world nations, a real trouper" (Cho 166).

This excerpt from Rivers' article thus helps to further define the "ultimate Western male fantasy" as a part of "colonial sexual mythology based on Western perceptions of women in Asia." It also coarsely highlights how racial and gender stereotypes converge in order to construct Asian (and Asian Pacific American) women as "politically passive and sexually exotic and compliant" (Cho 173). Rivers' invocation of "third world nations" calls to mind the fact that the modern mail-order bride industry has established a stronghold in developing countries in Asia, like the Philippines.

When viewed through the lens of Intersectionality, (or the theory that "race, class, and gender are simultaneous and intersecting systems of relationship and meaning" (Anderson 6), it becomes even easier to understand how social constructs like the Filipino marriage migrants' race, class, and gender coalesce to produce situations of heightened vulnerability to violence for "Oriental Girls" who stay in and venture outside of Asia. Intersectionality helps identify how the location of some women at the intersection of race, class, and gender "shapes their actual experiences of domestic violence as well as the responses of others" (Pennington 26). In terms of definition, "race" is "associated with physical characteristics like skin colour and facial features;" "class" extends beyond notions of "common economic positions and life-chances to encompass iniquitous international relations, including economic disparities" between American/Western men and Filipino women; and "gender" refers to "culturally ascribed notions of masculinity and femininity and is a relationship deeply inscribed in unequal divisions of labor" (Pennington 25). Some may argue that these three major social categories (coupled with globalization) may have, for better or worse, predisposed Filipino women to migrate outside of their home country. However, I believe that this argument effectively robs women of their agency in choosing the path to migration. I argue that it is *precisely* because Filipino women do indeed work within such a conscripted system that each and every bond they loosen through

strategic self-(re)making ought to be celebrated and credited, distancing them from a victim discourse surrounding "mail-order brides."

Together with Intersectionality, a Social Constructionist perspective (or the theory that argues that ideas and concepts are not natural categories but social constructions, the meanings of which are recreated out of human interaction (Pennington 25)), reveals how "social and political forces shape our lives and our sense of ourselves" (Kirk 2). Irrespective of whether they are aware of such "forces" acting upon their lives or not, women marriage migrants are constantly highlighting the artificiality and, therefore, malleability of their role as "Oriental Girls" by defying gender norms and crossing multiple boundaries in migrating to marry outside of their ethnic lines. Therefore, Social Construction theory is important because it allows us to see that "situations and structures are not fixed for all time but are changeable under the right circumstances (Kirk 2), making it possible for women to redefine these social constructs to their benefit. Taken together, these two concepts do not just lead to a victim discourse, but can actually be utilized to show the women's creativity and agency.

The Internalization of Race and Gender Stereotypes

From the gendered class-based racism inherent in the "ultimate Western male fantasy," the figure of "The Filipina" emerges as "the most desirable of all Oriental females" (So 404). The company American-Asian Couples, advertising their services in such magazines as *Harpers*, provided, along with photos of available Filipinas, an information sheet entitled "The Filipina." It read:

> "The typical Filipina…is petite, feminine, affectionate, traditional, and devoted to her husband. She often looks more Spanish than Asian. She retains the best feminine Asian physical characteristics (small, slender), and personality traits (hard-working, humble, devoted to her husband and family), while being just "Americanized" enough to be for the American male, the most desirable mate of all Oriental females" (So 404-405).

This information sheet universalizes (or assumes that there is one physical, temperamental, and cultural prototype of) women from the Philippines, in order to construct "The Filipina" as the most appealing and marketable commodity in the mail-order bride business (Liu and Chen 6). The company's depiction of "The Filipina" others her enough to be exotic and desirable, but makes her familiar or "Americanized"

enough to be ideal and acceptable. In comparison to her foreign competition, "The Filipina" reads, speaks, and understands English, adding strength to her marketability as the perfect wife (Liu and Chen 6). An earlier passage by Rivers illustrates the disgust certain "American" men express over the "'excessive effects of women liberation in Western countries,'" preferring instead Asian women who they imagine to be "more firmly located within patriarchal structures" and who are often represented as being "more suited than white women to maintain 'traditional' family values" (So 395-6).

Because there is a huge gender imbalance in the industry and competition with other foreign women is high, most Filipino women who wish to become mail-order brides present themselves as "gentle," "family-oriented," and "keen" – playing off of gender and race stereotypes (Ricordeau 5). According to Liu and Chen, with just the click of a mouse, "a woman's life and destiny may be written or rewritten" (1). The majority of online profile descriptions posted by Filipino women indicate that, to some extent, they have "internalized gender and race stereotypes about Southeast Asian women" in order to maximize their chances of being selected by men/customers (Liu and Chen 1). Some of the women even hide previous and current relationship statuses and/or the fact that they have children in order to gain and retain the romantic interests of prospective husbands. The Internet and the World Wide Web are powerful tools in the proliferation of the mail-order bride business, with immigration statistics indicating that, each year, there are six to 12,000 American men who find a foreign bride with the help of international marriage brokers, and that there are several thousand Filipino women who marry foreigners annually (Ricordeau 2). Despite these racialized ascriptions, Filipino women were and are able to create and redefine their identities through marriage migration.

Though these methods could easily be characterized as being devious and dishonest, the strategies some Filipino women employ in order to achieve a better life quickly shatter notions of their supposed "submissive" and "docile" natures and point towards their agency. Filipino women's migrancy (or the "complex subjectivities of migrants produced through their experience of multiple and contrasting places" (Lauser 89) assign them to a [temporary or permanent] life of living between the "old" and the "new," the "here" and the "there," making it particularly difficult for them to "insert, incorporate or assimilate themselves into existing places" (89). Fortunately, Filipina migrants are able to shift their positions according to particular contexts, transforming existing spaces and creating new ones." While they may not be able to completely evade the status of being perpetual aliens (or those who can

assimilate but are essentially always Other), Filipino women are able to forge an arrangement that allows them to comfortably inhabit the "space between." Their online depiction of themselves as the perfect "traditional" wife can be seen as one situation wherein they may fix their identities, ("appearing to adhere to a given set of traditions and essentialized cultural norms"), while in other instances they may present themselves as something more "hybrid and complex" (Lauser 89). The idea of migrancy is highly compatible with the Social Constructionist perspective, which allows that situations and structures are not fixed but are changeable under the right circumstances (Kirk 2). Marriage migration then can be said to provide many such "right circumstances" for Filipino women whose movements and mobility are tightly regulated by a script written by the Philippines' religious, legal, social, and economic infrastructure. Though Filipinas can be said to have internalized various fantasies about their "Oriental-ness" or "Filipino-ness," what they choose to do within this limited and limiting environment unequivocally points to agency because they consistently use this same internalization to present new ways of authorizing themselves.

The Construction of a Corollary Filipino Female Fantasy
Interestingly enough, the men appear to find the "traditional wives" that they are looking for; however, I wish to reframe this "fact" not as evidence of Filipina docility, but rather Filipina agency in working neo-colonial orientalism for post-colonial ends. It is possible that this surface outcome is a reflection of the fact that marriage migration is not only shaped by monetary factors (or "economic geographies") but also by desires to find genuine love and equal partnerships (or "geographies or 'sites' of desire") (Lauser 88). These various "geographies" indicate a corollary "ultimate" Filipino female fantasy based on Filipino women's perceptions of "American"/Western men's ability to offer them higher social status as well as better standard of living, and a more "modern" and "equal" family life and conjugal relationship (Lauser 94). It is important not to overlook this corollary fantasy because it operates right alongside its western male counterpart. According to a case study detailing U.S. colonial legacy in the Philippines, the U.S. symbolized a land of prosperity, its men "enlightened" by the women's movement and considered a "good catch" (Haban 5). In the construction of America in particular and the West in general as a desired "outside" in the "neo- and postcolonial" context of the Philippines, foreign men are imagined as more romantic, open-minded, and faithful than Filipino men (Lauser 94). The simple reality is that, for many Filipino women, marrying a "white"

foreigner would equate to the pinnacle of success as the husband's higher social status and better standard of living effectively usher the women to the path of social mobility. I attempt to shift the metacognitive framework by which people think about women labeled as mail-order brides by critically analyzing several case studies referring to the aforementioned orientalist discourse. Through these case studies, I want to demonstrate how crucial it is to pay attention to the manner in which individually-constructed anecdotes can challenge grand narratives that explain how the post-colonial, gendered, racialized world is supposed to work. Over and again, we become privy to instances where Filipino women emerge as storytellers – ones who are fascinated not so much with the idea of being saved by a white male from loveless-ness or poverty, but more with that of self-creation.

Case Study 1: "Lilia"

Our first case study is about a woman named Lilia. At the time of her interview with Lauser, she was a single woman in her early thirties, who migrated from the countryside to the capital of Manila. Lilia became an interpreter, teacher, and assistant for various international development agencies. Surrounded by employers from western countries who lived in Manila's rich global "villages," Lilia soon found herself attracted to their high standard of living, and international and cosmopolitan lifestyles. She began to dream of a similar future for herself. Specifically, Lilia imagined that life with a western man would fulfill her desires for "modernity" – modernity that included a life as a "respected wife and mother as well as a member of the privileged middle class" (Lauser 94). Despite the fact that she lived in an urban, "modern" context where, earning a good salary, she was able to send money back to her family in the countryside, Lilia still found herself struggling against what Lauser describes as the "'old-fashioned' image of being an 'old maid'" or *matandang dalaga* (94). In her interviews with Lauser, Lilia reveals:

> "You know, I have an [sic] European pen pal. I found him on the internet. We have been corresponding for a couple of months – and almost every day! His mails are so nice and sensitive…When I tell him about a book I liked, or a movie I've seen, you know, the next week he has read it or seen it and we philosophise [sic] on it. He's so understanding!" (94)

Lilia's words claiming that she "found him" on the internet indicates a confidence and assertiveness very much in line with her desire to be in an equal partnership and a "modern" relationship. Instead of being the one who is found, Lilia positions herself as the active one seeking her love, thereby rejecting the image of being another Filipina "damsel in distress." Though desirous of an equal and "modern" relationship and afraid of missing her chance to marry and have children, one word that would not describe Lilia's decision to find her future spouse using the Internet is "desperate." Indeed, she possesses multiple anxieties related to social and marital status and time, however her having "an European pen pal" still speaks to her great unwillingness to settle for something less than her wish for a husband that suited her well. Her exclamations that "his mails are so nice and sensitive" and "[h]e's so understanding!" are spoken against the backdrop of her having rejected an arranged marriage to a Filipino man, who she found to be unaccomplished, jealous, and overly concerned with dominating her. The apparent sensitivity in her European pen pal's correspondence excites Lilia who, with each letter, deepens a self-discovery that comes from both parties building a relationship through a discussion of [global] texts. In this way, we see the positioning of both partners to create a collaborative, mutual narrative of what love should look like in which both partners can participate. Resisting against the temptation of viewing these relationships in terms of opportunity, Lilia's story would have the reader enter into and consider the realm of self-making through narrative. Her increasing sense that the world is a *tabula rasa* enhances her drive to construct a self and future based on her own desires – a corollary Filipino female fantasy that encompasses not only her search for a more "modern" or "equal" marriage and family life, but also her rejection of local gender norms that would have left her grappling with a marriage she did not choose for herself.

Case Study 2: "Maria"

Despite many claims that foreign women are more interested in gaining citizenship than a genuinely loving relationship with their foreign husbands, women from many countries, including the Philippines, are, in fact, more interested in the relationship than the citizenship. Our second case study about a woman named Maria illustrates this. Like Lilia, Maria was still unmarried in her early thirties. She wanted to get married, and fell into the industry seemingly by accident, without any real desire to go abroad. She recounts her story in an interview:

> Maria: We met in the Philippines…I thought I had luck in getting pen pals, so I said to myself why not try abroad.
> Jane: You're just trying it out. It's just like trying?
> Maria: Yeah! I'm just trying it out. My sister wanted to go abroad. For me, I'm not that interested to go abroad, because I said, I don't want to go abroad, I just feel bored and everything.

Maria's self-professed boredom and disinterest in leaving her homeland is another illustration of Filipino women's fascination with the idea of self-creation. She is fascinated with the idea of creating a fantasy around what an ideal relationship could look like, whether this be with a Filipino man or not. Unlike Lilia, Maria has not developed a particular conception of Filipino men and, out of her boredom, appears to have just stumbled upon the idea of marrying someone from outside her own country. Her excitement in considering men outside of the Philippines for marriage is not necessarily a comment on Filipino men, but rather can be said to come from an abstract idea of no limits and no boundaries – a feeling of omnipotence that makes possible the persistence of such fantasies as no old maid status, no national boundaries, and no paternal oversight).

After almost one year of exchanging letters, Maria agreed to marry her Canadian pen pal, despite her father's protests that he lived "too far away" (PWC 19).

> Maria: But I said, "I'm getting old. I might be an old maid forever." I was already 30 years old and at that time I was panicking.

Her summary of how she became involved in the mail-order bride industry reveals how she relied more on "luck" than concerted effort to secure a foreign husband in the initial process, and did so without really expecting herself to have to do the assimilating. Her comment of "I don't want to go abroad" says that Maria was not looking to be "saved" from the Philippines, or from poverty in the Philippines. However, her "panicking" over the very real possibility of being an "old maid forever" does eventually lead her to go despite her father's protests, which, in itself, serves as another indicator that Maria came from a family that did not depend on their daughter for financial support. Maria's case is not rare, but it is unlike the situation for many families in the Philippines.

Behind the Veils of Industry: Contesting the Victim Discourse
Surrounding Filipino Mail-Order Brides

One in every ten Filipino works abroad. Since the 1970s, the Philippine state has brokered labor to the world, using Filipino bodies as the country's primary export. The remittances of Overseas Filipino Workers (OFWs) help decrease an estimated $45 billion national debt (resulting from the imposition of "destructive structural adjustment policies that plunge developing countries further into debt") by at least $5 billion per year ((Tung 302). Interestingly enough, over 50 percent of these bodies deployed for labor are women who, whether single, separated, widowed, divorced, or newly-married, experience a different kind of freedom even as they continue to perform social reproductive labor (or the "array of activities and relationships involved in maintaining people both on a daily basis and intergenerationaly") away from home but still within the home. According to Tung, "migration studies have historically overlooked women or treated them as a "marginal category: as dependents of male migrants or as part of the debris left behind in the home country when the males depart" (302). Contemporary Filipino women illustrate that, far from being left behind, they are now migrating alone to provide for their families as men did in earlier decades (302). This migration extends from Lilia's migration from the countryside to the city to Maria's migration from the Philippines to Canada.

In Maria's case, working or living abroad to earn more money or gain citizenship was not a high priority. Her first priority was avoiding the old maid stigma and getting married to someone she felt she had corresponded well enough to know. Maria's story is an example of how Filipino women migrate in order to marry, and not just that they marry in order to migrate. Her pen pal arrived in the Philippines and married her. They had a child and she soon followed her husband to Canada with their newborn child. Once she arrived in Canada, Maria found herself in an isolated area in the dead of winter, and an hour drive away from the closest sign of civilization. She lived in a cabin with no heat or running water, and had to go to the lake to fetch buckets of water, sterilize it, and then use it for their daily needs. Maria felt completely isolated, especially in raising her new baby boy without the aid and advice of her family, and also found it difficult to understand and defend herself against her husband's verbal abuse. Besides being verbally abusive, Maria's husband was also obsessed with pornography. He would frequently surf the Internet for pornographic sites, especially interested in ones that featured Asian women and girls. Maria's depression and humiliation was severely deepened when her husband made her watch this pornography with him (PWC 61). Many times she attempted to communicate her discomfort

only to have her husband tell her that he could not understand her English.

Margaret Wan Lin and Cheng Imm Tann illustrate some of the vulnerabilities marriage migrants face upon reaching their country of destination by acknowledging that "barriers of language, culture, and economic disparities and the vagaries of racism and sexism" can magnify primary injuries Asian women immigrants and Asian Pacific American victims of domestic violence suffer at the hands of their partners and can subject these women to suffer secondary injuries, or "revictimization at the hands of institutions designed to serve battered women" (504). Lin and Tan offer the story of Ling, an APA woman who, after being beaten by her husband, manages to call the police, only to be revictimized by institutionalized forces when her grasp of the English language failed to deflect her husband's claim that she had attacked and deliberately stabbed him.

> One evening as Ling was cleaning some fish for dinner, her husband…began to pick a fight…Ling tried to ward him off by waving the knife she had been using to clean the fish for dinner that evening. He continued to lunge at her and in attempting to get the knife, fell upon the knife and cut himself. He continued to strike out at Ling" (Lin and Tan 505).

This case demonstrates that tools such as the mandatory arrest policy and/or the predominant aggressor policy that have been put in place to "enhance victim safety and increase offender accountability" can still be improved to cater to the needs of immigrant women (McKeon 499).

Returning to Maria's story, she was eventually able to make her voice heard, even if it meant resorting to clipping an Ann Landers column from the newspaper to share with her husband, saying, "This is the way I feel." After this event, her husband no longer compelled her to watch pornography with him, and now surfs the Internet with Maria beside him. According to PWC, Maria's husband sometimes remarks to her that she intimidates him, to which she replies, "That's good" (61). Though she uses the voice of another woman to communicate what she found difficult to do herself, Maria's Ann Landers column clipping shows a creative approach to attempt to change the quality of her relationship. While the clipping may first appear as an act of desperation, it is far from being so.

From a literary perspective, Maria's move is a powerful illustration of her ability to wield a discourse about respect and manners

to accomplish her own ends. She mustered up the will to resist despite her incredibly marginalized position within her marriage and within Canadian society. As Maria has continued to assert herself and voice her needs and concerns, she has gained a strength encompassed by her comment: "It feels like I have power" (PWC 61). This statement evokes a sentiment useful to breaking down the victim discourse surrounding mail-order brides in that it highlights a woman's growing awareness of her ability to write the script of her ideal relationship. This picture is not of a woman claiming empowerment in the sense of economic or social empowerment, but one with a definition more in line with authorial empowerment. This alternative reading is significant in terms of further understanding the corollary Filipino female fantasy, especially with how Maria has actively shaped a relationship that now serves as a mutual space where she and her husband can forge their own idiosyncratic version of what love means to them. The realization – partial or otherwise – of this corollary Filipino female fantasy is contained within that understated yet powerful quote, and allows the reader to see how significant of a comment this is for someone who, previously, felt as voiceless as she felt inconsequential.

Case Study 3: "Lanie"

Our third case study is about a woman named Lanie. For many years, she worked abroad as a domestic worker. While working abroad, she met and married a Canadian man and went to live with him in his small town. Like Maria, Lanie was isolated and quickly discovered that her marriage did not include the love, partnership, or financial support she had imagined (PWC 33). Her husband refused to give her any money – not even for food or for household needs, and, later, not even for the baby's diapers. Lanie gave birth to a son she named Tony, and was later informed by her parents-in-law that her husband had previously been accused of sexually molesting his first son. She resolved to never leave Tony alone in her husband's care and, once she found a baby-sitting job to pay for their various personal and household needs, was forced to bring him with her everywhere she went. Lanie carried Tony on foot, in the dead of winter because her husband also refused to give her a ride in his car (PWC 33). Lanie's job functioned as a coping mechanism. It was a way for her to leave the oppressive confines of her home and place as much distance as possible between her and her husband. The ability to earn money freed Lanie from her initial financial dependence on her husband's income, and enabled her to gain a somewhat stable income. It also helped her obtain a degree of liberty and freedom. However bleak her situation appeared, Lanie fought back. She proudly shared how she

would carefully "time" her and her child's meals so that they would finish eating before her husband arrived, expecting her to cook him a meal. During those times, she would simply tell him, "We ate already. We're not hungry anymore" (PWC 33), leaving her husband to cook for himself, and at the same time, making sure that the food she purchased with her own money was only used for her and Tony's needs. While there is no physical abuse in Lanie's experience as a "mail-order" bride, what she endured and has to continue grappling with is nevertheless laced with a form of violence difficult to name. Her actions demonstrate a degree of power, creativity, and initiative that somehow mitigated the effects of abuse, and kept her and Tony relatively safer than before. In many ways, Lanie's story also shows a fascination with the idea of self-creation. As she distanced herself from her husband by becoming financially independent, Lanie presented a different picture of Filipino women not as gold-diggers migrating and marrying only for economic and material benefits, but ones who are in love with the idea of self-creation – one tied not to radical individuality but to an idea of selfhood that best equips them to bear the responsibilities given to them with love, pride, and creativity.

Each year, poverty and lack of employment opportunities compel approximately 19,000 Filipino women to leave the country either as migrant laborers or mail-order brides. Clearly, marriage migration is not the only option available for these women. A noted structural affinity exists between a paid domestic worker and an unpaid housewife. However, of these two major women migrant categories, the status of wife is much more highly valued in Philippine society, explaining why Lanie would choose to accept the Canadian man's proposal over continuing her contract as a domestic worker. By participating in global hypergamy (or what may be a current form of an "old-fashioned' tradition of "marrying up"), some Filipino women could effectively evade the Bootstraps Theory, which, according to Donna Langston, perpetuates the "false hope" among the working class and poor that they can succeed from a position of real difficulty by just pulling up their bootstraps in the face of real structural inequality (1). Filipino women who successfully "marry up" need not further dwell in moments of stalled mobility by entertaining this false hope. For women like Maria and Lanie, whose husbands misrepresented themselves and their income levels, global hypergamy and the social mobility it purportedly entails will obviously not be a reality; however, as I have argued earlier, many Filipino women are more interested in genuine loving relationships than the acquisition of either money or citizenship.

Filipino women's agency emerges in their efforts to redefine who they are in the context of two ideologies: the ideology of motherhood and the ideology of the wife which, together, enforce Filipino mothers' and wives' figurative place in the home as imposed by state law and supported by the Catholic Church. Other factors such as the Catholic Church's prohibitions against birth control, a *querida* system that allows men to informally maintain multiple wives outside of marriage, and a sexual double standard which holds men and women to different standards of fidelity in the nation's written penal code on separation, all deeply influence the women's decision to migrate abroad (Tung 302). It is under this context of limited mobility that some Filipino women leave a home country they deem too patriarchal to try their fortunes abroad as one of the eight million overseas Filipinos who are part of the global Filipino Diaspora.

Conclusion: Pockets of Resistance and Processes of Self-Creation

In my discussion of the Filipina mail-order bride, I do not mean to alienate anyone who is not Filipino, or a mail-order bride. Instead, my wish is to inspire readers (who may or may not have ties to the marriage market or mail-order bride industry) to reflect on how they are nevertheless implicated in a conversation about bondage and liberation. I use "bondage" in terms of being tied to the categories like race, class, and gender, and "liberation" in terms of being able to break from narrative conventions that tie us down to fixed notions of the aforementioned social constructs of race, class, and gender. M. Elaine Botha writes that she had discovered a very profound truth about human relationships: that both "[her] bondage and [her] liberation are intimately related to the bondage and liberation of others (249). I believe that this profound truth is as good a call to action as any. I urge my audience to thoughtfully consider what it would mean if their bondage and their liberation were actually tied to the bondage and liberation of others. Furthermore, what would it mean to *deliberately* and *willfully* tie their own bondage and liberation to the bondage and liberation of others. Tying and relating ourselves to others (to strangers) in this way might make thinking about the complexities and contradictions within the mail-order bride industry and the brave, devious, selfless, scheming methods some Filipino women utilize in order to secure a better life for themselves and their families a bit more easy to understand.

Despite structural and institutional limitations, Filipino women have made do, whether laboring in their own homes or in other people's homes. The varied and creative ways that Filipino women employ to redefine themselves outside the box of "victim" and "Oriental Girl" and

"The Filipina" and into something more "hybrid and complex" might currently be beyond the reach of the public's understanding, however this will not be the case for long if we are to commit to empathizing with the bondage of others and tying ourselves to the task of helping secure their liberation. Once again, this liberation is not spoken in the context of liberating women from abusive relationships, (which depends more on a victim discourse), but liberation in the sense of freedom from restrictive ideologies through the creation of new narratives, which allow more space for Filipina agency.

Considering the majority of Filipino migrants who don't achieve their "ultimate" fantasy upon migrating abroad for either labor or marriage, the collective courage and individual self-sacrifice that is poured into maintaining family and nation above all else is striking. Winona LaDuke's words come to mind:

> "In the lives of women in my family, it was never about just our own selves, it was about the collective dignity and everyone's health and rights. This is counter, in many ways, to Americanism. Americanism teaches individualism. My family, and indeed movements for social transformation, are not about anything as limited as the better job or the better advantage for the individual woman" (605).

LaDuke goes on to explain that each day, she, like so many other women in the world, "recommit[s] to continue this struggle for life;" that, as women, "we take responsibility for our destinies." This recommitment and this responsibility are precisely what I believe the Filipino marriage migrants (or mail-order brides) wake up making and taking every day. Mothers, daughters, sisters, and wives are deliberately putting themselves out in the fray in order to live one more day and earn one more currency that is for the collective, and not just about their "own selves." I have attempted to illuminate the agency Filipino women exercise even within oppressive situations and conscripted systems by critically analyzing the narrative power of self-making tied to the migratory experiences of women labeled as "mail-order brides."

Throughout this paper, I have argued that spaces always exist where women can and do resist oppressive situations and conscripted systems. I have stressed the fact that Filipino women make choices and negotiate their situations not to romanticize or ignore the structural and ideological factors that limit their opportunities and increase their vulnerabilities. The figures of individual women like Lilia, Maria, and

Lanie who show us the richness and innovativeness of their attempts to challenge injustices serves to strongly undermine stereotypes of Filipino women as submissive, uneducated, and hapless victims. Highlighting pockets of resistance and drawing out forms of women empowerment is a central aim of this paper as Filipino women (whether as nurses, domestic workers, prostitutes, or mail-order brides) are forced to emigrate as part of globalization. While traversing any kind of boundary involves risks, the women's move transnationally for work and/or marriage more often provides opportunities to exercise and demonstrate agency than victimhood. Using case studies and a literature review, and content analysis, I have provided a different image of Filipino marriage migrants as empowered women who are strategically, creatively, and, oftentimes, successfully, utilizing a counter-narrative marked by processes of self-construction and the production of a corollary female fantasy.

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Behind the Veils of Industry: Contesting the Victim Discourse Surrounding Filipino Mail-Order Brides

Merzamie Sison Cagaitan
English Language & Literature, Comparative History of Ideas,
Dr. Michelle Liu
msison@uw.edu

Cagaitan hopes to continue her studies on the cultural and corporeal geographies of transnationalism in literature, focusing on colonial and postcolonial mappings of race, class, and gender. Following her Fulbright teaching appointment in South Korea, Cagaitan will pursue a Ph.D. in English, and a position as an English professor at a university.

"Do Good Things with It, Do Bad Things with It": The Love of Money, the Loss of Memory, and the Lust for More in Black Art

Alexander Catchings

Abstract

This paper explores African American cinema, and the ways Black representations emerge in different commercial contexts to appeal to interracial audiences. Understanding independent "Black cinema" as films that intend to resist voyeuristic spectatorship, I distinguish the economic trends between expressly Black cinema versus commercial cinema that employs specific, trope-centered representations of Black characters. This paper lays out the enduring economic boons and ramifications from cinematic representations of social and political cultural memory, for better or for worse.

Televisual Setbacks

Seven o'clock on a Thursday night in a mild September, families around America huddled on their couches to turn on NBC. It was 1977, and it was family hour. Potato salad had been consumed, trace remnants of spaghetti Bolognese were rinsed from pots, and empty glasses of Dandelion and Burdock soda pop rested listlessly in gray grout kitchens with linoleum facades the nation over. Recycling? Ain't nobody got time for that—and it wasn't yet popularized around America—it was only five years federally recognized. But that was neither here nor there: *Laverne and Shirley* was on. Families could count on a half hour of hilarious Milwaukee Jewish antics, preceded by a half hour with the timeless Fonz on *Happy Days*. But on this September thirteenth, a change was coming to Family Hour. *Happy Days* was shifted to a new time slot in favor of an exciting new variety show featuring an oft-talked about but rarely televised man toying with sketches. He was edgy, he was dynamic, he was polarizing, and he was Black. When the last of *Laverne and Shirley's* credits scrolled off the edge of people's television screens, this is what greeted America:

> [Camera oriented from bare shoulders to the top of his head] Good evening, Ladies and Gentlemen, and welcome to the Richard Pryor show. My name is Richard Pryor and I am so happy to have my own show I don't know what to do, I could jump up and down and sing Yankee Doodle. I'm tellin' you, it's gonna be a lot of fun. You know there's a lot of things written about

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me. People wondering am I gonna have a show, if I'm not gonna have a show, well I'm havin' a show. People say, "Well how can you have a show? You've got to compromise, you've got to give up everything." Is that a joke or what? Well look at me. [Camera pans out to reveal Pryor's bare torso] I'm standing here naked. [Camera pans further to reveal Pryor's whole figure, with smooth, bare skin where his genitals should be] I've given up absolutely nothing. So enjoy the show!

<div align="right">Pryor Show</div>

Pryor's immodest monologue would prove prophetic for black creative control in television and cinema for the decades to come—truly, at what cost are programs and films created? While in this instance castration carries Pryor's compromise for creative control, I am suggesting that something much less phallic but entirely more fearful has been lost in black mainstream creative visuality: memory. To expand on this, perhaps we can turn to the show's frenetic instrumental theme song, The O'Jays' green anthem, "For the Love of Money." The song's first notes, "Some people got to have it/ some people really need it/ listen to me, y'all do things, do things, do bad things with it, you wanna do things, do things, do good things with it/ […] talk about cash money—dollar bills, y'all" (O'Jays). It was no accident that Pryor chose this song for his show. He knew that the type of humor he conjured straddled mainstream capital promise and subversive revisionist history. His show included cringe comedy sketches about Reconstruction murder trials and black archaeologists discovering the Book of Life featuring an all-black genesis. One sketch even pictures a press conference full of eager reporters probing a blasé first black president, who tries to drop the unemployment level for white Americans below five percent while trying to bring black rates from forty to twenty percent in order to "merge, of course, a United States" (*Pryor Show*). Pryor's delivery teeters on snarky, self-righteous, yet recalcitrant in the Presidential sketch, deftly and unbelievably embodying a radical rendering of progressivism some pine for in second-term President Barack Obama. Point being, somewhere in Pryor's wild and unflinching comedy onslaught was a sensibility of uncomfortable truths and alternative realities America could only come to bear in masqueraded, comedic carnival. Unfortunately, Pryor didn't seem to compromise enough. When Pryor's alternative ways of considering race in America became too risqué, his show was pulled. It only took four episodes. A different black man's show would come to grace the NBC Family Hour, but it would

take seven more years and meticulous selection. Come the year 1984, everyone's favorite nothing-to-see-here-but-your-average-affluent-African-American-nuclear-family would last for much more than four episodes on *The Cosby Show*.

On Cultural Memory

Television and cinema have changed the ways humans take in cultural memory. Ron Eyerman defines cultural memory nicely as a tool that "provides individuals and collectives with a cognitive map, helping orient who they are, why they are here and where they are going. Memory in other words is central to individual and collective identity" (Eyerman 161). The cognitive mapping that results from cultural memory is certainly a double-edged sword. In some ways, cultural memory can empower groups—especially politically disenfranchised populations—by making communicable memories and experiences that may not normally be accessible. A private, derogatory moment of homophobia can be addressed through a short film, and the cathartic (or troublesome) act of remembering hate-based-hurt becomes shareable through to other members of an affected group (Harris 22). Art is not the only example. The Civil Rights Movement of the 1960s bore its legislative gains in large part due to the proliferation of household televisions. Tales of discrimination in the South became etched in the collective memories of majority viewers the nation over through televised images of the violence and the victories in Birmingham and Montgomery (Luders 109). Visuality, without doubt, allowed for powerful action and empathy among historically divided populations.

However, the very impressionistic quality of cultural memory can orient history in unsavory ways. Repetitious images and motifs in film and cable have at times sublimated political problems into elusive solutions. Returning to the rise of *The Cosby Show*, a post-Civil Rights generation of African Americans was finding its footing in the late Seventies and Eighties. While incarceration rates, drug baiting, and the normalization of environmental racism through suburbanization plagued minority communities, *The Cosby Show* impressed upon a nation images of an upper middle-class African American family in Brooklyn, headed by Heathcliff Huxtable (Bill Cosby), an affable obstetrician who was raised by a father with the purest African American vocation: a jazz musician. The family matriarch, attorney Clair Huxtable (Phylicia Rashad) is elegant, bilingual, and firm in her volition (Hoppkins 961). These characters were undoubtedly positive role models for African American youth, but they also served as a sort of second-phase allusion for proponents of Ronald Reagan's erroneous "welfare" queen campaign

strategy in the 1970s. Surely, socially immobile minorities in America's poorest communities could "pull themselves up by their bootstraps" and be like the Huxtables (Hopkins 970). But the track to providing one's children access to good public schools, getting into law school or medical school, and attracting a staggeringly diverse clientele to one's private practice was left unclear. For many viewers, though, a perfectly politically correct, equal opportunity America as rendered in the laudatory *Cosby Show* was real. Not much more needed to be fixed, in their sense of cultural memory. This erroneous neoliberalism-base on the representation of a minority of a minority points toward the tense relationship between art and politics. Art need not be political, and politics are certainly not often artful. But tomes of cultural memory often seem most advantageous when matriculated through folklore, penned stories, footage, and even recreations. The recreation of political cultural memory is often at odds with creations aimed at fiscal capital. Even when narratives are not hugely fictitious, as with the *Cosby Show*, archival works of art such as Alex Haley's book-turned-mini-series, *Roots*, risk becoming dramatized in order to appeal to broad television audiences.

The Magical Negro Conjures

The exoticism of African American talent has long been a point of entertainment and wonder in America's conscious. Langston Hughes actually pointed to the almost magical qualities of black culture in BLACK MAGIC, a text coauthored with Milton Meltzer. In the book, Hughes recounts, "Hundreds of white minstrels performing in burnt cork borrowed not only the Southern Negro's songs but his dance steps, his jokes, and his simple way of speech as well -- which they distorted into what became known as 'Negro dialect.' White entertainers, North and South, literally made millions of dollars from Negro material. The Negroes themselves, barred from most theatres as spectators and segregated in others, could seldom see a minstrel show, and at that time they were not allowed to perform in them" (Hughes 36). Indeed, blackface minstrelsy would prove to be a genesis for black performance in entertainment, but film allowed black representation to take on an ethereal sort of conscience in America's cultural memory—literal magic.

The magical Negro is a figure that has not escaped us. Once upon a time the obsequious black figure was the best way to play toward success in Hollywood for African Americans. Hattie McDaniel was the first African American to win an Oscar (Best Supporting Actress) in 1939 for her performance as a mammy in *Gone With the* Wind (Mapp 9). James Baskett won a special Oscar in 1946 for his representation of the

beloved Uncle Remus in *Song of the South*. The award was given "for his able and heartwarming characterization of Uncle Remus, friend and storyteller to the children of the world" (Mapp 12). *Song of the South* positions Uncle Remus as a wizened old slave on a Southern plantation telling stories to a little white boy while colorful birds perch on his shoulder. The most famous song from this film, "Zip-a-Dee-Doo-Dah," which also won an Oscar for best composer and lyricist, talks about "everything being satisfactual" in the sweet tea Southern Life. Unsurprisingly, as soon as mass cinematic and eventually televisual means for cultural consumption were developed, African American representation was about being an asset—whether it be through a folksy didacticism or a deferential helpful hand—in a white world. Some of the most acclaimed performances by African Americans in the last thirty years of cinema have come in differently coded obsequious roles—the magical negro.

In the 1998 film *What Dreams May Come*, Robin Williams plays Chris, a psychiatrist who has a wonderful artsy wife and two beautiful children. The family does great until their nanny gets into a car accident while driving the children to school. The children do not survive. Williams' wife, Annie (Annabellla Sciorra) becomes wretchedly depressed. On their anniversary after the childrens' death, good-guy Chris goes home to get Annie something to cheer her up before their dinner when a car accident occurs in front of him. He is safe, but goes to help a victim when he is struck and killed by a car. The rest of the movie explores Chris' time in a heaven based on his imagination and dreams, then it tracks his trek to hell, where Anna rests after she has committed suicide following his death. Through this melodramatic movie, Chris has a guide in heaven—Albert, played by Cuba Gooding Jr. Albert is Chris' old mentor in medical school, and he wields all the good power an angel should have in orienting somebody new to heaven. Gooding's character is perfectly emblematic of the helpful, jovial black assistant in Williams's white heaven. We come to find that Gooding's character is actually a disguised Ian—Chris' lost son. The surreptitious disguise is particularly fitting for a 1998 film—only eight years off of Whoopi Goldberg's Oscar-winning performance as the faux-then-not-faux oracle Oda Mae Brown in *Ghost*. There are many more instances of well-regarded magical negroes, as in Michael Clarke Duncan's performance of John Coffey in *The Green Mile* (1999), Don Cheadle's representation of Cash in *The Family Man* (2000,) Will Smith's highly problematic performance in the box office flop (yet home movie hit) *The Legend of Bagger Vance* (2000), and even Lee Weaver as the Blind Seer in the 2000 folk adaptation of the classical *Odyssey* in *O Brother, Where Art*

Thou? This sort of alterity appears again and again, titillating audiences over decades.

The absurdity of this magical trend has been recently criticized and parodized, perhaps best by comedians Keegan Key and Jordan Peele in the 2013 comedy sketch show *Key and Peele*. In the sketch, a white businessman hangs a phone up in his work office after lamenting about his recent divorce and extortion. Peele enters the office dressed as a janitor, then asks if he can take the businessman's garbage before dropping the apropos euphemism, "I find the more garbage in the can, the better it feels to dump it all out. I suppose that's why we get it so full in the first place—so we can start over" before snapping his fingers and creating red fireworks. Key then comes in, also dressed in gray overalls. Key announces he would like to fix the copier, and drops a euphemism of his own, saying "sometimes thangs ain't really broken—it's the way we treat 'em that needs to be fixed" before hovering his hand over the busted copier and emitting a green flash, fixing the copier. Key proceeds to whistle so that an animated blue bird, reminiscent of Uncle Remus's classic bird, comes to his shoulder. Clearly miffed, Peele says that Key must find his own troubled white man, and the two magical Negroes engage in a full on magic battle. Key and Peele end up blowing themselves out of the building, when a black cleaning lady comes in to the bewildered white businessman. She says, "Good lord, are you alright?" The stunned man nods his head, when the maid continues, "Well, I guess sometimes things have to come apart before we can put them back together again." The business exclaims in amazement, "You must be a magical negro, too!" The maid furls her brow and says, "Who you callin' Negro" (*Key & Peel*)? The skit cleverly traces the narrative of the magical Negro and disavows it with the helpful cleaning lady, who does offer advice but does not embrace the antiquated term "negro," by extension rejecting its dense history attached to myriad servile adjectives, of course hearkening primarily to "magical."

The magical Negro is the soft and misguided representation of African American culture dominant America seeks to laud; a utilitarian people who embrace vulnerability and intimacy, much like the Mammy figure, but played by some particularly compelling actors and actresses. Troubling as it is, this is where cultural memory, money, and politics intersect. When Hollywood (and by extension, its consumers) provides a marketable space for African Americans to find monetary success then a select group of African Americans are able to serve as examples of black emblems of success who subscribe to some politics of respectability. At once, mainstream filmgoers are able to maintain antiquated comfort in visualizing African Americans as utilitarian, if not as the embodiment of

the characters they play, then simply as the players who take the screen, or perhaps as aptly, sports fields and arenas. If a film with all of the above is in play (think *The Blind Side* or the 2000 *Remember the Titans*) then some director and lead have a blockbuster with a shot at a Golden Globe.

The Buddies and Biographies

Tracking the profits of films over time is a messy and arduous task that has been taken up by mostly journalistic and popular culture entities. This study has relied on the Internet Movie Database (IMDb) and its affiliates to track fiscal trends in the Box Office over time. The IMDb has over fifty different methods for categorizing films. Interestingly, among these varying categories, films predicated in plot or production by African Americans fall into two categories: biopics and buddy comedies. Buddy comedies pair an interracial duo (in their earlier incantations, almost always male pairs) who discover one another in unlikely situations and work together to solve a common problem. Donald Bogle finds that black and white film characters can develop mutually beneficial relationships of give and take—especially in terms of character. "'Even in 'Casablanca' you can see it with Dooley Wilson and Humphrey Bogart. Who knows all about Rick's past with Ilsa Lund? It's Sam, the piano player" (Bogle 133).

Bogle also finds parallels between the black-white buddy movie and some of America's more enduring literature—beginning with Mark Twain - in which the main characters are loners, mavericks operating beyond the pale of society. "'It is very much a part of a tradition. They're two figures standing outside of society. They're outcasts or misfits against the system, and they link up with one another. In that sense, it's like Huck and Jim on that raft—two men chained together, outside of the established order" (Ross). Further, Bogle laments that these sorts of relationships and onscreen alliances are, like the Huxtables, misconceived as consistent alliances formed in real life. He notes in a 1993 interview, perhaps to an overly-conservative but still apt degree, "It really only works in terms of movies. Real relationships with black males and white males frequently do not work. When they do work, they have to overcome great differences, misconceptions about one another's culture. Generally, this relationship is rare. Films still deal with race in America in an almost comic way, so we don't have to think seriously about the dynamics of the situation. In the Reagan 80's, a politically conservative time, racial issues aren't going to be examined. They're going to be glossed over." (Ross) Bogle's remarks become particularly salient given that the Reagan 80's into the Clinton 90's bear the most

affluent time for Black actors in films—almost entirely via buddy films, the highest grossing films co-starring Black actors. The numbers are surprising (Table 1).

Table 1. The highest grossing buddy films in order of lifetime gross (source: IMDB).

Rank	Title	Studio	Lifetime Gross	Theaters	Opening Net
1	Men in Black	Sony	$250,690,539	3,180	$51,068,455
2	Rush Hour 2	NL	$226,164,286	3,118	$67,408,222
3	Men in Black 2	Sony	$190,418,803	3,641	$52,148,751
4	Men in Black 3	Sony	$179,020,854	4,248	$54,592,779
5	The Heat	Fox	$155,766,608	3,184	$39,115,043
6	Lethal Weapon 2	WB	$147,253,986	1,830	$20,388,800
7	Lethal Weapon 3	WB	$144,731,527	2,568	$33,243,086
8	Rush Hour	NL	$141,186,864	2,724	$33,001,803
9	Rush Hour 3	NL	$140,125,968	3,778	$49,100,158
10	Bad Boys II	Sony	$138,608,444	3,202	$46,522,560

All of these films with the exception of *The Heat* and *Bad Boys II* feature interracial duos. Of note about *The Heat* is that it features two women in the lead, whereas the other films rounding out the top ten list are all men. *Men in Black* and *Lethal Weapon* feature the tandems of Will Smith and Tommy Lee Jones and Danny Glover and Mel Gibson respectively. Rush Hour stars Chris Tucker and Jackie Chan, and *Bad Boys* features Martin Lawrence and Will Smith. While every one of these films maintains a particular sort of levity, the message each sends is strangely saccharine—something Bosley Crowther of The New York Times calls "a strong, stark symbolization of an abstract truism, a remarkably apt and dramatic visualization of a social idea—the idea of men of different races brought together to face misfortune in a bond of brotherhood. Each is the victim of cruel oppressions, each has his hopes and dreams" (Ross). True enough, these films show camaraderie, but only through extreme, doomsday auspices—terrorists threatening major metropolitan cities in *Rush Hour* and *Lethal Weapon*, and aliens planning to dominate the world in *Men in Black*. Hopeful messages, but not altogether accessible beyond the realm of fiction for these films' every(wo)man viewers. In spite of their Box Office successes generically, these films do not come close to touching the top grossing films of all time. The only films that feature Black actors in the top fifty most profitable films are also Buddy Films. *Forrest Gump* (1994) is the twenty ninth highest grossing film at $329,694,499. Only a portion of

this film showcases a buddy dynamic between Forrest and his Vietnam war friend, Bubba. Bubba characterizes a buffoonish, down-home Alabama African American who manages to be as slow-witted as Gump himself.

The range of films presented here goes to show a complex and unfinished history between racial niches in America and consumer capital. The domestic sales figures of African American films and the Oscar success of Black actors trace a line of undeniable guises synthesized by Bogle. "The brutes, the bucks, and the tragic mulattoes […] were all dressed in servants' uniforms. In the 1940s, they sported entertainers' costumes. In the late 1940s and 1950s, they donned the gear of troubled problem people. In the 1960s, they appeared as angry militants. Because the guises were always changing, audiences were sometimes tricked into believing the depictions of the American Negro were altered too. But at the heart beneath the various guises, there looked a familiar type" (Bogle 24). A familiar type indeed—the African American entertainer is in a precarious place, with a clear avenue for profitability by adding flesh to Bogle's specters of black performativity. Artistic production threaded together with honest, biting, and less hopeful or docile undertones fall to the economic wayside. Perhaps a director can find the success of Spike Lee, but in his prolific oeuvre are only a handful of films with major box office success. His most biting, emotional films injected with documentary cultural memory have been straight to television or video—*4 Little Girls, A Huey P. Newton Story, When the Levees Broke: A Requiem in Four Acts*.

In spite of the tenuous path for Box Office success, many independent film makers of varying races are situating compelling representations of cultural memory—fictionalized and real—in theaters and finding critical acclaim. In a moment where Americans seek forums that aggregate film critics, this is a major boon to filmmakers like Dee Rees, whose intersectional film, *Pariah* (2011) has galvanized productive public dialogue about Black queer culture and family life. Director Benh Zeitlin has found major success adapting science fiction to Southern representation in his *Beasts of the Southern Wild* (2012). He casts a bevy of new faces on the Big Screen and in the production studio, impressively maintaining the aura of the South in a multiracial, expeditious film that reflects on sentiments that might not have made it into the purview of a camera lenses in 2005, when the levees broke in New Orleans. Ultimately, film has reflected America more than it has pushed the country, and this is not entirely negative. Given directors like Rees and Zeitlin and the markets on which they encroach, America's reflection looks much better than the one that looked back at Paul

Robeson, Lena Horne, and Sidney Poitier. These lions were forced to middle their politics on screen in order to carry their clout to larger audiences off of it. It seems that, with the proliferation of amateur film criticism on web domains, more viewers are becoming critical of their cultural memory, and better-situating the postmodern reflexivity of film and politics with the amount of stars they attribute films—something that helps affect who buys a ticket, or who chooses to select "Watch Now" on Netflix.

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Alex Catchings
Department of English, Dr. Sonnet Retman
acatchings@berkeley.edu

Alex is currently a first-year PhD student in the English Department at the University of California Berkeley. He researches African American literature and culture with interests including African American humor, cinema, and music.

An Examination of Current Digital Inclusion Efforts in Migrant Youth of Yakima Valley

Bryan Dosono

Abstract

Digital literacy is the ability of individuals and groups to access and use information and communication technologies (ICT). Digital inclusion seeks to bring the benefits of ICT to vulnerable populations such as low-income families, residents of rural communities, seniors, disabled citizens, at-risk youth, immigrants, refugees, and people of color. Despite its thriving agricultural industry, the Yakima Valley in South Central Washington is designated as an economically distressed area with low wages, significant unemployment, and high poverty levels. The area's agricultural emphasis attracts a large population of migrant workers who are generally perceived to be information poor, meaning they face major challenges with finding and using greatly needed everyday information. Little research in ICT access for migrant populations exists because differences in language, culture, and other factors make migrant workers and their youth a difficult population to study. This research involves reviewing literature on the information ecosystem of the Yakima Valley, interviewing relevant school district administrators of Educational School District 105 in South Central Washington, and evaluating current educational technology access strategies within the region. I interviewed five administrators from ESD 105 in a semi-structured fashion for their insight into the current ICT landscape of their schools. I recorded, transcribed, and coded all conversations to transform qualitative data into a standardized format for interpreting recurrent concepts. By way of grounded theory, my work paints a clearer picture of current digital inclusion efforts towards migrant youth and provides transferable recommendations as to how they can better participate in today's digital economy.

Literature Review

Disparities in ICT

The emergence of information and communication technologies (ICT) has transformed today's economy through the diffusion of new tools; personal computers and the internet improves how modern society interacts, learns, and earns a living. However, there are multiple disparities associated with ICT deployment and access. According to Chakraborty & Bosman (2005), factors such as race, education and income are widely regarded as the leading causes of those disparities,

which are frequently called the digital divide. Groups with higher incomes and better education, particularly Caucasians and Asian Americans, are adopting newer ICTs faster and are connecting more often to the information economy. Fairlee (2004) reports that barriers such as language have been found to explain low rates of computer and Internet access among Americans of Latin or Hispanic descent. Community programs that seek to overcome the digital divide by promoting digital inclusion and fostering the ability of individuals and groups to access and use ICTs, address these barriers by leveling the playing field of technological opportunity for underserved populations (FCC, 2012). Vulnerable populations that experience barriers to ICT include low-income families, residents of rural communities, seniors, disabled citizens, at-risk youth, immigrants, refugees, and people of color, such as those found in the Yakima Valley.

Socioeconomic History of the Yakima Valley

The Yakima Valley was created by the flow of a river through the million acres of land in what is now Central Washington State. By the closing of the nineteenth century, large-scale irrigation projects helped local farmers realize the land's potential. The Yakima Valley became the "fruit bowl" of Washington, producing apples, peaches, pears, cherries, and grapes, as well as hops, sugar beets, and asparagus (Gamboa, 1981). Despite its thriving agricultural industry, the Yakima Valley is designated as an economically distressed area with low wages, significant unemployment, and high poverty levels. The area's agricultural emphasis attracts a large population of immigrant Hispanic farm workers; in the Census 2010 questionnaire, 46% of survey respondents in Yakima County of Washington State reported themselves as persons of Hispanic or Latino origin (US Bureau of the Census, 2012). This number is anticipated to be higher if undocumented workers are taken into account. Origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. Unlike areas of the southwestern United States, Mexican settlement in the Yakima Valley is a recent phenomenon. Per Coronado (2005), large-scale Mexican immigration to the valley began during World War II, when the high demand for agricultural labor led to the enactment of the Bracero Program from 1942 to 1964, which brought more than 35,000 Mexican laborers to Washington. Gamboa (2000) asserts that since the Bracero Program ended in 1964, immigrants, predominantly from Mexico, have continued to come to the Yakima Valley to find employment or to unite with family members and friends who settled in the area.

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Migrant Youth as Infomediaries

       Fisher's (2004) work in studying the information behavior of migrant Hispanic farm workers and their families in the Pacific Northwest generally perceived migrant workers as information poor, meaning they face major challenges with finding and using greatly needed everyday information. Migrant workers are defined by the United Nations (1990) as people who are engaged or have been engaged in remunerated activities in a State of which they are not national, have substantial information and practical needs for help with adjusting to life in a new country. Personal networks are a highly favored information source for migrant workers. Secondary sources include radio, television, and print media, although many factors determine the use of ICT among immigrant populations. Migrant workers are more likely to trust face-to-face communication from their social networks in personal environments like church, school, and the workplace.

       Chu (1999) examines how children of these migrant workers play a significant role in facilitating the literacy interactions of their immigrant parents, relatives, and friends. These children serve as infomediaries, or information intermediaries, and are called upon to perform adult responsibilities for their parents ranging from conversational interpretation, filling out forms, writing letters, and translating information. Children who serve as infomediaries are an asset to their families, but great expectations are imposed on them because of their need to balance two different cultural environments: that of their ethnic community and that of U.S. society. Dependence on English-speaking children is a damaging pattern among immigrant families; the self-defeating cycle of children translators continues the isolated life of immigrants. Such differences in language, culture, and other factors make migrant youth a challenging population to study. The undocumented status of some migrant families adds yet another layer of difficulty concerning the ability to share information openly.

Educational School District 105

       The Educational School District (ESD) 105 in the Yakima Valley developed a migrant education program to assist local school districts that work with a large number of migrant youth (Harding & Sykes, 1994). The ESD 105 Migrant Education Regional Office (MERO) serves approximately 16,400 migrant students who attend the 25 public school districts and 23 state-approved private and tribal schools in Washington State. MERO works with school districts and teachers to implement federal and state programs that support migrant student learning and parent involvement. With support from federal Title 1

funds, MERO serves in liaison activities between the U.S. Department of Education's Migrant Education Program, the Office of State Superintendent of Public Instruction, Migrant and Bilingual Education, and the schools, communities and parents that work directly with students.

A Closer Look: Wapato School District

Wapato School District (WSD) is a public school district located in Wapato, Washington. In the 2011-2012 school year, the district had an enrollment of approximately 3,400 students. The student body is culturally diverse: 72% of the students are Hispanic and 19.4% are American Indian. Nearly one in five students are from the Yakama Nation. Roughly 29% of the students at WSD are reportedly identified as migrant and 100% of the students qualified for free or reduced meals (Table 1). WSD is one of 25 other school districts that fall within the jurisdiction of ESD 105.

Table 1. *Student demographics of Wapato School District*

2010 Enrollment Statistics		
Enrollment		
October 2010 Student Count		3,376
May 2011 Student Count		3,291
Gender (October 2010)		
Male	1,709	50.60%
Female	1,667	49.40%
Race/Ethnicity (October 2010)		
American Indian/Alaskan Native	665	19.70%
Asian	52	1.50%
Asian/Pacific Islander	52	1.50%
Black	4	0.10%
Hispanic	2,428	71.90%
White	143	4.20%
Two or More Races	83	2.50%
Special Programs		
Free or Reduced-Price Meals (May 2011)	3,291	100.00%
Special Education (May 2011)	417	12.70%
Transitional Bilingual (May 2011)	824	25.00%
Migrant (May 2011)	954	29.00%
Section 504 (May 2011)	13	0.40%
Foster Care (May 2011)	0	0.00%

Source: Office of Superintendent of Public Instruction Washington State Report Card

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Methodology

This research involved reviewing literature on information behavior for migrant youth in the Yakima Valley, interviewing relevant school district administrators of ESD 105, assessing metrics of success, and evaluating current technology access strategies within the region. The literature review suggested that the information behavior of various groups of immigrant youth varied depending on their enrollment status. Therefore, the focus of this research is on migrant youth that are currently enrolled in ESD 105 schools.

I have interviewed five administrators from ESD 105 for their insight into the high level analysis of decision making in their respective IT departments. Relevant stakeholders that partook in my interviews included the Director of the Migrant Education Regional Office, the Director of the Educational Technology Support Center, and the Director of the Yakima Valley Library. I also interviewed the Director of Technology and Assessment from Wapato School District to gain context of a particular school district of ESD 105. Although K-12 youth were the targeted end users of the technology provided by the school district, I chose to interview school administrators because they can provide context to budgetary policies and technical resource constraints where students cannot.

I conducted all interviews in a semi-structured fashion to allow stakeholders the freedom to express their views in their own terms (Courage and Baxter, 2004). I asked a set of predetermined questions relating to strategies that examine what technologies are available for migrant youth, how often key performance indicators of success are evaluated, and how current technology access strategies are assessed (Figure 1). I recorded, transcribed, and coded responses to transform raw data into a standardized format for interpreting recurrent concepts (Pickard, 2007). Additional data that guided the analysis of the research came from the Washington Migrant Education Program (MEP) Service Delivery Plan (SDP). The SDP documented the substantiated needs of migrant students in the state, set performance targets for meeting these needs, and provided the general strategy for local response to these needs. This research was conducted by way of the grounded theory method to empirically conceptualize the current landscape of ICT access for migrant youth in the Yakima Valley.

Findings and Discussion
Technology Usage and Infrastructure

All educational technology plans within the Yakima Valley center around developing the necessary skills of its students to be

productive members of society. The IT infrastructure of ESD 105 schools is funded by E-Rate under the direction of the Federal Communications Commission (FCC). E-Rate provides discounts to assist schools and libraries in the United States to obtain affordable telecommunications and internet access. These discounts are available on four key areas of service: telecommunications services, internet access, internal connections, and basic maintenance of internal connections.

Interview Questions

- How does ESD 105 see technology fit in its mission/vision statement? Is ESD 105 engaged in any digital inclusion programs or initiatives?
- How does ESD 105 leverage existing investments in its IT infrastructure? What is needed in technology capacity/skill building to keep moving diverse participation forward that supports ESD 105's work?
- Where are the strengths, weaknesses, opportunities, and threats in your information technology management department? Are there any gaps? Who is left out and at risk of being left behind in accessing information resources?
- What is the source of funding for your technology services? How are libraries and computer labs furnished/maintained? Do you feel that those facilities are over/under utilized? What digital technologies are currently available for students, faculty, and staff?
- What are ESD 105's measures of success (benchmarks) for digital inclusion? Who oversees all IT operations? How are technology strategies evaluated?
- Do you have any experience working in school districts that are predominantly white? How does that compare with your experiences interacting with the diverse composition of students, staff, and faculty at ESD 105?
- What is your experience working in a school district that serves a significant migrant population? Do any interesting stories come to mind from your involvement with this community?

Figure 1. *Interview questions*

Wapato School District (WSD) in particular receives approximately $3 million dollars of E-Rate money that funds 90% of eligible IT services. One of the limitations of the E-Rate Program is that internet access cannot be provided outside of the school district. To ensure compliance with E-Rate requirements, WSD administration completes monthly technology audits to assess the usage of its end-user equipment like computers and telephones. The district utilizes its collected bandwidth data to shape network usage and provides access to network applications that integrate technology into the classroom. Additionally, WSD's administrators complete over 100 walks a month in classrooms and computer labs to ensure high quality of instructional technology in each campus facility. A high quality Wi-Fi network is present within the district, and many instructors allow students to bring their own devices (i.e. laptops, iPads) and use them during class.

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ESD 105 is affiliated with several educational initiatives that offer high-quality internet resources across many disciplines. Thinkfinity is the Verizon Foundation's free online professional learning community that provides access to over 60,000 educators and experts in curriculum enhancement, along with thousands of award-winning digital resources for K-12. In this service, educators connect and collaborate through themed groups, blogs and discussions to share resources and best practices that support 21st century teaching and learning. Thinkfinity and the Educational Technology Support Center at ESD 105 have agreed to work together to deliver Thinkfinity training to educators in Washington. The Washington Learning Source (WLS) is another statewide educational technology resource developed by ESDs of Washington State. Its mission is to provide a place for districts to choose products and services that meet their needs and create economic efficiencies through ESD collaboration and a regionally supported delivery model. For over 30 years, Washington ESDs have been providing a vast array of services to school districts for the purpose of assuring equal educational opportunities for quality education and lifelong learning. WLS is an expansion of the ETSC purchasing program and serves as a primary source to access the variety of resources available in enhancing education and teaching in the state of Washington.

Research continues to affirm the positive impact that effective instruction coupled with a technology-rich learning environment can have on student performance (West, 2011). Computers help students improve their performance on basic skills tests and are powerful tools for problem solving, conceptual development and critical thinking. Technology integration has demonstrated that students learn quickly and with greater retention when learning with the aid of computers. Adequate teacher training is an integral element of successful learning programs based or assisted by technology.

Technology Training from Committed Staff

The Educational Technology Support Center (ETSC) of ESD 105 works with the region's schools to provide leadership and assistance in using technology to boost student success. ETSC helps teachers, administrators, and office staff use technology for program planning, classroom integration, program assessment, research, and grant writing. In addition to offering consultation on Internet safety, legal, and ethnical technology use in K-12 education, administrators meet with ETSC to develop technology plans for district initiatives.

Providing professional development workshops for instructors is a priority for ETSC. At no cost, any teacher or staff member within ESD

105 can engage in 10 days of training in technology integration and lesson design. Trainings from ETSC range from various domains of technical skills, including learning how to design graphics with Adobe Creative Suite programs, conducting a videoconference call, and developing a website portal for classroom resources. All instructors are required to attend professional development seminars on a yearly basis to maintain their proficiency with current and upcoming technology tools.

Various technology-focused programs allow for the regular training of teachers and staff. For instance, the Peer Coaching Program aims to increase the capacity within teachers of Central Washington to use educational technology in the classroom effectively. The ETSC at ESD 105 has been training and supporting peer coaches since 2003. Already 244 instructors have been trained through this program. Peer coaching allows two or more teachers to work together, one coaching the other, to improve individual instructional practice. As colleagues in the same school, they share classroom experiences, observe and team teach in each other's classrooms. Peer coaching works best for educators who have some experience with tech integration and learner-centered instructional practice and who are ready to coach a colleague with 21st century technology. PILOT is another program affiliated with the ETSC. The site is an online self-assessment tool for educators to determine their levels of technology proficiency and classroom application. Based upon the results of the assessment, PILOT software allows educators to view and select learning opportunities throughout the state to advance their proficiency level. In addition, charts can be displayed showing the overall level for teachers at a school site as well as within a district, region, or for the entire state. PILOT is also a learning community for educators to meet and participate in statewide projects and is a tool for districts to use with their staff to plan their professional development efforts.

ESD 105 evaluates how educators integrate technology in their everyday teaching through a tiered model of technology use in classrooms. At the first tier, the teacher uses technology to get a specific task done. Specifically, the instructor supports the learning experience by finding instructional resources on the internet, communicating quickly with email, and posting grades and other relevant information online for parents. At the second tier, the teacher involves facilitating a large group of learning activities and encourages student use of technology. In this way, the instructor enhances the learning experience by delivering visual presentations, conducting one-computer classroom lessons, and collecting student assignments online. At the third tier, the teacher involves student use of technology in individualized learning activities.

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In doing so, the instructor personalizes the learning experience by authoring work online, managing online discussions, and inventing products through programming. ETSC Directors in Washington State developed this model, which has been approved by the Office of Superintendent of Public Instruction and already is included in ESD 105's Technology Planning support documents (Fisher, 2013).

Student Technology Usage Outside of Schools

Other than school district computer labs, students in the Yakima Valley also have access to various branches of the Yakima Valley Libraries (YVL). Supported through local property taxes, the rural county library district comprises of a central library and 16 community libraries located throughout Yakima County. All towns or cities are either annexed to or contracted with Yakima Valley Libraries for library services. Annexed cities include Harrah, Moxee, Selah, Yakima (Yakima Central, Southeast, and West Valley), Sunnyside, Toppenish, Wapato, and Zillah. Contracting cities include Mabton, Granger, Tieton and Naches. Rural county locations include Buena, Terrace Heights, and White Swan. YVL currently serves over 240,000 people in Yakima County and aims to support lifelong learning by providing free, open, and full access to information. Migrant youth who visit YVL commonly seek the following information services: education and career preparation, health and wellness, English as a second language, and legal consultation. The central branch of YVL is equipped with a lab of over 150 computers and grants wireless internet access to all patrons. The majority of YVL staff is bilingual, which allows its librarians to better serve migrant youth who just moved into the Yakima Valley with little or no English skills.

One of the most noticeable technology gaps for migrant students is the lack of internet access outside of school facilities. Although branches of YVL throughout the region offer access to ICTs, various branches are located far from school premises. Students who reside in low-income public housing lack transportation to these libraries, which have been a commonly expressed concern among parents and administrators. Additionally, although the central branch of Yakima Valley Libraries offers over 150 computers, other sites like the branch in Wapato are limited to approximately 5-10 computers at any given time for general public use. The scarcity of public computers and limited connectivity outside school zones negatively impacts how these students connect to online resources to complete class assignments and research projects. Youth from low-income families are especially at risk because they are less likely able to afford personal computers, essential software,

or an internet service subscription. High school students who are seeking jobs or applying for college are also restricted to school hours if they do not have the necessary technology available in their homes. For migrant students, accessing extra computer time for educational use before or after school can be challenging if their schedules need to accommodate for employment or family caregiving responsibilities.

Not having any data on what is available in student homes is the underlying problem in achieving digital inclusion for ESD 105 administrators. This is especially the case for Wapato School District. Information about in-home technology usage is not surveyed from students. Migrant educators and administrators need to better investigate what kinds of technology are available that can give migrant students easy, affordable access to learning because they are not fully aware of the computer fluency levels of their students. Without an aggregated data of technology inventories collected, a holistic picture of the information ecosystem within K-12 education cannot be painted. If this unknown data was available, teachers can better tailor their curriculum to compliment student strengths or adjust lessons accordingly to various technology competency levels in the classroom.

Addressing the Achievement Gap

Migrant youth face numerous challenges that prevent them from succeeding in education (Figure 2). Most common among these challenges is the susceptibility of migrant youth missing school when their families move from one work site to another. Furthermore, migrant youth are more pressured to work longer hours on the job instead of studying for school. Frequent moves and recurrent absences mean that migrant students often fall behind academically. However, technology is a valuable tool that can enhance learning and enrich the education opportunities for migrant students. Distance learning programs that move with the migrant students and allow them the capacity to access their coursework from anywhere they live could provide the greatest potential for academic achievement among migrant populations.

Figure 2. *Seven areas of concern for the migrant student*

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The Migrant Education Regional Office provides technical assistance to federal project directors and school administrators for the implementation of their Migrant Service Delivery Plan. In Washington State, migrant students are held to the same challenging academic performance targets and indicators that all students are expected to meet under the federal Adequate Yearly Progress (AYP) guidelines. State-level performance data for migrant students is used for policy development and targets program interventions that assure satisfactory academic performance. MERO administrators believe that engaging parents in the education of their children is key to achieving student academic success. Their parent services assist school communities in the implementation of programs designed to actively involve parents as partners in the education of their children in the home, school and community. MERO also provides community trainings for migrant parents who want to get more involved with their children's education. These trainings discuss misperceptions teachers and migrant parents have of one another, barriers and solutions to parent involvement, characteristics of successful parent involvement programs, successful educational recruitment strategies, and how to establish parent advisory committees within their respective school districts. Overall, MERO's proactive efforts in engaging and empowering migrant parents enhance the learning success of their students.

Aside from MERO, various nonprofit organizations in the area contribute to transforming the lives of young people from rural school districts in education. For instance, the Northwest Learning and Achievement Group (NLA) located in Wapato has after school programs that boost academic achievement and increase the numbers of students in these low-income areas who are applying for postsecondary education. With the help of NLA, thousands of Hispanic and Native American learners throughout the region are challenging conventional wisdom by demonstrating that they can exceed expectations and overcome the traditional barriers to success. NLA receives funding from the Federal Department of Education through the Department of Community Technology Opportunities Program, the Washington State Arts Commission as a partner to Wapato School District, and the Gates Foundation. Furnished with a computer lab and staffed with educational advisors, the NLA provides educational resources to schools, colleges, and community organizations so that students from low-income families will be able to reap the benefits of higher education.

Recommendations

Drawing upon the data collected from each interview, I examined that migrant students are a significantly large population group that is at risk of being left behind in accessing ICT resources. I propose several strategies that can be investigated and evaluated further to improve the educational opportunities of migrant students.

Recommendation 1: Increase access to distance learning alternatives

- Problem: Migrant youth miss school when their families move from one work site to another, causing them to fall behind in the achievement gap compared to their non-migrant peers.
- Strategy: Increase student access to online programs to mitigate educational disruptions that impact grade promotion. Offer flexible courses of study that help migrant students accelerate course completion or finish incomplete courses. Refer migrant students to online courses and other distance learning opportunities for credit accrual. Provide additional instructional time in the summer or evening.
- Assessment: Measure the number of participating students and courses completed. Evaluate if supplemental technology instruction is cost effective. Utilize technology and other tools to promote skill building in the target content areas.
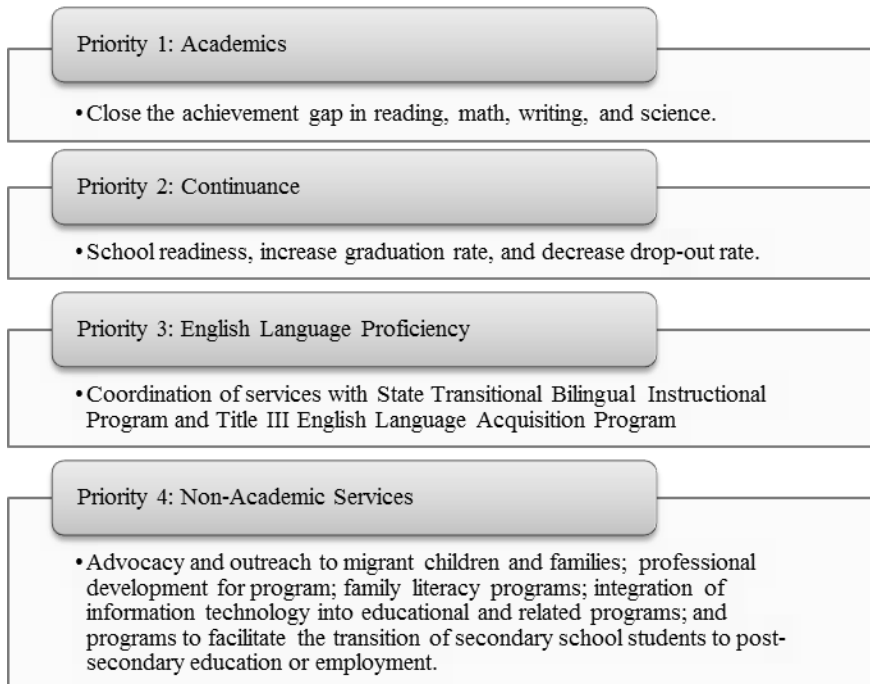
Recommendation 2: Prioritize funding for ancillary migrant resources

- Problem: Non-academic services are the lowest of the four listed priorities in the Washington State Migrant Education Program (Figure 3), which include advocacy and outreach activities, professional development, family literacy, the integration of information technology into educational and related programs, and the transition of secondary school students to postsecondary education or employment.
- Strategy: Allocate more funding from various grant sources (SIG—School Improvement Grant; Title Funds; E-Rate; etc.) to non-academic services. Lobby or sponsor legislation that advocates non-academic services as a higher priority item in "Title I, Part C, Migrant Education Statutory Requirements: Section 1306(a) of the Elementary and Secondary Education Act."
- Assessment: Measure the change (increase or decrease) of graduation/retention rates of migrant students.

Recommendation 3: Run a pilot technology indicators survey
- Problem: School district administrators and faculty do not have any concrete data on the IT resources available in student homes.
- Strategy: Conduct an annual technology indicators survey at the beginning of each academic year as a requirement for students to enroll in classes. Collect data on residential use of cable television, broadband adoption and uses (including health, work, education, finance and civic engagement), and an inventory on personal electronic devices. The survey should be available in both Spanish and English languages. Inform low-income families about low-cost options available for high speed Internet, provide resources on purchasing computers, and teach students how to maintain personal computers safely and securely.
- Assessment: The data will be compiled and analyzed the by school district's Director of Technology to identify significant gaps and barriers in technology access and use. This information can provide additional insight into the holistic IT landscape of student homes and inform future budgetary decisions that involve IT infrastructure investment.

Priority 1: Academics
- Close the achievement gap in reading, math, writing, and science.

Priority 2: Continuance
- School readiness, increase graduation rate, and decrease drop-out rate.

Priority 3: English Language Proficiency
- Coordination of services with State Transitional Bilingual Instructional Program and Title III English Language Acquisition Program

Priority 4: Non-Academic Services
- Advocacy and outreach to migrant children and families; professional development for program; family literacy programs; integration of information technology into educational and related programs; and programs to facilitate the transition of secondary school students to post-secondary education or employment.

Figure 3. *Washington State Migrant Education Program priorities*

Conclusion

Access to ICTs improves quality of life and empowers smaller communities driven by common identities, ideologies, and interests. ICTs now have an impact on how migrants perceive, negotiate, and interact in their environments. Without access to global information and services, migrant communities will continue to experience economic and social attrition when connectivity with a wider world remains absent.

This research involved reviewing literature on information behavior for migrant youth in the Yakima Valley, interviewing relevant school district administrators of ESD 105, assessing metrics of success, and evaluating current technology access strategies within the region. Technology integration has demonstrated that students learn quickly and with greater retention when learning with the aid of computers. Within Educational School District 105, administrators complete over 100 walks a month in classroom and computer labs to ensure high quality of instructional technology in each campus facility. Additionally, compulsory technology-focused professional development programs allow for ESD 105 staff and teachers to stay up to date with the latest technology in educational instruction. Aside from school facilities, migrant students in the Yakima Valley have access to regional libraries and community centers. However, unlike school district computer labs, computing resources in these spaces are not as adequately furnished or updated with educationally relevant software.

School districts with prominent migrant populations should consider increasing access to distance learning alternatives to mitigate educational disruptions as a result of migrant students missing school when their families move from one work site to another. Funding for ancillary migrant resources should be prioritized higher in Washington Migrant Education Program's Service Delivery Plan because these auxiliary efforts directly impact the motivation of migrant parents to transition their children to pursue postsecondary education or employment. Piloting a technology indicators survey will provide migrant educators and administrators the missing information they need to complement technology in their future curriculum design and to inform long-term IT infrastructure investments. The aforementioned transferable recommendations have the potential to build more digitally inclusive communities for similarly underserved communities, which enable migrant youth to improve their participation in the digital economy of the 21st century.

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Bryan Dosono
Information School, Dr. Ricardo Gomez
bdosono@gmail.com

With his background in social informatics and human-computer interaction, Bryan Dosono explores challenges relevant to information and communication technologies for development. Dosono will be starting his PhD program in Information Science and Technology in the fall of 2013 at Syracuse University where his research will address technology policy and information access within underserved communities.

Testosterone Effects on HVC and RA Regression in Gambel's White Crowned Sparrows

Elizabeth Emau

Abstract

Evidence shows rapid seasonal morphological changes in the HVC (proper name) and the robust nucleus of the acropallium (RA) of the brain in song birds that plays a critical role in song production. Testosterone (T) plays a cyclic role mediating these changes and can act locally on the brain to protect neuronal loss and regression. The mechanism and direct signal pathway that T acts on remains unclear. In this study, we examine whether T is interacting with the phosphoisitide 3-kinase (PI3K) pathway, which regulates cell growth and death. We address this issue by infusing an inhibitor of this pathway (Ly294002; Ly) near the HVC of Gambel's white-crowned sparrows as they are taken from long-day to short-day breeding conditions. Using Nissl stained tissue, we examined the volumes of HCV and RA. Our results provide confirmation that the PI3K pathway is one mechanism used to control the T-mediated HVC and RA regression.

Introduction

Neuronal loss is one of the primary indications of neurodegenerative disease and traumas such as Alzheimer disease and stroke, which have consequences that can lead to severe cost of an individual's mental and physical capabilities. To better understand the underlying mechanisms of these disorders, research has turned to study the influences of neuroplasticity, or changes in neuron death and birth (Mesulam 1999). Songbirds have shown evidence of plasticity in the regions of the brain that control song behavior in the form of seasonal morphological and physiological growth and regression of these regions. Located in the anterior forebrain, a neural network forms between Area X, the lateral portion of the magnocellular nucleus of the anterior neostriatum (LMAN) and medial thalamus (DLM) involved in the process of learning, whereas the HVC and robust nucleus of the acropallium (RA) control for song production (Larson 2013). RA projects into the hypoglossal nucleus, which innervates the syrinx (Figure 1). Seasonal plasticity is affected by environmental conditions such as sunlight as well as circulating levels of testosterone (T). Songbirds, including the Gambel's White Crowned Sparrow (GWCS), show seasonal plasticity as well as distinct long-day (LD) and short-day (SD) breeding seasons making them an excellent model system to

examine relationships between neuronal growth and death (Brenowitz 2002).

Preliminary research shows that T increases volume and neuron numbers of HVC by causing neurons to release neurotrophin, Brain-Derived Neurotrophic Factor (BDNF), as well as influencing changes in RA (Larson 2013). The mechanistic pathway mediated by T remains uncertain but it has been suggested that T is involved in the activation of the phosphoinositide 3 kinase (PI3K) to activate protein kinase B (AKT), which has a key role in promoting cell proliferation and migration (Figure 1). To determine if T is using the PI3K pathway to mediate HVC and RA growth we use the potent inhibitor Ly294002 (Ly) to block the PI3K pathway. We surgically implanted cannula attached to osmotic pumps to directly infuse the T and the inhibitor adjacent to HVC over the transition from LD to SD conditions. Our results showed a regression of growth in the presence of Ly and that T is primarily using the PI3K pathway to regulate HVC volume and neuronal numbers.
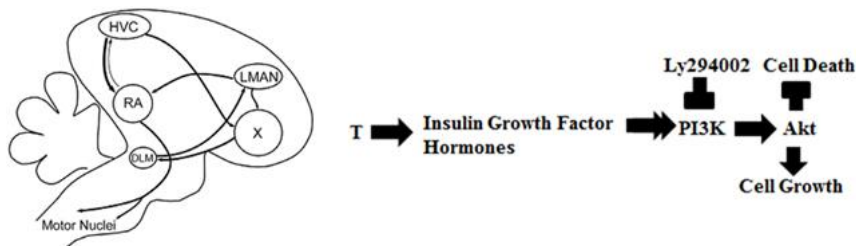
Figure 1. *Sagittal Schematic Diagram of the avian song control system (Thompson 2012) (left) and testosterone (T) molecular pathway (right).*

Materials and Methods

All animal treatments and husbandry followed the National Institutes of Health animal use guidelines and are approved by the University of Washington Animal Care and Use Committee. GWCS were captured in Eastern Washington sites. Birds were kept in indoor aviary facilities for 9-12 weeks under SD photoperiod (6-8 hours light) prior to the initiation of the experiment. This process regressed circulating levels of T sufficiently and ensured photosensitivity. At the start of the experiment, we exposed birds to LD photoperiod (14 hours light) and gave each bird a T pellet to stimulate growth of HVC and RA for 28 days. T is lipophilic and diffuses from implant site into the blood stream (Brenowitz 2002). At day 26 birds were surgically implanted with a cannula attached to an osmotic pump to locally infuse treatments of

Ly&T, Ly, T or DHT&E2 (equivalent to T), and vehicle (V; empty control) until euthanasia at day 31.

Brains and gut tissue were extracted and post-fixed in a neutral buffered formalin solution (NBF) and sectioned coronally at 40 μm on a freezing microtome. Every third section was mounted and stained with thionin. The remaining sections were used for immunohistochemistry (IHC). We traced and measured the area of the Nissl-defined borders of HVC and RA from projected images using camera imaging and ImageJ software. The volume was determined by using the formula for a cone frustum encompassing all the sections (Brenowitz 2002). To determine neuronal number we outlined regions of the HVC and used a computer random generator to distribute 3-4 sample boxes at 40x magnification ($0.01mm^2$) per section. We counted all neurons within these boxes

Results

HVC volume regressed to the greatest extent following Ly&T treatments when compared to Ly, V or T treatments alone (Figure 2). In general, birds infused with the inhibitor Ly294002 had reduced HVC volumes. Ly only treated birds had a moderate reduction in HVC volume suggesting that T uses multiple pathways to stimulate growth. The numbers of neurons in HVC were greatest in the presence of T alone. Ly&T treatments resulted in the lowest numbers of neurons, while the number of neurons in HVC was highest in T treated birds (Figure 3). RA cell counts remained constant and did not show any effects of Ly or T treatments (Figure 3). There was a wide range of standard deviations among the experimental groups, which indicated marked variability in RA cell counts and little difference among groups.
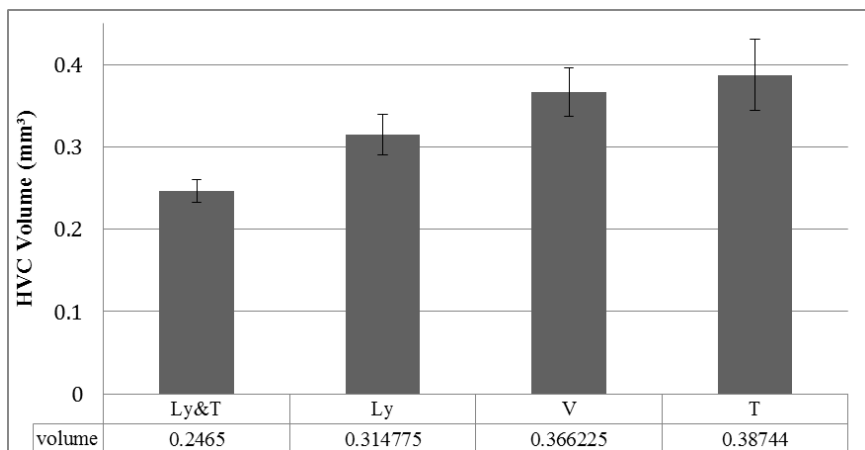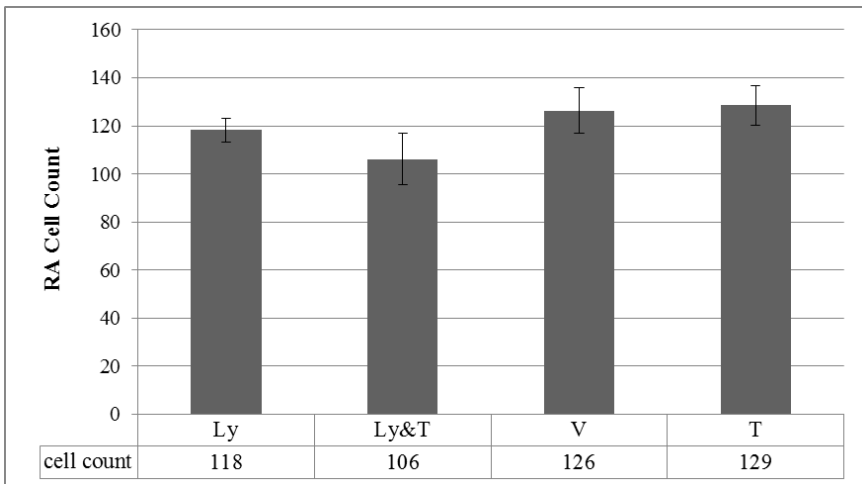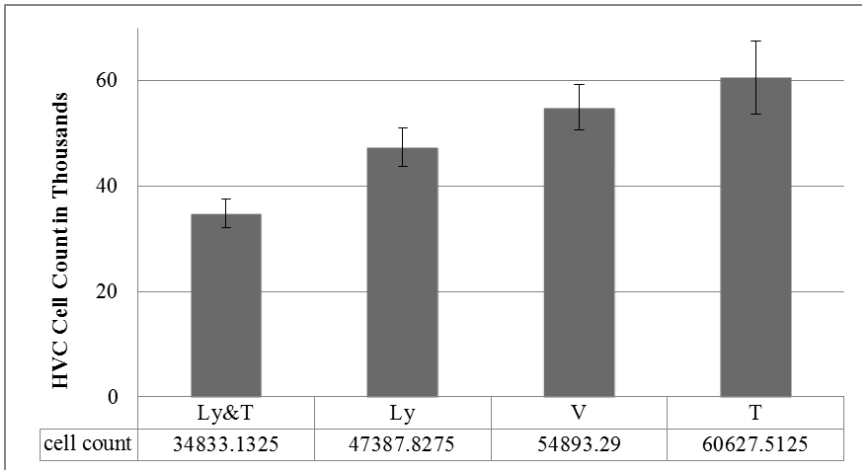

	Ly&T	Ly	V	T
volume	0.2465	0.314775	0.366225	0.38744

Figure 2. HVC Volume Analysis.

cell count	Ly&T	Ly	V	T
cell count	34833.1325	47387.8275	54893.29	60627.5125

cell count	Ly	Ly&T	V	T
cell count	118	106	126	129

Figure 3. *Neuronal numbers in HVC (top) and RA (bottom)*

Discussion

      Our results show that the presence of Ly inhibits the protective effects of T on neurons and reduces HVC size and neuronal counts. These findings show that T primarily acts through the PI3K pathway to mediate the seasonal morphological changes of HVC and RA regions in songbirds. T treatment maintained higher HVC volume during transition from long-day to short-day breeding conditions which supports previous research that T has protective properties on neuronal cells (Thompson 2010). The T and V treatments retain a high HVC volume which is possibly due to maintained levels of circulating T that can be counteracted with local infusion in birds. The lowest volume was Ly&T

treatment, indicating that Ly prevents T from activating PI3K pathway to stimulate cell growth. The Ly treatment without T showed a moderate volume reduction suggesting that Ly still inhibits the PI3K pathway despite T activation, to a lesser amount. Perhaps there are insulin growth factors that act on the PI3K pathway and stimulate growth of HVC. In all groups RA cell counts remain constant and do not show a dramatic regression. This is possibly due to insufficient diffusion rates of T on RA during infusion. Four animals were not used in this study due to insufficient photoperiod during breeding season. Future studies will use the remaining tissue for IHC to measure neurogenesis and cell death occurring in HVC and RA. This will establish how many new neurons were born and how many neurons died across treatments. Our results provide insight to the complex molecular pathway that underlines adult neural plasticity and contributes to specifying clinical treatments for injuries and diseases leading to neuronal loss.

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Elizabeth Emau
Department of Biology& Psychology, Dr. Ralf Luche and Dr. Eliot Brenowitz
emaue@uw.edu

I am interested in cell fate choices and neurogenesis that can be applied to global health challenges. I intend to pursue a Ph.D in public health with a program that emphasizes science and applications towards understanding social context and human populations.

# Circadian Modulation of Neuromotor Control

Jennifer Gile

Abstract

Decoding electrocorticographic (ECoG) signals coming from the primary motor cortex (PMC) associated with complex motor programs may represent a fundamental tool for the development of minimally invasive neural prosthetic devices. The development of analytical tools to extract this motor information and of algorithms to use this information to generate motor tasks will rely on the understanding of endogenous and exogenous variance that affect the PMC. The circadian system is a predictable source of endogenous variance. The master circadian pacemaker governs overt circadian rhythms of physiology and behavior, leading to 24-hour oscillations in parameters that directly affect our ability to achieve specific motor tasks. Our goal for this study was to identify PMC electrical patterns associated with specific motor tasks and determine if and how these patterns change throughout the 24-hour day to account for the circadian changes. Wheel running is a stereotypic behavior in mice that can be quantified as wheel revolutions and by changes in muscle activity measured through electromyographic (EMG) electrodes. To identify specific PMC patterns associated with wheel revolutions per minute (RPM), we studied mice implanted with both ECoG and EMG electrodes. We first determined whether there are specific cortical ECoG patterns associated with running-wheel revolutions in mice. There appears to be a broad-spectrum power increase in the ECoG frequencies that correlates with wheel running. We then determined how these ECoG activity patterns associated with running-wheel revolutions in the PMC vary throughout the day. There appears to be a circadian change in the power of specific ECoG frequencies associated with wheel running. Further analysis is ongoing to assess the predictably of these changes across times of day between animals. Our experiments will be the first to develop an inexpensive animal model to decode ECoG activity associated with a motor task. A predictable circadian variance in the electrical activity underlying specific motor tasks may be essential in creating brain computer interfaces (BCI's) that operate over a 24-hour domain effectively by eliminating time as a source of noise.

Introduction

Complex motor programs in mammals are the result of neuronal firing patterns within the PMC. These specific neuronal activity patterns

within the PMC can be associated with motor tasks such as the movement of a cursor in a computer screen. This has been done in humans and primates by recording the firing pattern of cortical neurons with intracerebral electrodes. This information can then be decoded to generate a similar motor task in a neural prosthetic, a machine such as an artificial arm, which is directly controlled by electrical neuronal activity (Serruya et al., 2002; Tayler et al., 2002; Carmena et al., 2003; Hocberg et al., 2006). Less invasive approaches like electrocorticographic (ECoG) or electroencephalographic (EEG) recordings could be used in humans to extract PMC neuronal activity patterns associated with a given motor task. Progress using this approach has been slowed by the lack of inexpensive animal models to correlate motor tasks to ECoG activity patterns. To address this issue, we use PMC surface ECoG recordings in mice to abstract motor neuron activity patterns associated with specific wheel-running revolutions.
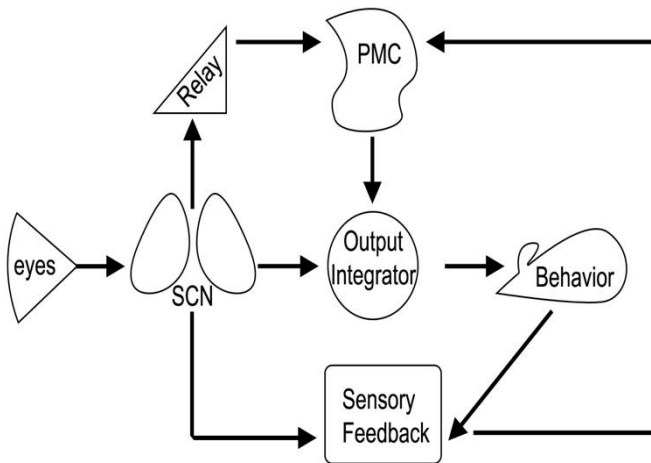
Figure 1. *Box diagram of the possible interactions of the circadian system with the primary motor cortex. The motor cortex sends descending signals to trigger behavioral programs, which are modified by sensory feedback. Circadian timing generated in the SCN may impinge upstream or downstream of the motor cortex, which will be revealed by our experimental results.*

Brain areas like arousal and sleep centers can directly modulate motor activity in a sensory-dependent and independent manner, as well as modulate the effect of sensory feedback on motor programs (Figure 1). One of these centers is within the hypothalamic suprachiasmatic nucleus (SCN), which contains the master circadian pacemaker. The master clock regulates the 24-hour timing of overt behavior and physiological rhythms, including the sleep-wake cycle and locomotor

activity. The circadian system organizes almost all behavioral and physiological processes into the 24-hour domain. Because of the circadian input to motor centers, we hypothesize that the same motor tasks performed during the day will require different patterns of PMC neuronal activity than during the night. In other words, our central hypothesis is that motor programs within the PMC are modulated in the circadian domain by the master circadian pacemaker. We compare ECoG activity associated with the same task, specific wheel-running revolutions, performed at different times throughout the day. Our hypothesis predicts that the same task should be underlined by a different motor pattern when performed at different times of day.

Methods

We implant ECoG electrodes in the PMC of C57BL/6 male mice housed under a 12:12 LD (light dark) cycle in cages without running wheels. Electrodes are silver-wire hooks, which are .013 inches in diameter that are fully insulated except at the tip so that it may make electrical contact with the dura mater. Two hooks are implanted bilaterally in the motor cortex (one per hemisphere). One reference electrode is placed in the cerebellum, a ground is placed subcutaneously, and two EMG electrodes are placed on the neck muscles. A small preamplifier is implanted on the surface of the skull. After implantation surgery animals are allowed to recover for at least 5 days. They are then tethered by the pre-amplifier and allowed another 2 days to adjust to the tethering. The animals are placed into constant darkness so that changes we see in the recordings are based on the animals' own endogenous rhythm and not due to responses to a light/dark schedule. The adult mice are housed in individual cages and their locomotor activity is monitored in 10-minute bins using Clocklab software (Actimetrics) analyzed using the El Temps software (Diez-Noguera, University of Barcelona, Barcelona, Spain). Their locomotor activity is constantly monitored and ECoG recordings are timed according to the phase of each mouse's circadian locomotor activity cycle. This is known as "circadian time" (CT), with CT12 being the locomotor activity onset in their home cage. The ECoG recordings are taken in 3-hour intervals across the circadian cycle starting at CT00 and ending at CT21, with 2 recordings per day, 12 hours apart. This ensures that changes across the day are not due to the mouse losing interest in running due to an over-abundance of recording sessions per day. The order of timed recording pairs is randomized for each group of mice, which controls the order of recordings potentially changing cortical signals. These recordings consist of placing the implanted mice into a cage with a running wheel for twenty minutes; ten

minutes of running activity and ten minutes of resting (stationary) in which the wheel is locked. Throughout the recording trial, running-wheel RPM, EMG, and ECoG activity are recorded.

Run Detection

In order to convince ourselves that the mouse model could demonstrate a circadian difference, we first needed to show measureable differences in its behavior. To detect this we took the measurements from both the tachometer to show RPM of the wheel as well as the EMG output for the mouse's back muscles to find levels of activity. The wheel speed was sampled every second at 1Hz and the EMG signal was sampled at 400Hz. In order to ensure a high quality data set, we manually sorted through the running data on four recordings for two different mice to create a marked data set for running events and stationary events. Running events were considered events in which the wheel had at least 3 consecutive seconds of rotations as well as the EMG signal having a considerable amplitude increase. The amplitude increase was on the order of 2-3 times the baseline voltage measured from the muscle. Stationary events were events with at least 5 seconds of no wheel motion, as well as at least 3 seconds of no EMG signal amplitude going above baseline. Using these criteria, a couple hundred samples for both running and for stationary were recorded to use for training a filter that could automatically detect running for our animal model.

The filter was built so as to favor a very low false positive rate while allowing for a reduced true positive rate. The rational being that in the recordings there was an excess of events needed for analysis, so the focus was to catch only running events and missing a few while not accidentally including errant stationary events. The filter chosen in the Circadian modeling analysis had a FPR of 0% and TPR of 66% on the training data set.

The filter used the wheel data and required consecutive rotations to focus on those seconds, and then used the EMG data to find the exact moment to a resolution of $1/200^{th}$ of a second where running began. The EMG filter was made by taking the spectral power of the EMG training data, which showed significant differences in signal amplitude at different frequencies compared to the spectral plot of the stationary event. The spectral power plot was made using the Blackman-Harris windowing function and then squaring the Fast Fourier Transform (FFT) with itself. This analysis highlights the contributions to the overall signal from sinusoidal functions from 1-200Hz as our sampling rate was 400Hz.

Modeling of Circadian Differences

       Once we had a filter that was highly selective towards detecting running, we ran it against all of the recorded data for each mouse. The running filter generated the data set used in comparing across time of day differences. The data set was the time points, to the millisecond, where the mouse began a running motion. Knowing the time where running started allows us to use the raw brain signal where the behavior was the same to look at how different model parameters change throughout the day. The first analysis run using the running data was to look how the spectral power changed over the course of the day for a running mouse. This was the same analysis used to find a difference between running and non-running, except now all of the data being used was running, and the comparison was over the day.

Results

       The first aim of our experiment was to use ECoG recordings in mice to detect patterns of neuronal activity within the PMC that are associated specifically with wheel-running behavior. We have found a pattern of brain wave activity associated with wheel running and resting. There is a broad-spectrum power increase that correlates with running (Figure 2).
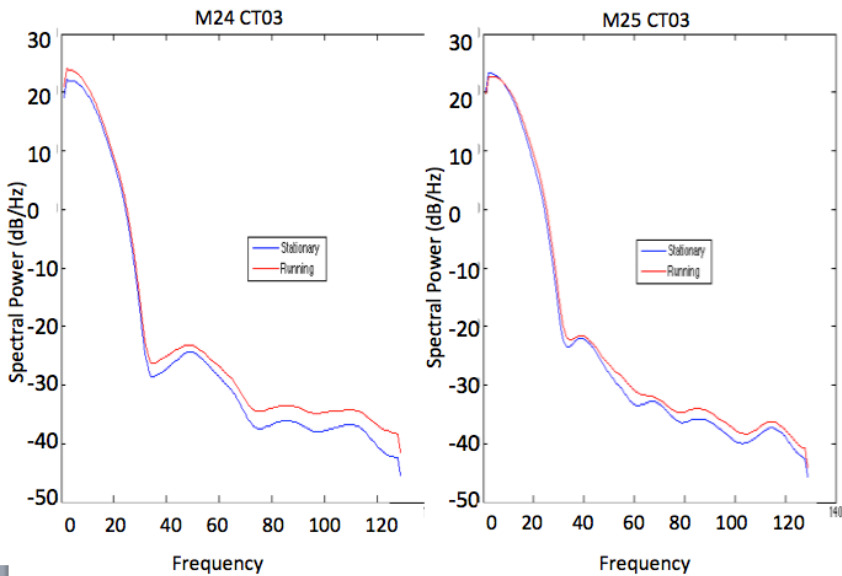
Figure 2. Fast Fourier Transform (FFT) of ECoG recordings from two mice at CT03. The x-axis shows frequency in Hz and the y-axis shows the spectral power of the signal.

Red and blue traces represent the cortical signature of wheel running and resting at CT03 in mice. There is a broad-spectrum increase associated with wheel running.

After identifying a cortical signature of wheel running and resting in mice, we examined the circadian component of these signatures. PMC ECoG activity patterns associated with the same wheel running RPMs reveal a circadian modulation (Figure 3). Note that this figure was not generated with the same filter that was previously described in the methods.
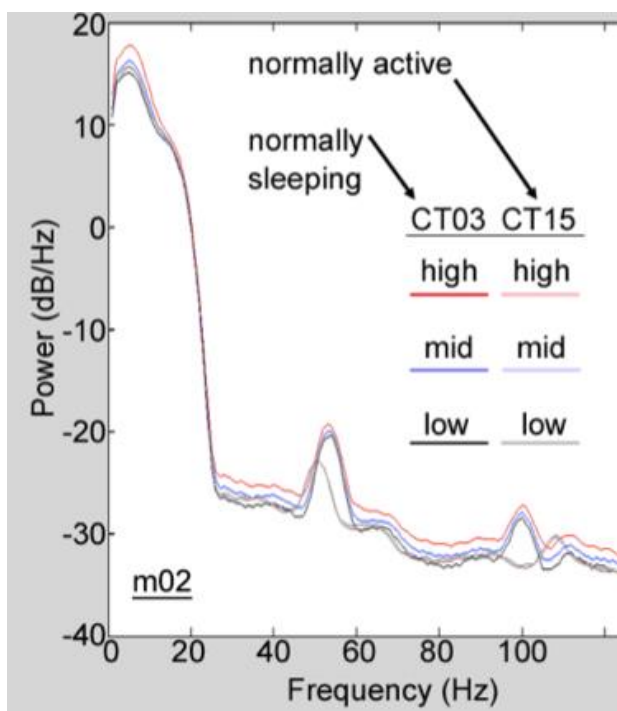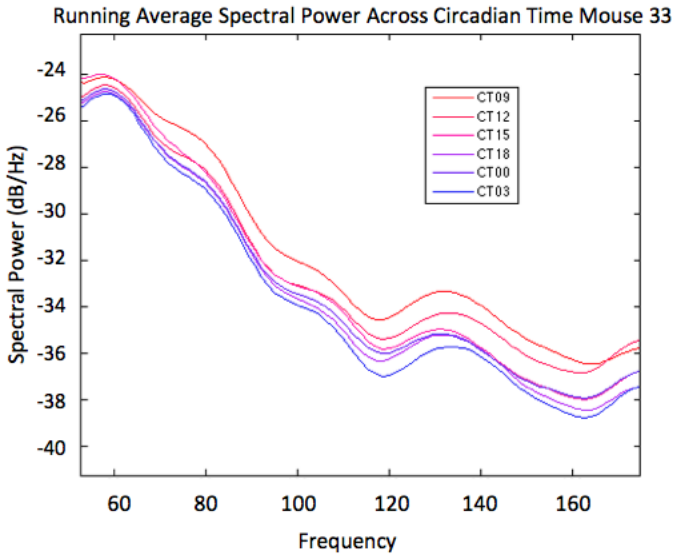

Figure 3. *FFT of ECoG recordings from one mouse at CT03 and CT15. Each colored line represents the cortical signature of wheel running at a specified RPM. Note that CT03 and CT15 ECoG spectra present power changes at specific frequencies.*

This modulation manifests itself in a change across circadian time, in the magnitude of the increase in the power of higher frequencies when the animal runs on the wheel (Figure 4). The same analysis performed on a different mouse can be seen in Figure 5. Although there does appear to be a circadian component to this wheel running signature, it does not have the same frequency shifts as Figure 4. This circadian component can also be visualized 3-dimensionally (Figure 6). The third dimension is depth into the sheet by time of day. The cross section
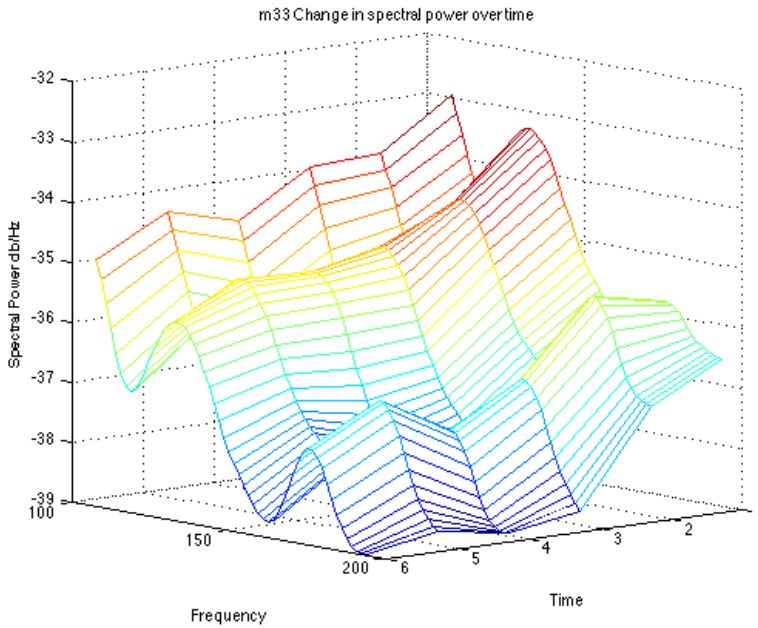
appears to be a sine wave, which confirms that the signals are indeed cycling across circadian time.

Figure 4. FFT of ECoG Recordings from one mouse across different times of day. All circadian time points taken for this mouse are shown. The magnitude of power changes for the higher frequencies shown in the plot is under circadian modulation.
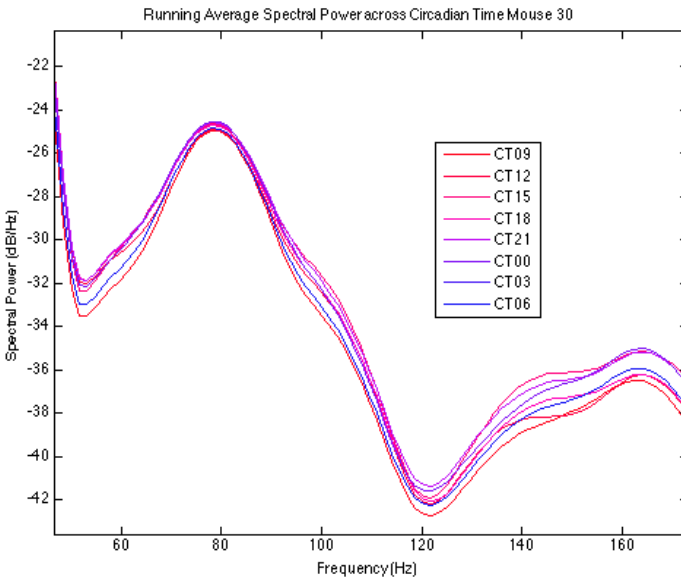
Figure 5. FFT of ECoG Recordings from one mouse across different times of day. Details as in Fig. 4.

Figure 6. 3-dimensional FFT of ECoG recordings from one mouse across different times of day. All circadian time points taken for this mouse are shown. The magnitude of power changes for the higher frequencies is revealed as a sinusoidal change across circadian time (time).

Discussion

Our initial results indicate a broad-spectrum power increase in brain-wave output from the motor cortex associated with wheel running. Furthermore, there appears to be a circadian modulation of the power of specific ECoG frequencies within each animal. We have yet to find a predictable pattern of modulation throughout the day that is common to all animals; currently analysis is ongoing. The decoding of motor cortex signals is at the core of the design of BCIs. These devices decode signals from the conscious brain to drive the execution of specific tasks by a machine, such as an artificial limb. Our work will contribute to the understanding of how the motor cortex decodes circadian time. This knowledge is essential to create BCIs that can operate effectively throughout the 24-hour day to execute tasks.

Our broad-spectrum ECoG signature for wheel running differs from cortical patterns associated with other motor tasks. In humans, specific motor tasks were seen to decrease low-frequency alpha brain-wave activity (10-25 Hz) while increasing higher frequency (80-100 Hz)

waves (F. Aoki et al., 1998). Although we do see an increase in the higher gamma frequencies associated with wheel-running behavior as expected, we do not see changes in the alpha wave frequencies. This difference could emerge from the discrepancy in motor tasks, Aoki et al. studied human subjects performing visuomotor tasks. Visuomotor tasks are motor tasks that are dependent on sight. For example, the test subjects would track a moving visual target with a joystick-controlled cursor. These types of tasks are much different from wheel-running behavior. Mice do not need visual cues to run on a wheel, as it is a stereotypical and spontaneous activity. There also exists the possibility that these differences are species specific. While humans exhibit a decrease in the alpha wave frequencies during motor tasks, this may not be a signature of motor programs in mice.

Figure 3 reveals that there is both an increase in power output and variance with speed during normal sleep time. This may represent inefficiencies in output guidance. That is, the motor programs used during normal sleep time (subjective day for a mouse) are not as efficient as motor programs used during the mouse's normal activity time (subjective night).

The signals in Figure 3 are only comparing two different time points in a given day. Figures 4 and 5 give a more complete picture of how the motor cortex signatures cycles throughout the 24-hour day. Within the power spectrum landscape across circadian times, the highest power in both mice is at CT09. The two mice studied did not show a consistent pattern in their circadian modulation of the spectrum associated with wheel running. However, within each individual there was a circadian change in the wheel-running ECoG signature, as our hypothesis predicted. The possibility exists that the circadian modulation landscape is unique to each animal, yet predictable within each individual. Future experiments and analytical tools will determine if the circadian modulation of these brain wave signatures are predictable across animals. Under this scenario, for each circadian time we expect to see changes in power at the same frequency ranges for different mice. If this were not the case, an algorithm to eliminate time of day as a source of noise that is effective across mice cannot be developed. Nevertheless, algorithms could be developed that are effective at accounting for circadian modulation within each individual.

Other variables that could be under circadian modulation may include: coherence between the left and the right motor cortices, amplitude differences within channels, and potential subtle characteristics that may emerge with wavelet analysis. Wavelet analysis is a signal processing method that is similar to the FFT. However, while

the FFT decomposes the signals into sine and cosine waves, wavelets identify best-fitting functions in space and scaling. These analyses are ongoing and may identify circadian modulatory features that are common across animals. Specifically, wavelet analysis may "fingerprint" specific RPM values at specific circadian times as evidence for circadian modulation, which could be followed by statistical analysis in the appropriate ECoG frequencies.

There does exist the potential that specific ECoG frequency patterns associated with wheel running RPM will not show a "universal" change across the circadian cycle. If this is the case, we will test the hypothesis that the master clock may modulate arousal downstream of the PMC. This can be done by looking at changes in the PMC neuronal activity that is associated with fine-tuning motor tasks in response to sensory input. We have already found a difference in ECoG signals associated with running-wheel revolutions. Thus, it is conceivable we will find a circadian modulation of patterns that underlie PMC responses to experimentally induced wheel-resistance changes.

A predictable circadian variance may be essential in creating BCI's that operate over a 24-hour domain by eliminating time as a source of noise. If our hypothesis holds true, further experiments can be done using mice in which specific clock-genes are regionally knocked out to stop circadian clock function either in the SCN or in the motor cortex. This approach could determine whether the motor cortex is regulated by the master clock or locally by circadian oscillators within the cortex. Our work will directly contribute to our understanding of how the motor cortex decodes circadian time. This knowledge is essential to create BCIs that can operate effectively throughout the 24-hour day to execute tasks by brain-operated artificial devices.

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Acknowledgments

Jennifer Gile
Biology, Horacio de la Iglesia
jgile1@uw.edu

I am interested in how the timing of behavior and physiology is controlled by the central nervous system.

Framing Africa: Exploring the Role of Filmmaking Practices in Post-War Burundi

Alejandro Guardado

Abstract

In 2007, filmmaker and journalist Christopher Redmond co-founded the Burundi Film Center in eastern Africa. This non-profit organization allows Burundian filmmakers and other citizens to engage with cinematic art forms and communicate their culture through film. Furthermore, the BFC opens avenues for Burundian artists to explore the significance of some cultural themes, such as family relationships and sexuality, in their works. A careful analysis of the short films produced at the BFC offers insight into how young Burundians view the social, economic, and political landscape of their new, post-war country. Through cinematic techniques of camera framing, narrative elements, and dialogue selection, each film communicates a point of view that reflects on the aftereffects of war and the social consequences of civil conflicts. A close reading of each film also reveals recurring themes that are, presumably, significant to young Burundians: war, family, and education. These themes can be understood more appropriately within a context of Burundian culture, specifically its post-war climate. However, the act of filmmaking in Burundi also offers insight into how the BFC allows young Burundians to explore their changing nation, communicate their experiences for international audiences, and participate in a global landscape linked by a far-reaching media culture. But more significantly, the BFC gives young Burundians a space for self-expression; it provides a site for them to create visual narratives regarding themes that reflect the salient features of life in Burundi.

Introduction

In the summer of 2006, Canadian filmmaker Christopher Redmond traveled to Kigali as part of the *Rwanda Initiative* to train print journalists. While there, the then 23-year-old Redmond met Raymond Kalisa, a freelance videographer who was formulating a proposal to "train aspiring filmmakers" in the nearby country of Burundi (Redmond). After looking over Kalisa's proposal, Redmond helped develop his "economic based" approach into a plan that emphasized film training among Burundian youths. A year later, Redmond co-founded the Burundi Film Center (BFC), a non-profit media development project that, according to the center's website, operates on a mandate to "Inspire. Educate. Entertain." "Burundi is a nation emerging from a war-time

crisis," the BFC website adds, "and (is) entering a new era of cultural understanding, tolerance and education."

The BFC's mission seems to share scholar Nadine Dolby's claims that popular culture, specifically the media forms of film and television, contributes to an understanding of "emergent public spaces and citizenship practices in Africa's present and future" (Dolby 32). The BFC mission fits properly into the "citizenship practices" Dolby refers to since, as she suggests in her text *Popular Culture and Public Space in Africa* (2006), African youth utilize popular culture to enter modernity, "to be part of the global flows that shape the contemporary world" (Dolby 42). While Dolby frames her analysis on a popular reality show, she directs attention to the way that young Africans participate, "however briefly," in a "global conversation" through the realm of media culture (Dolby 43). And, if the BFC's "mandate" efficiently expresses its project's undertaking, then it will function to allow young Burundians to navigate a global landscape linked by a far-reaching media culture.

However, this is not to say that the work being developed within the BFC has, thus far, been a showcase of Western support for Third World filmmaking practices and cultural productions. Since its creation in 2007, the short films that the BFC has produced illustrate essential characteristics of Burundian life, presenting social, domestic, and economic issues through cinematic narratives. Furthermore, these films validate the experiences of Burundians living in a post-war climate. By challenging more popular cinematic narratives about war and trauma, specifically the past and present conflicts in Central Africa, these short films allow young Burundian filmmakers to directly share their stories and experiences with international audiences.

In this paper, I will argue that the BFC, and the arena of filmmaking, functions as a space for young Burundians to participate in global discussions about the future of their country. I suggest that, as BFC short films continue to be screened at international film festivals, Burundi is allowed more visibility and the unresolved issues resulting from its civil war become more defined for international audiences. Some of these issues are expressed thematically through BFC films and I will analyze how they communicate relevant issues as they arise from Burundi's civil war. In addition, I will question how these themes present different perspectives on what a future Burundi might look like. I will conclude my paper by discussing the ways that the BFC benefits young Burundians and how it serves as a model for film education in Third World countries.

Framing Africa: Exploring the Role of Filmmaking Practices in Post-War Burundi

Burundi Civil War

Burundi entered its civil war in 1993 as a result of unequal distribution of wealth and possession of power between the dominant Tutsi minority and marginalized Hutu majority. In October of 1993, Tutsi soldiers killed the first-ever Hutu president in a *coup d'etat*, starting an ethnic conflict that claimed the lives of some 300,000 Burundians (Uvin 13). From 1994 to 2005, rebel groups – largely supported by the Hutu community – competed to find a solution to the imbalance of power between the Hutu and Tutsi. Ashild Falch, a researcher at the Peace Institute in Oslo, writes that three major power-sharing agreements occurred during the 12-year conflict: the 1994 Convention of Government, the 2000 Arusha Peace and Reconciliation Agreement and the 2004 Burundi Power-Sharing Agreement. Although each agreement had limited success, Falch suggests that none of these plans captured the vision each tried to implement (Falch 1). The 1994 Convention of Government never fully addressed the events that caused the civil war, failed to include any of the rebel groups' interests, and the coalition government organized around the plan was overthrown by a military coup in 1996 (Falch 2). The following agreement in 2000 failed to ensure ceasefire agreements between any of the major rebel groups, which prolonged the civil war (Falch 2). Although the 2004 Burundi Power-Sharing Agreement outlined several objectives to create a "proportional share of political power" among Hutu and Tutsi groups, it did not implement the ceasefire agreement signed with the last remaining rebel group, the Palipehutu-FNL; however, in December 2008, the Burundian government eventually signed a peace agreement with the Palipehutu-FNL (now called the *Forces nationales de liberation* (FNL) at the Great Lakes Summit held in Burundi's capital, Bujumbura.

Post-War Burundi

Many positive outcomes resulted from the 2004 Burundi Power-Sharing Agreement, such as the ceasefire negotiations with rebel groups and the ensuring of an ethnic balance in the security forces. It is too early to tell, however, what Burundi will look like during "peacetime." As scholar Peter Uvin writes in his book *Life after Violence: A People's History of Burundi*, Burundian youth, the focus of his study, define "peace" in different ways, with most youth favoring "security, development, and the restoration of social relations" as valuable peace-building strategies in Burundi (51). Most Burundians seek to dismantle the corruption and violence that has devastated the country, with an emphasis on finding solutions to Burundi's ethnocentricity problem (Ulvin 188). Some Burundians even feel that the war was a "necessary

evil," as it reversed the status quo and Burundians, reeling from "the shock of the war," became more vocal and criticized the politicians who claimed to "represent" them (Ulvin 76).

While soluble goals for restructuring Burundi's government and social institutions remain in political discourses, other ways to improve social cohesion can be found in the areas of education. Burundians in secondary school, usually students in their twenties, believe that an education offers to bring them, along with their families, "out of a deeply uncertain future" (Ulvin 90-91). If an education is considered to be a ticket out of poverty, then it is worth considering how the BFC factors into the educational framework of Burundian society. Specifically, my analysis will not depend on statistical information to consider the success of the BFC's project. Instead, I will use the short films themselves as evidence to evaluate how Burundians engage with cinematic arts to explore the evolving milieu of their country.

Themes
War and Trauma

Perhaps the most common theme in BFC films is war and its aftereffects. Although, in some form or another, each theme explored in BFC films is an aftereffect of war, war as an explicitly stated subject is expressed in many films. It is not surprising that this theme shows up frequently in the first BFC short films produced in 2007, as Burundi was emerging from wartime. However, each film explores war in different ways, often framing this theme in subtle, though not exclusionary modes.

The aftermath of war is directly presented in the storyline of the 2007 BFC short film, *Reveal Yourself*. The film opens with images of Congolese refugees camped out in the Burundian capital, Bujumbura, sans dialogue. We see women breastfeeding their babies, children walking around unsupervised, some of them naked, and adolescents sitting around a campfire. The most striking images show the shadows of unidentifiable bodies in the campgrounds superimposed over flames. These images might recall the destruction of bodies and property during Burundi's civil war, when "Tutsi men, women, and children were hacked to pieces or burned alive" (Lemarchand 6).

While this film does not deal with the Burundian civil war, its distance from that particular conflict offers insight into how filmmakers are dealing with that part of Burundi's history. In fact, an examination of this avoidance in mentioning that "necessary evil" reveals the role of trauma in Burundian filmmaking. Dr. Dori Laub, a psychoanalyst and scholar in psychic trauma, writes that traumatic events become inscribed and recorded once the "listener" receives testimony from the trauma

survivor (Laub 57). In his text *Bearing Witness or the Vicissitudes of Listening*, Laub says that, "the listener to trauma comes to be a participant and a co-owner of the traumatic event: through his very listening, he comes to partially experience trauma in himself" (Laub 57). The listener, according to Laub, must, above all else, *listen* to the trauma survivor, being aware that the speaker fears the trauma but finds comfort in speaking about the event.

If any moment in *Reveal Yourself* illustrates Laub's postulation, it arrives at the end of the film when a refugee man, Raphael (Francis Muhire) returns a five-dollar bill to Louise (Linda Kamuntu), a Burundian woman who dropped it earlier that day. She sits with him outside her home and, as he smokes a cigarette, they begin a dialogue about how Raphael ended up in Burundi.

> "We fled in 2006… but my parents were killed,"
> Raphael says. Louisa responds, "Oh, mine too, but from
> a disease… AIDS."

While Raphael quickly apologizes for inconveniencing her with the memory, Louisa reassures him, "That's life, we move on, no?" This bit of dialogue represents the paradox most Burundian youth encounter in attempting to move on from civil war. When discussing Burundi's ethnic conflicts, most Burundians prefer "silence" rather than negotiating ways to implement a "Western-style transitional justice" system to oversee criminal prosecutions (Ulvin 154, 159). However, this should not assume that Burundians are attempting to ignore those conflicts. In his research, Uvin interviewed a twenty-two old Burundian man who said:

> "For me, I don't think it is good to talk about the past.
> But you cannot forget the periods of sorrow in your life.
> You can't forget those years. I don't know what to do if
> you have memories of bad things in your heart. But if
> you do talk, you need to only talk about what happened
> to you and that you don't want it to happen again." (159)

Examined within a framework of trauma, this quote, along with the final scene in *Reveal Yourself*, shows that Burundians prefer to silence their experiences, and yet they wish to move on from these traumas into a post-war era. Burundians largely treat the "desire to talk about the past" as a "weakness" (Uvin 159). "People talk about the past, the argument goes, because they cannot help it," he writes, "because they cannot stop themselves, because they cannot forget" (159). However,

since "talking about the facts," according to Uvin, means reflecting on "suffering and loss, destruction and displacement," might filmmaking be used as a substitute for communicating these losses (Uvin 153)? Specifically, just as *Reveal Yourself* distances itself from the Burundian civil war by addressing another conflict, it manages to introduce the trauma of war through elements of dialogue and editing. It traffics in emotions by communicating those same traumas without the need for rhetoric; instead, this film, and others, use images and dialogue to carry out the function of testimony and witnessing.

Family

The Burundian civil war disrupted several Hutu and Tutsi family units who had to flee from rural areas to the city when the conflict erupted. Not only were Hutu and Tutsi families fleeing from the massacre on human lives, but also, as their homes burned and families were killed, Burundians had to take refuge in the homes of extended family or strangers (Uvin 97). While BFC films do not deal with the scope of family displacement, several of these narratives show the individual toll that familial responsibility takes on a person. For example, the 2010 BFC film *Mission: Montreal* tells the story of Lionel (Angelo Arakaza), a mechanic who wants to leave Burundi for Canada where he thinks life is better. His only obstacle: a brother and sister that depend on his income to attend school. Lionel makes a deal with a businessman to sell accessories in exchange for money to buy his ticket out of Africa. The film ends with Lionel boarding a bus, presumably to leave for Canada, leaving his brother and sister in the care of an aunt.

By focusing the narrative on Lionel, rather than his siblings, the filmmaker emphasizes the internal struggle of young Burundians to provide financial assistance for their family. This film characterizes most Burundians' living situations in urban areas as "there is no family (in the city) that does not have people from the larger family, or from the native commune, living in its house" (Uvin 115). This should not assume that Burundians would prefer to live independently of their family or communities. In Uvin's research, he found that urban youths, "a rather alienated and unhappy bunch to begin with… very often far removed from their nuclear families," assured him that mutual help exists in their community despite the rampant poverty levels (115). "That said," Uvin writes, "*all* urban people did recognize problems with mutual help, as well… the most prosaic reason (being) the dramatic poverty that characterizes people's lives" (115).

At the very least, *Mission: Montreal* highlights the struggle between individual desires (to improve one's own future) and balancing

those wishes with family commitments. The conclusion of this film suggests that the filmmaker perhaps is using film as an extension of these desires; if their reality does not dovetail with their life goals, then filmmaking allows those wishes (to secure one's own future, to leave the country, etc.) to be expressed and realized through the narrative. This struggle between individual goals and familial responsibility is quite common among female BFC students. These students have, among other obligations, children to raise and feed, so continuing to make films is harder for them given their situations (Redmond).

Perhaps the film to most directly illustrate the compromise of individual goals for the sake of family planning is the 2008 BFC film *Bigger Plans.* In this film, a young man named Moma (Landry Nshimye) dreams of attending college to study architecture and build a more promising future for himself and his family. However, he has to choose between using his savings to attend a university and helping his mother purchase a landlot and "build a real house" for themselves. In the end, Moma chooses to give his mother his money and the film ends with the family standing in front of the landlot, the site of their "future home." This film is notable in presenting the limited options that Burundians have in planning out their future; their long-term goals have to be negotiated with the interference of immediate family needs. Thus, family responsibility is placed above individual goals because, as this film illustrates, dire financial straits make each family member more dependent on each other.

Education

Education is valued highly among Burundian youths who feel "it is at the heart of individual social mobility and family strategies for survival" (Uvin 86). Most Burundians also value education because "it is the best if not the only way out of farming" and serves as an escape from "the prison that rural life represents for many people" (Uvin 88, 89). While economic and educational disparities exist between urban and rural Burundians, the benefits of an education are well-known to both groups. A twenty-eight-year-old civil servant, who completed one year at the university, tells Uvin, "If you don't study, the only opportunity is to cultivate ten hours a day under a hot sun, every day of the year" (88-89). Sharing this sentiment is a thirty-year old widows who says:

> "I admire people who have studied and have a degree. They do not have to pass their entire days cultivating, they earn money and help their families escape poverty. I regret not having continued my studies." (89)

The high regard for an education was seen as early as the pre-war days in Burundi's history. What political scientist René Lemarchand calls the 'selective genocide' of 1972 was a concentrated effort to eliminate all educated Hutu in Burundi (89). Along with these violent events, the Tutsi elite maintained their power "through highly unequal access to education," specifically secondary and college-level education (Uvin 89). Some of the "unhappiest people" Uvin met during his research included "young men in Bujumbura… desperately looking for a job, month after month after month" (91). These are men looking for a break, "trying to ingratiate themselves with more powerful people," similar to Lionel in *Bigger Plans*, though he seems to prefer monetary, not educational pursuits (Uvin 91).

Two BFC films illustrate the significance of an education in Burundian life from both urban and rural perspectives. The first is the 2010 film *The Return of Old Man Kabura*, a film about an 82-year-old man, Baptiste Kabura (Leonard Bapfakurera), who flees Burundi to Tanzania during the 1972 ethnic massacres. He now returns to his rural village 38 years later to find that the site of his home is gone, possibly burned to the ground during the violence. When a local family takes him into their home, the old man meets the daughter, a young girl named Claudette (Joseé-Sandrine Bahati). Baptiste bonds with Claudette over a mutual curiosity for reading; although he does not know how to read, Baptiste tells Claudette he enjoys a particular book for its "pictures." Baptiste eventually encourages Claudette's mother to allow Claudette to attend school and relieve her of her domestic duties. The film ends with Claudette visiting Baptiste's grave and spelling his name on the dirt.

This film illustrates the benefits of girls receiving an education when it is available to them. For example, Uvin found that when girls are not hindered by agricultural work and when they have a close proximity to schools, those whose families sent them to school "did extremely well when given the opportunity" (87). However, an education does not guarantee that women will escape the gender roles Burundian society ascribes to them. Women, educated or otherwise, are expected "to meet traditional obligations of marriage, childbearing, and domestic work (Uvin 124). But regardless of educational background, some Burundians feel that a girls' social mobility is dependent on other factors. A thirty-year-old rural man claims:

> "Girls' situation is completely dependent on the men they marry. If they come from a rich family, and marry a poor man, they can become a lot worse off – and vice versa. Unmarried girls either come from rich families

and have easy lives, or they come from poor families. If
the parents are dynamic, their situations can improve.
When the parents are not dynamic, they stay poor."
(Uvin 100)

Some young women bypass their dire financial circumstances
through prostitution, a line of work that Burundians have differing
opinions about. This is the focus of the 2010 film, *Easy Call*, which tells
the story of a young girl nicknamed "Easy Call" (Lynda Brown Kana)
who frequents nightclubs as a prostitute, looking for customers willing to
pay for her services. When she comes home to her religious mother
(Nadia Harushimana), who criticizes her immodest lifestyle, Easy Call
says that she is already earning money and does not need an education.
Easy Call ends up pregnant and tells her mother that she will keep the
baby who, unlike her, will have the benefit of knowing its father. As the
film closes, the mother flips through a photo album that shows a picture
of her with Easy Call's father, a gentleman who flirts with Easy Call at a
nightclub earlier in the film.

Easy Call and her mother's perspectives on prostitution represent
two distinct points of view regarding this occupation in Burundi. One
point of view, "the progressive one," suggests that prostitution is not due
to a character flaw in women, but because "of the debilitating constraints
of poverty, unemployment, and insecurity" (Uvin 102). As Easy Call
tells her mother early in the film, prostitution provides her with an
income; she may as well ask the question, "Why study to receive a job
when I already have one?" A twenty-three-year-old refugee woman
explains:

> "I lived with my paternal grandfather, but he is poor and
> I had to fend for myself, and that is how I started to
> frequent men, not because I like it but only to have
> enough to eat." (Uvin 103)

Easy Call's mother provides another interpretation for
prostitution, mainly the one that views it as a result of a deteriorating
morale in society, an abundance of poor role models, and "cultural
pressures" (Uvin 103). The film does not specifically favor either
opinion, though an early scene where Easy Call prepares for "work"
shows her removing a crucifix hanging by her mirror and throwing it
away. This scene exemplifies a perspective that posits that decaying
social values and a poor moral foundation within family structures result
in "marginal" behavior (Uvin 103). This perspective contends with the

former opinion that blames a flawed social infrastructure on women entering into prostitution. And while both *The Return of Old Man Kabura* and *Easy Call* present alternative perspectives on education, they both seem to agree with a common argument among Burundians that, despite an individual's educational background, "it is much harder for women to find decent work than for men" (Uvin 103).

Burundi Film Center

The analysis I have offered thus far should not be confused with an attempt to present the most salient features in Burundian life. For that matter, these films should not be confused with being examples of authentic Burundian experiences. Life in Burundi, or in any country, is too complex for any film to capture the breadth of its social and political dynamics. Also, filmmaking itself is a process by which images are selected and manipulated into a fixed order. However, the themes I have analyzed recur often in BFC films and highlight specific topics in Burundian life. This suggests two important things. First, the more visibility that BFC is allowed globally will expose more audiences to these particular themes. The implications of this exposure are significant because they will introduce audiences to these stories about war, love, sexuality, and family. The universality of these themes may also help international audiences access these stories despite any cultural distance between them and the characters onscreen.

Second, these films may benefit Burundi in terms of the "cultural output" that could result from a future film industry in that region. As writer Nigel Watt notes, "Burundi's 'modern' cultural output has been small," writing, "only one feature film (the 1993 film *Gito the ungrateful*) has been produced" in the country (17); another film, the Oscar-nominated short film *Na Wewe*, was shot in Burundi in 2009 (Schwarzbaum). The more cultural productions that Burundi yields may result in Burundian artists or students turning to filmmaking as a possible career goal or as an interest outside of agricultural work. In fact, many BFC students have gone on to pursue their filmmaking interests in other countries, while BFC films have been screened at film festivals in the United States, France, Italy, and Canada (Redmond).

If the BFC benefits Burundians in any way, it is by allowing them to record their individual narratives of Burundian life. Other cinematic narratives about Hutu and Tutsi cultures and conflicts, such as *Hotel Rwanda* (2004), *Munyurangabo* (2007)*, Kinyarwanda* (2011), have given more popular, and, some might assume "official" accounts of ethnic conflicts in Central Africa. But as BFC films continue to present narratives created by Burundians, audiences will be allowed a closer

proximity to life in Third World countries. Rather than reflect on war and trauma with the melodramatic style that is common in films about those themes, BFC films express their narratives through love stories, comedies, and redemption dramas. According to Redmond, early BFC films related subjects such as AIDS and rape, products of the social unrest within the country. However, more recent films have largely dealt with characters wanting to find work, leave the country, and improve their circumstances (Redmond).

As BFC narratives continue to move beyond Burundi's previous conflicts, global audiences will receive different perspectives on how life is lived in the country. Furthermore, Burundi's global presence might be more apparent. As a country whose civil war received less coverage than "the orgy of media attention attracted by Rwanda," Burundi's transition into a post-war era may be reflected and represented with these filmmaking practices (Lemarchand 164).

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Acknowledgments

Alejandro Guardado
English Department, Dr. Katherine Cummings
alex@thefilmschool.com

My interests include the intersection between cultural studies and cinema studies, with a particular focus on gender, sexuality, and race. I am interested in pursuing a PhD in Cinema Studies.

The Nuclear Rabbit Hole:
Environmental Justice for Women, Children, and the Unborn

Jacinta S. Heath

Abstract

What are the consequences of developing and utilizing nuclear technologies? What populations are most vulnerable to contaminants released by the subsequent industrial processes? When assessing health damages, how is qualitative data utilized, and how could it be utilized within the Risk Assessment and Management? It is generally accepted within the scientific community that women in their reproductive years and children manifest disproportionate negative health impacts from exposure to radioactive contaminants. Based on preliminary research, the most vulnerable populations are women, children, and the socially marginalized. Methods utilized for data collection in this study include Archival Research, Participant Observation, and Ethnography. The narratives of Hanford Down-Winders impacted by plutonium production in Hanford, Washington, are contrasted with the experience of Hibakusha, the atomic bomb survivors of the nuclear weapon dropped on Nagasaki, Japan at the end of World War II. Qualitative data can be used within risk assessment, required by Environmental Justice regulations such as the Comprehensive Environmental Response, Compensation, and Liability Act ('CERCLA'). CERCLA was developed by the legislature to address issues concerning federal management of releases, or threatened releases, of hazardous substances. This information is used to gain insight into the long-term consequences of continued perpetuation of nuclear technologies. Qualitative data derived from this study will be used to improve current methods of risk assessment and management of Federal Superfund Sites like Hanford, as well as to provide methodology for the formulation of international risk analysis concerning the future of nuclear technologies.

Introduction

Throughout my investigation into the industrial complex that enables the perpetuation of nuclear technologies, I have observed notable patterns of atrocious health abnormalities. These abnormalities are particularly pronounced in women, children, and the unborn. Despite the seriousness of these consequences, there is little awareness surrounding nuclear threats to reproduction and the development of children.

The impacts of the nuclear production chain will be analyzed with the aid of Down-Winders of the Hanford Nuclear Site in Eastern

Washington and with Hibakusha, atomic bomb survivors in Hiroshima and Nagasaki, Japan. The nuclear political economy is extremely complex, but we will focus on the narratives provided by a Hanford Down-Winder woman who was in her reproductive years during peak emissions, a Hanford Down-Winder man who was a child during peak emissions and two women who survived the atomic bombing of Hiroshima and Nagasaki. This research and analysis is grounded in the Environmental Justice Framework. It attempts to address how vulnerable populations, predominantly women in their reproductive years and children, experience disproportionate negative health impacts.

In 1943, Hanford, Washington became home to the world's first full-scale plutonium production plant. The Hanford Site produced the weapons grade plutonium used in the Nagasaki bomb, code-named 'Fat-Man'. After the war, Hanford increased plutonium production, providing most of the plutonium for the more than 60,000 weapons in the U.S. nuclear arsenal (Department of Energy "Hanford Overview"). During this time Hanford's operation resulted in significant releases of radioactive contaminants into the air, soil, and the waters of the Columbia Rivers, and aquifers. The decommissioning period for most reactors occurred between 1964 and 1971. The last reactor operated until 1987, and was used to fuel the civilian electrical grid as well as to produce plutonium for nuclear weapons (Sanger, 1995).

Hanford was declared the nation's most contaminated site under the CERCLA National Priorities List ('NPL') by 1988. The site is currently operated by the United States Department of Energy in cooperation with the Washington State Department of Ecology ('WSDOE'), and the Environmental Protection Agency ('EPA'). Native American Nations including the Yakama Nation, the Nez Perce, Umatilla, Walla Walla, Cayuse, and Wanapum peoples all have treaty rights to the land and have significant interest in its management. The operation of the Hanford Site released significant amounts of radioactive contaminants into the air resulting in reproductive loss, gross fetal abnormalities, thyroid cancer, and various other radiation induced illnesses.

On August 9, 1945 American soldiers dropped a nuclear weapon code-named 'Fat-Man' onto the people of Nagasaki, Japan. The plutonium in this bomb was produced at the Hanford Site. Within the first two to four months 60,000-80,000 people in Nagasaki had died. These people died from flash or flame burns, falling debris, and other related causes. In the following months many died from burns, radiation sickness, and other injuries compounded with other radiation related illnesses. Health complications associated with external, as well as

internal, radiation caused by the bombing continue today for the last of the Hibakusha ('atomic bomb survivors'). Most who died were civilians. The ripple of the bombings is still felt throughout Japan, and bomb survivors still share their stories for the sake of future generations.

Due to the cultural, political, economic and environmental contingencies of plutonium production, WWII atomic bombings, and radioactive waste cleanup, anthropologists are uniquely situated to provide valuable insight and knowledge relevant to the development of more just, equitable, and sustainable policies to move beyond nuclear. While anthropology is valuable to this process we cannot forget that a multitude of participants and perspectives must come together to create lasting impacts, and policies, which will carry into the future and heal past trauma. Interdisciplinary, collaborative endeavors must be fostered and executed if we are to succeed in promoting peace and orchestrating a societal shift towards universal health and prosperity.

Methodology

Archival research, participant observation and ethnographic interviewing are used to access perspectives on how nuclear development impacts human health and reproduction. This research paradigm has enabled me to access underrepresented populations about extremely sensitive issues, such as women's traumatic reproductive abnormalities. This method is particularly effective for issues involving environmental justice concerns within marginalized populations. I was fortunate enough to have the support and consent to share information collected from the ethnographic interviews, and I have preserved them using audio and visual recording equipment. Processing, preservation and making these interviews accessible is still in process.

General Research Paradigm: Action Research

My working principles emphasize relationships, communication, participation, and inclusion. Throughout my engagement I must constantly reassess my research process with the guidance of the community and its various stakeholders. By pursuing community input, and promoting collaboration, I am better able to construct meaningful research and work with stakeholders to better represent their experience and valuable perspectives on these complex issues. I follow strict procedures to ensure the well-being of participants. The privacy and confidentiality of my participants is paramount. A specific protocol for obtaining informed consent is an essential part of the research process. Utilizing sociable research processes reinforces the ethical rigor of credibility, transferability, dependability, and conformability to check the

trustworthiness of procedures. I used Ernest T. Stringer's 2007 publication *Action Research,* a comprehensive guide to the Action Research Paradigm, as the main model to inform my methodology.

Having deeply considered and internalized the theoretical and ethical considerations of this type of sensitive research engagement, I was able to move forward with diplomacy, gaining insight through mindful data gathering. The first cycle of the action research process is qualitative in nature and requires the researcher to gather information about participants' experiences and perspectives. Then, preferably with the aid of the participant, define the problem or issue in terms that "make sense" and are true to their own terms.

Archival Research

One of the great successes of this project was the great wealth of 'accessible' archival material. Sources ranged from National Regulatory Agency documents, to Environmental Impact Statements, to Official United States documentation of WWII and the Marshall Project and beyond. A huge amount of information can be found on the Hanford Site, and more information is released by the day. Unfortunately a large part of the task involves an immense expenditure of "code-breaking" because of the excessive use of technical jargon. The subject matter of most of these materials relates to the Federal clean-up required by regulatory requirements established during the 1960s. It is difficult to deduce the impacts on people based on these technical documents. The difficulty is not in finding the statistics, but in deciphering them.

There has been little effort to make documents accessible concerning the health impacts of radionuclide exposures as well as the risk of exposure associated with the Hanford Nuclear Waste Site and the enduring impacts of external and internal radiation exposure caused by atomic bombs. As previously mentioned, the majority of the information found on the Hanford Site is qualitative in nature, and is very difficult for the average stakeholder to understand. In contrast, most of the information archived from the Japanese WWII experience of surviving the atomic bombings is quantitative. Later we will discuss the strengths and weaknesses of quantitative and qualitative data collection, and work towards an integrative method.

Participant Observation

An essential component of genuine action research is Participant Observation. This is an on-going cycle of Observation, Action, and Reflection. This form of observation is distinct from observational routines typically used in experimental research or clinical practice.

The Nuclear Rabbit Hole:
Environmental Justice for Women, Children, and the Unborn

Instead of observing only specified things, the researcher takes a more holistic, ethnographic approach and is more responsive to the needs of participants sharing sensitive information. Participant Observation also serves as a profound means of developing rapport with stakeholders. This method provides "opportunities to engage in interviews and conversations that extend the pool of information available" (Stringer, 77). By volunteering with local non-profit organizations and attending public meetings on the Hanford Nuclear Waste site clean-up, and maintaining these contacts, I have developed a network of people and resources that are the foundation of my research, engagement, and awareness of this issue.

*Figure 1. (**left**) Photograph from Recording of Public Participation Meeting 7/21/2011 by Mike McCormick **Figure 2. (right)** On-campus outreach Spring 2011.*

The second leg of my research, in Japan, provided me with the opportunity to participate in Peace Ceremonies held on the anniversary of the bombings in Hiroshima and Nagasaki. The group also visited various Peace Museums and participated in ceremonies held at local elementary schools that had been decimated by the bombings. One of the most profound and symbolic experiences was the Hiroshima Lantern Ceremony. The tradition is to write messages of peace on a lantern and send them down the river which runs through the peace monuments.

Our 'peace family' was comprised of two Japanese students, a girl from Hiroshima and a boy from Nagasaki, one Korean girl, one Chinese girl, and two American students representing both coasts (Seattle, Washington and Washington D.C.). Our peace lantern had messages of peace in four languages: Japanese, Chinese, Korean and English.

Throughout this research journey I have participated in a wide array of events and activities, both while in Japan, and through continuous involvement with the Hanford Site. After participant observing, I recorded my observations as field notes.

Figure 3. (left) *Photograph of Peace Lantern launch August 6, 2012* ***Figure 4. (right)*** *Picture of Peace Family after we finished our collective message of peace.*

Ethnography: Semi-Structured Interview and the Importance of Rapport

Ethnographic interviews are most effective when they evolve as a semi-structured and almost conversational exchange. This leads to unexpected information that might otherwise be missed if the researcher follows too strictly a set of predetermined questions. The ethnographic interview is also a powerful narrative form because it provides stakeholders with opportunities to describe the situation in their own terms. This reflexive process enables the interviewee to explore his or her experiences in detail and to reveal the many features of that experience that have an effect on the issue investigated.
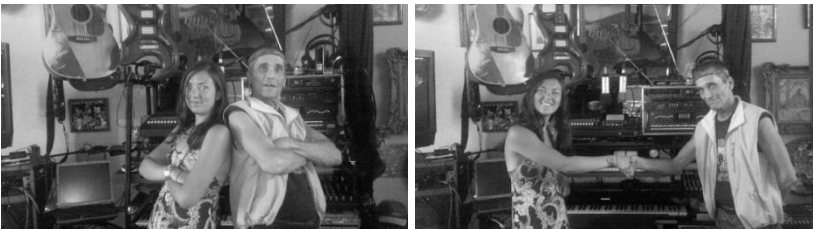
Figure 5. *Images from interview with James Stone Cipher III; Cipher holds the world record for living the longest without a thyroid, which was likely deteriorated by exposure to Iodine-131 during Cold-War peak plutonium production at Hanford. These photos illustrate the birth of our collaborative efforts. Used with permission.*

Audio and Video Recorders

I utilized tape recording and videotaping when possible in order to record the accounts and make them as detailed and accurate as possible as well as transferable to a wider audience. Tape recorders were not used if it threatened the development of rapport with respondents. I was always prepared to stop the recorder and allow respondents to speak "off the record" at any sign of discomfort. Prior to the recording I asked the participants' permission to record their perspective. After informed consent was obtained I set up the camera and captured the best footage I

could. Now that these invaluable perspectives have been collected it is now my duty to edit them into digestible chunks and create an online database where they can be accessed.

Discourse Analysis

After transcribing my field notes, editing my footage, field notes, and reviewing documents received throughout the research, I engaged in the process of critical discourse analysis. Critical Discourse Analysis was pioneered by discourse analysts such as Norman Fairclough, Tuen van Dijk and Ruth Wodak. Nicola Woods's 2006 publication, *Describing Discourse: A Practical Guide to Discourse Analysis*, describes Critical Discourse Analysis (CDA) as an "interdisciplinary analytical perspective… [which] seeks to examine language as a form of cultural and social practice, and it is an approach which allows the description and interpretation of social life as it is represented in talk and texts"(Woods, xiv). Critical discourse analysis focuses predominantly on the relationship between social power and discourse by studying the way in which "social power abuse, dominance, and inequality are enacted, reproduced, and resisted by text and talk in the social and political context"(van Dijk 2001, 352).

After research, reflection and transcription occurred I coded my data, which enabled me to discover patters using corpus, collocations, word frequencies and semantic prosody. It enabled me to draw out themes throughout the text by quantifying themes through text annotation. After identifying themes I attempted to chart connections within the text and within my field notes. Critical Discourse Analysis was helpful in attempting to understand the archival text as well as the ethnographic interviews within the cultural context of time, place and experience.

Significant Findings

After coding my data I found that the main themes were women, children, health, nuclear, and environmental justice. Another profound theme that emerged is the reality that radioactive waste knows no boundaries. People closest to the contamination and those who have multiple exposures experience increased damages, but these contaminants have the potential to impact us all. Water connects us, and the continued contamination to our waters poses a serious threat to all life and reproduction. There are intergenerational consequences to these industrial processes, and these must be taken into account when calculating risk and making decisions about how they will be used in the future. There is no way to adequately compensate those injured, but we must take their experiences and make efforts to not repeat our mistakes.

The Nuclear Production Chain has gross disproportionate negative health impacts to women, children, and the unborn. Despite this fact, current regulations and healthcare practices regarding radiation protection and compensation do not recognize the higher cancer risk per unit of radiation exposure experienced by women. Radiation regulations do not recognize non-cancer risks, which predominantly concern pregnant women, the embryo/fetus, infants and children. This has profound environmental justice implications. Environmental Justice ('EJ') calls for the "fair treatment and meaningful involvement of all people regardless of race, color, national origins, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies"(Miller, 2003). Currently, women and children are not a keystone part of the investigation into the health implications of nuclear technology perpetuation, and are not being adequately represented within federal risk assessment and management.

Environmental Justice also refers to the problem of geographic, organizational, and procedural inequities that comprise part of the construction of environmental racism (see Peña, 2005). People of color and low income communities are more like to live in areas in which they are exposed disproportionately to toxic wastes and other hazardous substances and risks (this is the geographic inequity dimension); they are more likely to be excluded from the organizations that make decisions affecting the sitting of hazardous waste and other risk-inducing sites (the organizational dimension); and they are more likely to suffer from unequal enforcement of the nation's environmental laws and regulations (the procedural inequity dimension).

For decades the disproportionate health impacts to children have been acknowledged, yet the increased risk to women and the unborn is not yet popular knowledge. Standards currently in place are based on young, white, male workers, code named 'Reference Man', and do not account for increased impacts to women, children or marginalized subgroups who also show increased rates of disease associated with subsequent exposure. This is a textbook example of an environmental justice violation and goes against the equal protection clause in the constitution.

There are large gaps in research regarding the variety of adverse health outcomes, especially for exposures during pregnancy, which partially accounts for this lack of regulatory accountability. More research into the increased impacts to women, children and the unborn must be explored vigorously if we are to set acceptable standards that satisfy this population's constitutional right to equal protection of the law. This lack of reliable quantitative data plays into the regulatory

process. However, a wealth of qualitative data does exist and provides us with first-hand experiences of these adverse health outcomes. Interdisciplinary studies need to be designed and implemented to address this gap in our knowledge concerning the health impacts of nuclear weapons development and deployment.

Though quantifiable data is highly respected within the regulatory development process, we cannot negate the profundity of firsthand experience or qualitative data. It provides us with a holistic picture of the events through the perspective of those most intimately impacted. A reoccurring theme within the Hanford community, as well as the Hibakusha of Hiroshima and Nagasaki, is reproduction and the importance of children. These two fundamental aspects of life were and continue to be seriously threatened by the perpetuation of industrial processes associated with the military industrial complex designed to create nuclear weapons.

Hanford Hibakusha

As demonstrated by the narratives featured above, children and the unborn are extremely impacted by the development of nuclear technologies. This disproportionate impact is a unifying thread among the various links on the nuclear production chain, as well as the communities that bear the burden.

Operations at the Hanford site, most notably the notorious Green Runs, have impacted surrounding communities predominantly by exposing them to internal radiation through inhalation or ingestion of contaminants.

Walla Walla resident Kay Sutherland shared her story with Mike McCormick; the following transcribed discussion illustrates the price mothers, babies and children pay. These narratives serve to unify and inspire advocacy for the babies and for future generations who will bear the burden of our nuclear wastelands left behind.

Kay Sutherland told her story in a cemetery in Walla Walla devoted to babies. She pointed out the dates of death of all the tombstones, all of which corresponded to intentional releases of radioactive contaminants by the Hanford site.

> "All of these babies need to have a voice in what Hanford has done. This is what needs to be talked about, the children, the loss of what might have been, our future murdered… so much future taken away from them because of a handful of men that decided to play good

[sic] and took away our inheritance, our life, our hope"(Sutherland)

She goes on to disclose very intimate details of her own experience losing her children.

> "September 1962 there was a continuation of the green run prior to my pregnancy with my daughter who was born in 1963. My daughter Jennifer is also buried here. My daughter had double clubbed feet, probable dwarfism and other anomalies that the autopsy didn't report. She had tumors throughout her body, an enlarged liver and died from a massive stroke that disintegrated her brain. She lived fifteen hours and forty minutes." (Sutherland)

Kay was left to mourn her loss without explanation.

Another similarity that came to light through being exposed to both the perspectives of the Hibakusha in Japan and the Down-Winders in eastern Washington is that these women who had miscarriages, or children with birth defects, or could not conceive all initially believed that it was their fault. They felt that their reproductive issues were caused by something that was wrong with them.

Kay explains that she:

> "took guilt of these children on myself because I was their mother, they came from my heart and my soul and for some reason I couldn't understand why I couldn't have my children live with me… there was no closure for a lot of these children because their parents don't understand what they did that was wrong. I myself believed that it was my fault that my children died and it wasn't until I started waking up to the fact that it wasn't me, it was Hanford. Beautiful children who died before they even got to live." (Sutherland)

As she learned more about Hanford and the health effects that were being experienced by the downwind communities she embarked on a relentless pursuit to find her own truth.

Jennifer's birth was extremely traumatic for Kay. This case also provides an example of how medical procedures were not in the interest of the patient; research priorities were put above the needs of the patient.

They were not accommodated and the process only further perpetuated the pain associated with the loss of a child.

> "The doctor told me that when my water broke it was green and foul smelling. It took her two hours, according to her autopsy report, to die after her stroke. They never brought her to me so I could hold her, cradle her, love her. I wasn't even told until the following day that she was dead. The body had been removed and I wasn't even told that she had been cremated." (Sutherland)

She was under the impression that Jennifer had been buried in the same cemetery where she had this interview.

> "I found out after I started my search to find out my truth of what actually happened. She sat on a shelf of the mortuary for four years."(Sutherland)

She didn't know the truth until four to five years before this interview was taken.

> "Everything that I had thought was true wasn't… She was autopsied by the very same pathology lab that autopsied Hanford people, they would bring them over from Hanford. Steal them away and bring them to Walla Walla. Have the pathology lab do their tests or take their bodies [sic] parts and take them back to Hanford and Tri-City area without the family knowing. They were never informed nor did they ever give their consent. That is the nuclear industry for Hanford. I don't know that my daughters' tissue samples may not be in the nuclear mausoleum, the transuranium complex… the mausoleum is housed in Spokane, it has body parts, cadavers, fetuses, any kind of sample that you can imagine and more that the nuclear industry took in the dead of night under cloak and dagger from all over the United States, from all the nuclear facilities. It goes on and on."(Sutherland)

The consequences of nuclear weapons development and deployment are known but not shared, often at the expense of women, children and fetuses, this anomaly explained by Kay and other survivors.

Kay worked to figure out her truth and to give voice to the babies and unborn that were not allowed to live because of Hanford operations.

This ethnographic data illustrates the indiscriminate damages caused by the development of nuclear technologies. There are countless numbers of stories like these and cemeteries filled with babies just like the one Kay stood in. Many of these people are dying and we are losing opportunities to learn from their experiences. More data collection is needed so we can sustain the memory of these historical events, which have compromised the health of all people, plants and animals.

Hibakusha Testimonies

Survivors of the atomic bombing of Japan still have vivid memories of that day and the time of chaos that followed the bombing. Recurrent depictions include witnessing people with their eyes completely popped out of their sockets, people walking around with their skin hanging off them like rags, wounds that filled with maggots over time and people dying immediately from the shock of drinking water.

The Hibakusha who shared their stories with our group had a unifying message of peace. They choose to share their experience with young people in the hope that knowledge of the damages of nuclear war will influence future generations to never use these weapons of mass destruction and encourage the eradication of nuclear weapons and other nuclear technologies.

Hibakusha Seiko Ikeda described August 6th, 1945 to our group on August 4th, 2012, two days before the anniversary, in a small conference room in Hiroshima. She was 12 years old participating in a school monitoring group five kilometers from the hypocenter.

> "I looked closely at friends' faces, skin was coming off shagging like wax trickling down from faces. My face must have been like that as well… The wooden houses were crashed… I heard so many cries, "please help… there are children still living… there is still children stuck in the house. Some women were half crazy asking for help with their children inside." (Ikeda, August 4th, 2012)

Many Hibakusha stories remind us that women and children are needlessly sacrificed in war. The indiscriminate death catalyzed by nuclear weapons take the lives of our most innocent. She ended her talk with this closing message,

> "I want peace to be achieved, no more nuclear
> weapons… It is now your time to keep telling my story."
> (Ikeda, August 4th, 2012)

Many women experienced instantaneous, spontaneous abortion; unknown numbers of miscarriages followed the deployment of both atomic bombs.

Sakue Shimohira, a Hibakusha from Nagasaki shared her story with us in a large meeting hall in the basement of the Hibakusha Shop in Nagasaki. She painted a horrific picture of the times after the bombing. One moment described she will never forget.

> "There was a woman who came in [to the air raid
> shelter] with her baby, she was asking for water, then
> she fell and there was blood running from her neck. I
> found it was actually the baby who did not have its head
> anymore and it was the baby's blood running down her
> neck." (Shimohira, August 8, 2012)

After this scene she took her sister to look for their mother:

> "We tried to avoid the bodies but sometimes we would
> trip over their bodies, but we continued to look for our
> mother. We have to look for our house, but everything
> was burned. We finally found what was our gate, there
> was a badly burned body, and we reached to it and just
> crumbled down into pieces so we flipped over the body
> trying to figure out who it was. She had laid her hands
> over her face, when we removed those we saw what
> wasn't burned yet, it was our big sister, mother of our
> baby nephew… We wanted to find our mother so we
> called out but couldn't find her. There were so many
> bodies. We saw two charred bodies and we look at them,
> one of them didn't have any eyes but we saw a golden
> tooth and knew that was our mother." (Shimohira,
> August 8th, 2012)

Her brother found them soon after this discovery. By the morning his body was cold.

She lost her hair, had frequent nosebleeds, stomach injuries and dysentery. She and her sister were orphans. Within the darkness of the night they could see some light, she imagined it being the souls of the

deceased but later found that it was phosphorous from the dead people. Her elementary school had fifteen thousand students; fourteen thousand of them died.

Occupying forces came in, bulldozed huts and built an airstrip over the bones of the deceased. The orphans of Nagasaki followed these soldiers and dug through their garbage. It was the only way they ate. Many children were left orphans without shelter, clothing or food.

> "One day I heard some sounds from my sister's stomach, it was infected with maggots, it was the sound of maggots eating her flesh. My sister's condition got worse, so many maggots, in the dark I can't even pick off those maggots, when morning comes I can take them, but those maggots by morning they get so fat. My sister started saying to me "let's go to where our mother is, all these kids are doing that, they are killing themselves, we can lay on the railway and go where our mother is." (Shimohira, August 8th, 2012)

Around 1948 many of these orphans began committing suicide. As her sister's condition worsened, the frequency of suicidal ideation increased. She tried to encourage her sister to keep living.

> "My sister have even more maggots and so painful she would still say it's better to die… few days later my sister didn't come home, people were saying there was a young girl who threw herself onto the railway and died. It was my sister who ran into the railway and committed suicide. She had no hair and her face was such a mess, not recognizable… she had lost both her legs and arms… when you throw yourself into a train like that not a modern… it was a steam engine and I told them this is my sister, they asked how do you know that, I point to her stomach that was rotten and filled with maggots, that is how I knew." (Shimohira, August 8th, 2012)

She collected her sister's body parts and took them to a place to be cremated. After this she herself contemplated suicide a number of times and even laid on the tracks but would jump off when she felt the train approaching.

> "Dying takes courage too. Courage to die, courage to live. I was conflicted between those. Unfortunately my sister chose the courage to die because she missed her mother. If I die there would be no one to put flowers on my families' grave…It was good to live but there was no food. I had the injury in my stomach and again there was maggots." (Shimohira, August 8th, 2012)

Out of the ashes of Nagasaki, in the wake of her trauma she found a new life and happiness.

After she finished her talk she thanked us for coming to visit Nagasaki and hearing her story. She asked us to gather our wisdom to make a peaceful world without nuclear weapons "or we will not be able to live like a human being or die like a human being" (Shimohira, August 8th, 2012). She asked us to know what happened in the past and expressed her want to pass that knowledge onto future generations. Her last words were "I am soon going to disappear from this world. Have a happy and healthy life, I will pass the torch to you now" (Shimohira, August 8, 2012).

During follow up questions we were shown a pearl of love that warmed all of our hearts.

> "I ended up marrying a man that helped me. When mother died there was two bodies, my husband was the son of the other body and he was also a friend of my brothers. I was ten and he was sixteen and we helped each other so we married." (Shimohira, August 8, 2012)

Her husband was also a Hibakusha; he had problems with his thyroid, heart problems and multiple operations. He was frequently out of work so she took on the additional burden and worked as a typist and in sales.

> "I also wanted children and I got pregnant. I went to the doctor he said the baby is dead. Then I went to another hospital and the doctor there said no the baby is not dead. I actually hear two heart beats. I had twin girls. I was really happy." (Shimohira, August 8th, 2012)

Her twins were born prematurely, each about 1 kilogram. They spent their first weeks in an incubation container, fed by injecting milk into their mouths. Despite this, they grew up and both have successful careers. She now has grandchildren!

These memories must not be forgotten. It is the wish of every Hibakusha to whom I was exposed that we share their stories with future generations because they will not be able to when they are gone. They asked us to be their voice into the future. Their testimonies offer invaluable insight into the realities of nuclear war and the health impacts of radiation, both external and internal.

Conclusions

The consequences of developing and utilizing nuclear technologies cannot be calculated. You can find it in the lived experiences of those most intimately impacted. Women, children, the unborn, Native American populations, low-socioeconomic families, the elderly, and other marginalized sub-groups are disproportionately impacted. To assess health damages, qualitative data must be utilized to gain greater insight into how exposures have actually impacted people's lives. Sensitive approaches to community research are needed to access information that is typically withheld from doctors and other researchers. The establishment of rapport within communities is essential for effective research.

There is a wealth of knowledge in the lived experiences of people who have had their health damaged by exposure to radioactive contaminants. No amount of radiation is safe. Any amount of radioactive exposure will disproportionately damage women, children, and the unborn. The perpetuation of nuclear technologies leaves behind a toxic legacy which will continue to burden future generations and threaten their health and reproduction.

Radioactive contamination does not respect manmade boundaries. Transboundary risk assessment must be pursued to truly understand the extreme impacts caused by the perpetuation of nuclear technologies. Increased mining of uranium, increased production of nuclear fuel, and the waste left behind by reactors, are all sources of contamination that inevitably make it into our water and into our communities. New leaks in the underground radioactive waste tanks at Hanford continue to be discovered. The Fukushima Daiichi nuclear power plant disaster has yet to be contained. These are just a few examples of nuclear disasters that have yet to play out, and that have and will cause immeasurable damages. Please consider these factors if you are in any way at the decision making table, and remember that those decisions impact our women, children, and all future generations.

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Acknowledgments

Jacinta S. Heath
Department of Anthropology, Dr. Devon G. Peña
jacinta.heath@gmail.com

My research interests include, but are not limited to, disproportionate health impacts to marginalized populations related to the development of nuclear technologies. I am currently completing my J.D. at Vermont Law School and will pursue a Ph.D. in Medical Anthropology. After a career in public service, I plan on returning to academia to teach the next generation of leaders.

A New Approach to Controlling Epilepsy

Vicky A. Herrera

Abstract

Epilepsy is a neurological disease characterized by recurring seizures, and it affects millions. We hypothesize that modulation of p38 mitogen-activated protein kinase (p38 MAPK) will influence HCN channel activity, affecting the frequency of seizures in an animal model of epilepsy. p38 MAPK is a kinase activated by conditions of cellular stress. It strongly stimulates the hyperpolarization-activated cyclic nucleotide-gated (HCN) channels, which are voltage gated ion channels that are highly expressed in the cortex and hippocampus, the brain regions where seizure onset occurs. A decrease in HCN channel expression or function has previously been observed in epileptic animals associated with a loss of p38 MAPK activity, which produced neuronal hyperexcitability. We hypothesized that increasing p38 MAPK activity might decrease neuronal activity and decrease seizure frequency. In this experiment, epilepsy was induced in Sprague Dawley rats through treatment with pilocarpine, a convulsant drug. Recurrent, unprovoked seizures were seen three weeks after treatment. An osmotic pump was placed in the rats, delivering drugs that modulate p38 MAPK. The drug SB203580 (SB), a specific inhibitor of p38 MAPK, was administered, as was anisomycin, a non-specific activator of p38 MAPK. Animal brain activity was analyzed with video electroencephalography through electrode implants in the skulls of the rats. Inhibition of p38 MAPK by SB increased seizure frequency by 179 % as predicted, however, anisomycin also increased seizures by 236%. We hypothesize that this may be due to non-specific actions on other signaling pathways like the c-Jun N-terminal kinase pathway (JNK). We're investigating the role of JNK in modulating seizure frequency, and this may point us to some new therapies. The implications of this study may indicate a new approach to the control of epilepsy via anti-epileptic drugs targeting JNK.

Introduction

Epilepsy is a chronic disease devastating millions of people worldwide. It is characterized by recurrent seizures. These seizures vary in severity and stimulus, but its effects can be detrimental to human life. In order to help those afflicted with epilepsy, anti-epileptic drugs (AEDs) are used as treatment. These drugs are not effective on everyone, and in the Poolos Laboratory at Harborview Medical Center, we are using a new approach that utilizes an alternate pathway in the brain to lower

seizure frequency, and that may help patients live a normal life without the worry of brain damage and death whenever a seizure occurs.

   The generation of seizures occurs primarily in the hippocampus, cortex, and thalamus regions of the brain; however the focus of our research is of the hippocampus region. The CA1 region of the hippocampus is highly expressed with hyperpolarization-activated, cyclic nucleotide-gated (HCN) voltage-gated ion channels, located exclusively in the apical dendrites of pyramidal neurons[1]. HCN channels open to hyperpolarization and help generate neuronal activity in the brain and the heart (Figure 2). There are four genes encoding HCN channels expressed throughout the body, playing a significant role in heart and brain activity. Modulation of the HCN channel expression shows a strong correlation with the development of epilepsy[2]. An upregulation of HCN channel activity via medication (such as the AED lamotrigine) decreases neuronal excitability, and a downregulation does the opposite, increasing neuronal excitability[3]. Epileptic patients with increased neuronal excitability during seizures have a decrease in the expression of HCN channels[4]. In this study we used an activator and an inhibitor of p38 MAPK to modulate its activity in epileptic rats. Epilepsy was induced in Sprague Dawley rats through treatment with pilocarpine, a convulsant drug that acts as a muscarinic receptor agonist. SB203580 (SB), a specific inhibitor of p38 MAPK, was administered, as was anisomycin, a non-specific activator of p38 MAPK.
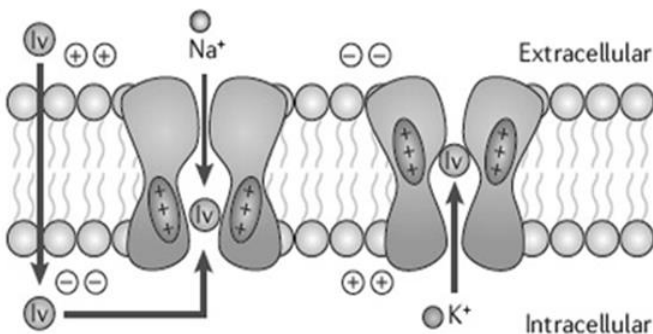
Figure 1. Hyperpolarization-activated, cyclic nucleotide-gated (HCN) voltage-gated ion channels.

   P38 mitogen-activated protein kinase (p38 MAPK) is an activator of HCN channels. It starts a phosphorylation signal cascade that ultimately leads to the activation of the HCN channels. In previous

studies by our laboratory, loss of p38 MAPK activity was seen in chronic epilepsy[5].

Materials and Methods

Animal Care and Epilepsy

Male Sprague Dawley (weighing 150 g or more) aged 6 weeks old were used in this study. All animals were kept under a constant 12-hour light/dark cycle with unlimited access to food and water. Epilepsy was induced with treatment of pilocarpine. Scopolamine was injected 30 minutes before injection of pilocarpine. Pilocarpine injections were given until recurrent seizures occurred. Three weeks after treatment with pilocarpine, recurring spontaneous seizures occurred. All manipulations were performed in accordance with the University of Washington regulations governing laboratory animal care.

Osmotic Pump Preparation

Osmotic pumps were prepared the night before and primed overnight. The pumps contained either the saline, or SB. The Vehicle for SB contained 150 ul of DMSO in 5.1 ml sterile isotonic 0.9% saline in 2ML4 pump. 1 mg of SB was placed in 150 ul of the DMSO. SP600125 (SP) and anisomycin were prepared in a similar way. The pump was placed overnight in a water bath until its use.

Electrode and Cannula Implantation

Cannulas were implanted three weeks after epilepsy was induced with pilocarpine treatment and status epilepticus was seen. The animals were injected with topical anesthetic subcutaneously. Drill holes for the cannula, four electrodes and three anchors were made (Figure 2). The cannulas were implanted in bregma coordinates: AP=-1.2 and ML=2.2. The tubing was flushed with saline and attached to the end of the pump. A pocket for the pump was created using hemostats. It was irrigated with 6.5% betadine 3 times and irrigated with sterile saline until clean. The plastic pedestal was attached to the EEG cable. Electrodes were inserted as shown in figure 2. 0.075 ml of buprenorphine was injected subcutaneously. Pure oxygen was pumped into cage for 15 minutes for post-op recovery. The animals were monitored with video electroencephalography (EEG) beginning a week after surgery and for ten days. The video EEGs were analyzed for seizures using the Racine scale where seizures are graded 1-5, five being the most severe seizure[6].
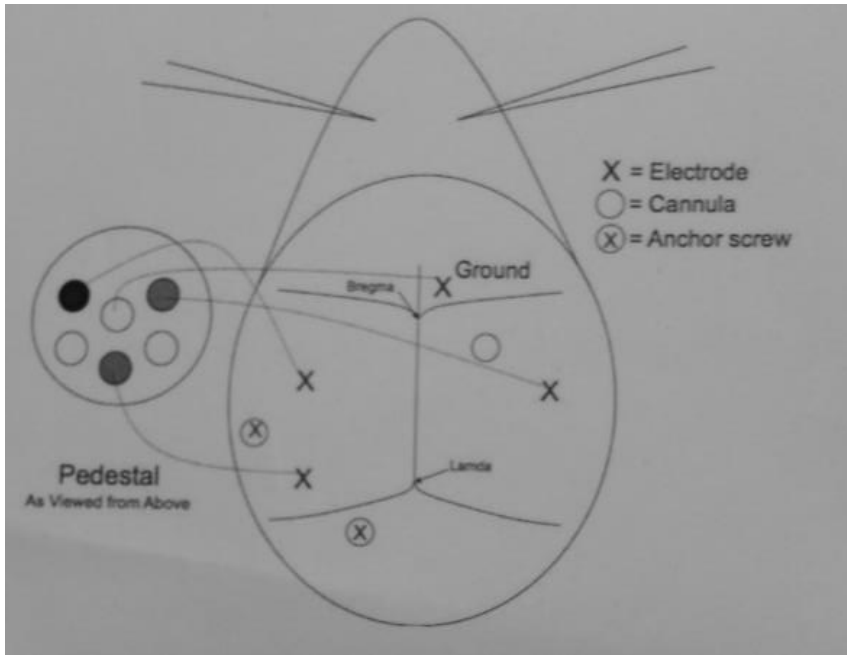
**Figure 2.** *Diagram showing placement of electrodes (Poolos 2002).*

Brain Slice Preparation

Solution preparation was made 1 hour before perfusion. The solution contains 6.13g Choline cl, 0.092 ascorbate, and 0.132g Pyruvate Anesthesia was administered to animal through Intraperitoneal injection (IP). The animal was perfused for 1.5 minutes with solution. Brain slices were trimmed down and transferred to incubation with an eyedropper. The slices were incubated in a water bath for 10 minutes, and placed in room temperature for 60 minutes.

Results

Inhibition of p38 MAPK by SB increased seizure frequency by 176 % of baseline (n=9, p<.01) as predicted; however, activation of p38 MAPK anisomycin also increased seizure frequency by 277% (n=4, p<.05). We hypothesized that this may be due to non-specific actions of anisomycin on other signaling pathways like the c-Jun N-terminal kinase pathway (JNK) (Figure 3). Besides halting protein synthesis, anisomycin also activates kinases. Its effect on the kinases may be a reason that we did not see the results we expected. Anisomycin may be activating an alternate pathway through these kinases. JNK has been seen to be involved in neuronal degeneration[5].

Ongoing research is in process. Dr. Poolos and I are currently researching how the JNK pathway affects the frequency of seizures. We are administering an inhibitor of JNK, SP600125 (SP) to epileptic rats as explained above. We hypothesize that seizure frequency will decrease with administration of this drug by phosphorylation cascade, which we hope will lead to the decrease in HCN channel expression and to an increase in neuronal excitably.
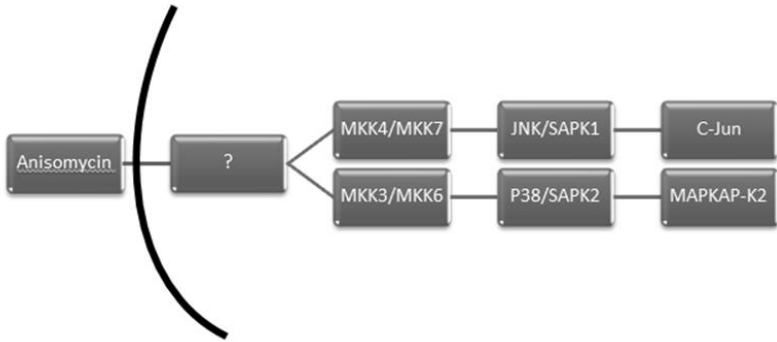
Figure 3. *Potential JNK pathway (Poolos 2012).*

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Acknowledgments

Vicky A Herrera
Harborview Medical Center, Dr. Nicholas Poolos
vkyherrera@gmail.com

My research interests include neurological disorders and sleep architecture. I plan to attend graduate school and earn my Ph.D in Biochemistry.

The Effects of Counseling Intervention Programs on Academic Achievement among Elementary School Students of Color

Rahma A. Jama

Abstract

Despite strong public support for school counseling intervention programs, there remains a lack of state and federal funding for such programs. Typical of national trends, Seattle area schools in low-income communities suffer from a severe lack of funding for intervention programs. As a counseling intern in one of Seattle's urban elementary and middle schools (PK-8), I have seen the impact that school counselors and intervention programs can have on a student's personal and academic achievement. However, not much is known about whether the group interventions work as well as other forms of interventions. The hypothesis of this study was that the effectiveness of individual counseling combined with group intervention has a more significant impact than a singular approach. The methodological approach of this research was to conduct a literature review of current areas of effectiveness of school counseling programs in elementary schools; I also used my experience as a counseling intern. In addition, I conducted an interview with my practicum instructor, a school counselor. I anticipate that a combined approach is more useful because it gives students an opportunity to talk about academic and personal topics and allowing them to see that they are not alone. This study has implications for the planning and funding of elementary school interventions.

Introduction

The objective of this research was to evaluate the effectiveness of combining small groups and individual counseling to facilitate behavior and learning in elementary and middle school settings in the Seattle public school district.

The research question was:

> *What type of school counseling intervention (group, individual, or combination) tends to be most effective and contributes best to improving academic performance and desired behavioral patterns for elementary school students?*

It was hypothesized that:

> *The effectiveness of individual counseling combined with group intervention has a more significant impact than a singular approach.*

Literature review
Individual Counseling Intervention

Individual school counseling has a positive effect on students by helping them share their personal stories. It helps both the school counselor and the student build one-on-one relationships characterized by trust. Rubin (2008) says that the most important factor influencing the effectiveness of interventions is the "quality of practitioner-client relationship" (Rubin, 2008).

Eschenaur (2005) examined a single-case study of a third-grade African-American boy who was diagnosed with ADHD. His teacher, also African American, presumed that he could not make academic progress in a traditional class. On the other hand, the school counselor believed that individual counseling intervention could increase the student's ability to succeed both academically and behaviorally. The school counselor worked with the student's teachers and mother. Subsequently, the third grade boy received individual counseling both inside and outside the classroom. As a result, the student improved both his academic and behavioral skills, and received the highest reading score in his fifth-grade graduating class (Eschenaur, 2005).

Group Counseling Intervention

Small group counseling has positive effects on students; they often learn from each other, develop new coping strategies, and support each other to overcoming problems. Brigman & Campbell (2003) conducted a study in a school setting on the effectiveness of small group counseling interventions which aimed to contribute to the students' personal development and academic achievement. Their study was replicated by Webb and Brigman (2005). These studies are specifically evaluated the Student Success Skills (SSS) group counseling intervention in several schools in 3rd, 5th, and 9th grades. They concluded that the SSS program was successful in increasing students' test scores and "school success behavior" (Steen, 2001).

Steen (2011) conducted an exploratory study in which he examined "the impact a group counseling intervention could have in helping students with personal development and as a result [academic success]" (Steen, 2011). He studied three elementary schools by 1)

developing and implementing a group counseling intervention addressing both academic and personal considerations, and 2) collecting data to evaluate the impact of the group counseling interventions. The result of this study showed that students in the treatment group had much higher grade point averages (GPAs) in Language Arts than the students in the control group (Steen, 2011).

Bostick and Anderson (2009) evaluated a small-group counseling intervention on forty-nine third-grade students with social skills deficits and found that students who participated in the intervention experienced reduced loneliness and social anxiety; in addition, they increased academic achievement (Bostick & Anderson, 2009).

Methods

This research study was targeting Black and African-American elementary school students in a low-income school district. The research design was both qualitative and quantitative, involving a literature review, interviews with my advisor who works as a school counselor, and my own observations via Counseling Internship. Data on the students was not collected because of Human Subject issue.

School Counselor Interview

I interviewed my advisor at my practicum placement who is a school counselor. The interview lasted thirty-minutes and consisted of three questions about the effectiveness of the counseling interventions which he provides in his school. I asked the following questions:

Which services are provided in your school?

The services provided by the school counselor are friendship group, social skill group, school success group, academic behavioral support, family support, Step 2 Bullying Prevention and Conflict Resolution, peer mediation training, parent conferences, student and teacher conferences, professional development training, and individual and group counseling.

What makes your counseling interventions successful?

He answered that the success of his counseling intervention depends on collaboration among school counselors, teachers, school administrators, students and their parents. He also mentioned the use of the evidence-based programs such as

Wellness Program and the Ruler Approach, which are effective programs and contribute to success. He concluded that he measures his success by evaluating intervention programs, and if the students' grades, attendance, and positive behavior increase, he knows that his interventions are beneficial for the students.

What challenges do you meet as a school counselor?

He answered that he doesn't have many barriers because the teachers let him pull the target students from the classrooms. In addition, the teachers work with him with the evaluation of the students. First, the teacher assesses the students' scores including behavior and academics, and then the teacher refers to the school counselor about which students need help. However, the barriers he mentioned were the lack of consistent parent involvement and the limited time he sees students due to structural time in the classroom.

Observation via Counseling Internship

As a counseling intern in one of Seattle's urban elementary and middle schools (PK-8), I have seen the impact that school counselors and intervention programs can have on a student's personal development and academic achievement. The counseling interventions I currently use, according to the guidelines I have been given by the school counselor with whom I work, include both group lessons and one-on-one counseling with girls. These students are 5th graders. Nine of the ten students are children of color. I also facilitate two middle school girls groups consisting entirely of African-American students. In the group lessons, I emphasize issues of respect, conflict resolution, anger management, anti-bullying, self-esteem, and friendship building. In the one-on-one sessions, I talk with students in private, listen, and give guidance. In addition, I observe students in their classes.

A graduate student and I facilitate these groups. Group sessions last for eight weeks and ran through the 2012-2013 school year. We scheduled thirty-minute group and one-on-one counseling sessions, and we plan to evaluate their effectiveness every quarter. The 5th grade group receives both individual and group counseling, while the middle-school girl group receives only group counseling. I noticed that I have built a better relationship with students who receive both group and individual counseling.

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We use an evidence-based practice called The Ruler Approach. This is related to students' social and emotional competencies. This approach is an "outgrowth of decades of research on emotional intelligence conducted by the Yale Center for Emotional Intelligence … [and] has proven that emotional skills are integral to personal, social, and academic success" (The RULER Approach.org). The RULER Approach teaches 5 key emotional literacy skills:

Recognizing emotions in oneself and others
Understanding the causes and consequences of emotions
Labeling the full range of emotions using a rich vocabulary
Expressing emotions appropriately in different contexts
Regulating emotions effectively to foster healthy
    relationships and achieve goals

The RULER Approach Tools

We use The Mood Meter tool (Figure1) at both the start and the end of the lesson by checking students' feelings. The Mood Meter helps students to identify their feelings, for example, happiness, excitement, sadness, or anger. The purpose is that for students to develop skills in recognizing, expressing, and managing their emotions.

Figure 1. The Mood Meter: Red (Angry), Blue (Sad), Green (happy), and Yellow (Excited)

The other tool we use is the Meta-Moment (Figure 2). We teach students strategies for managing their anger and developing problem solving skills. This tool helps students to "expand the 'space in time'

between an emotional trigger and a response" (The RULER Approach.org).

Figure 2. The Meta-Moment: Step 1-6 anger-management strategies to control body and mind.

Overall, we are trying to give students the help they need, and we measure our success by looking at students' grades, attendance, and behavior during class and recess. I found that more than half of the 5th grade girls group which receives both approaches increased their ability to solve problems and were focused more during class lectures while the middle school girl groups who only receive group counseling did not show improvement.

Results

The findings of the literature review of current areas of effectiveness in elementary school counseling programs, my experience of facilitating small groups, as well as individual counseling interventions indicates that both approaches help students to increase their grades and improve their behavior in different ways. Steen (2011) found out that students in the treatment group had much higher GPAs in Language Arts than the students in the control group, while Bostick & Anderson (2009) found that students who participated in the small-group counseling interventions experienced reduced loneliness and social anxiety while experiencing increased academic achievement. Eschenaur

(2005) examined a single-case study in a third grade boy, who showed improvement in both his academic and behavior skills, suggesting that individual school counseling is the best approach to meet the student's needs.

Recommendations

I suggest that a combination of group and individual school counseling is the most effective intervention because it gives students an opportunity to talk about academic and personal topics which allows them to see that they are not alone. In addition, they build one-on-one relationships which are characterized with trust. However, schools located in low-income areas may not be able to serve a combined approach to their students due to time and funding barriers.

I have benefited to facilitate small groups and individual counseling interventions. My insight is that school counselors play an important role in students' education.

Discussion

As indicative as these results are, there are limitations to the findings. The biggest limitation of this study is the lack of data collection of the counseling interventions for the 5th graders. Another limitation that may affect the effectiveness of the intervention is the lack of time. The counselors face limited time towards each student, while the students themselves face limited time out of the classroom setting. Funding was also a limiting factor since the Seattle Public schools have limited budgets, especially due to budget cuts, which may target school counseling programs. My recommendation for school counselors and school social workers is to stay updated with current evidence-based practices which are appropriate for their programs and contribute the most effectiveness. Further research is needed about the effectiveness of school counseling interventions. In addition, a strategy to identify students that would benefit from a combined approach is needed.

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Rahma A. Jama
School of Social Work, Dr. Kimberly Hudson
rahmaj@uw.edu or ducaysan@gmail.com

My research interest is education and parent-involvement among immigrant populations. After graduation, I will start a Masters of Social Welfare Program in the Summer of 2013. In five years from now, I plan to have received a Master of Arts in the field of social work, and be enrolled in a PhD program with a concentration on refugees and spirituality.

Exploring the Relationship between Executive Functioning and Social Emotional Development during the Preschool Years

Ashley D. Johnson

Abstract

The goal of this literature review was to identify and synthesize educational and neurological research examining the relationship between executive functioning skills and social-emotional development in young children. Educational research overwhelmingly suggests that student motivation and engagement share a positive relationship with pro-social behavior. For instance, motivated and engaged students tend to be enthusiastic and more actively involved in classroom-based activities. This active engagement can present opportunities for many children to hone critical cognitive executive functioning skills. Executive functioning is the coordination of the complex cognitive processes that underlie our ability to remember, plan, and adapt appropriately to different environmental demands. Preschool teachers can facilitate this by intentionally arranging and planning educational environments that respect student autonomy, but encourage student collaboration. These powerful learning opportunities occur when the content students learn about is personally meaningful to them, there is a community of inquiry present in the classroom, and teachers create positive emotional climates. The Project Approach provides students with the opportunity to design and complete in-depth studies of real-world problems. The social and individualized nature of this approach to learning may suggest that a project-based learning environment may enable students to practice and develop executive functioning skills. The coordination of working memory, inhibitory control, and cognitive flexibility that young children use in these environments share a relationship with their academic and social-emotional outcomes, and subsequently has meaningful implications for early childhood practices.

Introduction

Recently, members of the scientific community have confirmed what early childhood educators and advocates have longtime speculated: experiences during infancy and the early years (2-7) directly impact the shaping of children's brain architecture (Center of the Developing Child, 2009). This information is critical as children's early experiences can set the stage for future learning outcomes in both positive and negative directions. This public awareness has put even more pressure on public and private early childhood stakeholders to provide quality early

childhood programs that are evidenced based and promote positive cognitive and social-emotional development. This formidable cognitive foundation is supplemented when children enter early childhood programs that are personally relevant (Brandt, 1998). These environments enable children to have some agency or autonomy over their learning, because the content is applicable to their lives. It's no secret that young children are natural investigators, and tend to enjoy learning in environments that are active and goal oriented. Unfortunately with our nation's interest in academic achievement being measured on standardized assessment and evaluations, many educators find it increasingly difficult to provide meaningful and academically relevant learning experiences that actively engage students.

The Project Approach

The Project Approach in Three Phases

Fortunately, project-based learning environments can offer an opportunity for children to play a very active role in their educational experience by allowing the complex questions they have about the real world to be answered through personal and collaborative investigations (Katz & Chard, 2000). Projects are characterized by having 3 phases or a beginning, middle and end. However, before introducing a project to a class, educators should engage in collaborative preliminary planning (NAEYC, 2004). During this time teachers should select a topic to examine based on students' interests. Teachers should also discuss their previous experiences with the topic and represent these experiences in a topic or planning web. This topic web is revised and added to as the project transpires in the classroom and is used to document the progress of the project.

Once this preliminary planning is complete, the first phase of the project can begin. Phase 1 is characterized by teachers discussing the topic of interest with students in an attempt to discover what direct or indirect experiences they may have with the topic. Students are then asked to create physical representations of these experiences. These can take the form of drawing pictures, or constructing an object out of blocks, clay, old boxes, and even recycled bottles. What is important is that students are using physical and creative media to represent their personal experiences with the topic at hand. During this phase teachers should encourage students to explain their representations, and how they relate to the topic. Students' representations may be captured with a camera, and their explanations should be recorded by teachers in print form near the photo and displayed. Teachers should utilize these experiences and representations to aid students in creating questions that

they would like to answer during the project. Letters should be sent home to parents at this time to enable students to discuss the project content at home with their families. The purpose of Phase 1 is for teachers to learn about what students' preliminary understandings of the topic are, on which they can base future learning.

During the second phase of the project, children pursue inquiry by collecting data to answer their questions. Teachers should arrange time for children to talk with experts on the topic being investigated. For instance if students are completing a project on foods they eat at home, teachers may take students to visit a farm and speak with a farmer. During this phase teachers provide a variety of valid resources to assist students with their investigation. These resources can take the form of cookbooks, internet resources or encyclopedias. What is essential about this phase is that each child is given the opportunity to represent what they are leaning and can represent this knowledge in a way that is meaningful and accessible to them. Some students may write about this in their journal, while other students may work with teachers to conduct a survey. Children may also demonstrate their learning through dramatic play. It is imperative that teachers make students aware of the diverse yet connected work that is being done amongst other students in the classroom. Group discussion is an effective way to make students aware of what other project work is happening in the classroom.

The goal of the third and final stage of the project is for students to conclude the project by reflecting upon what they have learned. This is also an opportunity for children to share what they have learned to other classes, principals and parents. This culminating event is planned by students, but teachers intentionally assist students in selecting the information and representations that should be shared during this showcase of their work. Teachers should also provide creative opportunities for students to present what they have learned. This could take the form of a play or hosting a restaurant in the classroom. After this phase, teachers should utilize what they learned about students' interests to make connections between the topic that was studied and a new investigative topic for a future project.

The Project Approach and Executive Functioning

This approach can also help educators to provide multiple levels of engagement that may create a context that supports communication, engagement and a subsequent reduction of problem behavior exhibited by students in the classroom (Katz & Chard, 2000). Since social emotional adjustment is something that children must practice and learn over time, it is possible that this educational approach allows children to

integrate and use critical executive function skills that promote self-regulation skills critical for success in America's contemporary educational institutions. Scientists that study executive functioning describe it as being composed of three dimensions: working memory, inhibitory control and cognitive flexibility. These three components work together to produce competent executive functioning (Center on the Developing Child, 2011). It is inhibitory control that enables children to sort through their thoughts and impulses. It is what makes focusing and selective attention possible. Since project-centered learning environments require students to work in both small and large groups to construct representations and investigate problems, it is possible that students would be more personally invested in what they are working on and subsequently more likely to focus on the topic at hand. This ability to focus for an extended period of time is related to inhibitory control and the ability to mitigate impulses while persisting with a task. Project work also enables children to discuss their previous experiences with a topic in hand in small and large group settings. During this time they are expected to listen to others and wait their turn to share. This also suggests that project centered environments provide opportunities for students to practice inhibitory control skills.

Inhibitory control works together with working memory to set the stage for the second component of executive functioning. This refers to our ability to retain information over short periods of time and to use it in in our everyday lives. It is working memory that enables students to remember short directions. It also assists children with social activities such as planning or acting out a skit and taking turns. Project-centered learning environments are highly social and enable students to work in both small and large groups in tasks like interviewing experts, conducting surveys and reading nonfiction literature. Children practice retaining information to help them solve problems that may arise when working on a project.

Cognitive flexibility refers to a person's ability to change demands, abilities and perspectives. Children use this skill to approach experiments in different ways or utilize a different technique when resolving a conflict with another child (The Center on the Developing Child, 2011). Since project-based learning environments are highly adaptive and individualized, it is possible that students will be exposed to situations where their initial categories of thinking may be challenged by their experiences. For instance, going to a farm to learn about food may be mysterious to a young student who believed food only comes from the store. The ability to expose students to a variety of different contexts and environments through the project investigation may enable students to be

more flexible in their thinking. This ability to forego misunderstandings
when presented with an environment that challenges their thinking may
assist students in being more fluid when solving a future conflict with
other students.

**Executive Functioning and Social-Emotional Development in Young
Children**

Young children who don't have the opportunity to hone and
practice critical executive functioning skills, or who have cognitive
disabilities that impact the development of these skills, tend to have a
very difficult time managing ordinary tasks that are critical to success in
everyday life, such as making or keeping friends (Center of the
Developing Child, 2011). Many young children who struggle with
social-emotional learning difficulties also experience or have problems
with executive functioning skills (Riggs et. al, 2006). These challenges
include: difficulty completing tasks, managing materials, managing
attention and social difficulties. There is a great deal of research that
supports the relationship between poor executive functioning and
negative social-emotional adjustment in preschool-aged children (Riggs
et. al, 2006). In fact, a cross-sectional assessment of 82 preschool-aged
children revealed that challenges in executive functioning skills
operationalized in the study as poor performance on executive function
oriented tasks such as block sorting, rapid alternating, stimulus changing
was positively correlated with young children's inability to control
disruptive behavior (Cole et al, 1993). This finding was supported by
another study which followed 160 preschool-aged boys. Half of these
students were referred to clinics that specialized in providing
interventions to children with behavioral challenges before the study
began. The data from this study indicated that the young boys referred to
the behavioral clinic performed more poorly on tasks assessing both
verbal fluency and motor planning (Spetlz et al, 1999). With this being
said, there is evidence that supports the relationship between executive
functioning skills and social-emotional adjustment. This may imply that
assisting young children who struggle behaviorally in developing
executive functioning skills can have significant positive impact on
future academic achievement and social-emotional adjustment.

Social-Emotional Climate

Educational progressives like John Dewey have described the
characteristics of these learning environments and teaching strategies that
foster positive emotions like self-regulation. These environments
encourage children to touch, smell and feel personally connected to what

they are learning. Dewey also viewed children as being active constructors of their own knowledge; subsequently, students should help carry on the educational process. Teachers can guide this by intentionally structuring the environment to facilitate learning and should empower students to work cooperatively and share with one another. This new school system that Dewey envisioned set the stage for the creation of the project approach. Dewey argued that children learn best when provided with direct experiences. Subsequently, he believed that prosoical behaviors cannot be elicited through a universal curriculum, but can be honed by relating content learned in school to students' current understanding and interest (Novak, 1960). The Progressive Education Association, inspired by Dewey's ideas, later codified his doctrines as follows (Novak, 1960):

1. The conduct of the pupils shall be governed by themselves, according to the social needs of the community.
2. Interest shall be the motive for all work.
3. Teachers will inspire a desire for knowledge, and will serve as guides in the investigations undertaken, rather than as task-masters.
4. Scientific study of each pupil's development, physical, mental, social and spiritual, is absolutely essential to the intelligent direction of his development.
5. Greater attention is paid to the child's physical needs, with greater use of the out-of-doors.
6. Cooperation between school and home will fill all needs of the child's development such as music, dancing, play and other extra-curricular activities.

Educational research continues to suggest that children's ability to think and learn effectively is closely linked to their physical and social wellbeing (Scottish CCC, 1996). The relationship between learning and children's wellbeing is not one that is simple. What we do know is that strong emotions tend to enhance memory. Teachers create positive learning environments by fostering positive emotions like curiosity, excitement and laughter (Brandt, 1998). However we also know that schools can also be very stressful environments (Caine& Caine, 1997). Fortunately a great deal of research examining emotional regulation has been focused upon temperamental reactivity, and additional attention has been paid to ways that adults socialize children's development of optimal self-regulation .The emotional climate of the classroom is important for appropriate self-esteem to grow in relation to learning (McCoy & Raver,

2011). Students can develop self-esteem in environments where individual differences are appreciated and valued. Teachers can aid students' positive self-esteem by setting clear classroom expectations. When students engage in project work or problem centered learning, children can work towards divergent outcomes without discouragement. Since the Project Approach enables students to investigate questions they have about the world through projects, the amount of time and interest students' attribute to the project will dictate how motivated they are to engage in the project. Therefore, teachers should work with students to create questions that aren't easily solved by yes or no questions.

Educational research that focuses on the importance of motivation to incite excitement for learning in young children has led to a great deal of interest and inquiry regarding the value of project-centered learning in early childhood classrooms. Since project-based learning is a comprehensive perspective focused on teaching by engaging students in investigations, students are able to learn and grow in contextualized problem-solving environments. Subsequently, projects can connect phenomena learned about in the classroom and the real world (Sizer, 1984). Therefore, project-based education requires active engagement of students' efforts over an extended period of time, and this enables students to practice valuable executive functioning skills like focusing on tasks with minimal distraction. This learning also promotes links amongst subject matter disciplines and presents. Perhaps most importantly, projects are adaptable to different types of learners and learning environments (Blumenfeld et.al, 2000).

Implications for Policy and Practice

This information has meaningful implications for both policy and practice as poor executive functioning skills at early ages tend to be associated with "problem" behaviors in the classroom. Problem behaviors during the early childhood years are meaningful predictors of future behavior problems in students (Gilliam, 2011). Fortunately high quality preschool environments like educational environments that utilize the Project Approach are effective in reducing the number of behavioral problems exhibited by students, especially those who are from low-income environments who may not have the same access to these high quality early childhood experiences. However, what we know about cognitive development indicates that many children enter early childhood environments with poor executive functioning skills. Subsequently, severe behavioral challenges may be present at increasingly young ages, which make it difficult for these students to cope and be successful in traditional didactic early childhood classrooms (Gilliam, 2011). The

research suggests that these students' challenging behaviors may cause them to be expelled or removed from educational environments that are helpful for developing executive functioning skills.

A Personal Reflection

What prompted me to conduct this literary review were my experiences in an urban preschool classroom that was interested in implementing the project approach. Site supervisors believed that the inclusive nature of project-related work would enable students who struggled behaviorally and socially in class to work more collaboratively. I quickly learned that incorporating a project into a classroom, and asking students intentional questions to guide this process, is somewhat of an art and takes time and preparation on the adult's part. While I was unable to implement a project in this classroom, I saw some very promising things while observing the classroom that can set the precursor for project work. For instance, students were encouraged to make representations of aquatic life they saw on a field trip to an aquarium. Students' ability to talk with experts about marine life enabled them to create beautiful paintings of fish, seals, starfish, etc. A young man who educators found increasingly difficult to manage seemed to particularly enjoy this activity noting, "I'm drawing a fish. It's in the water. We saw the fish." He was able to modulate his normally challenging emotions during this time and focus on a task for an extended period of time. This focus may be an indicator of his honing of inhibitory control skills.

On another occasion when I was outside with students, I noted that they took particular interest in the compost bin. One student noted that "Worms live in there. They eat the food". In retrospect this would have been a wonderful opportunity for teachers to ask the student questions like, "Why is the food in there? And why do the worms eat it?" These intentional questions could foster inquiry and curiosity about composting. I also noted that children who I observed as having challenges with focusing during circle time were able to persist with tasks for long periods of time when they were provided autonomy. For instance, during choice time students would play restaurant in the dramatic play area for extended periods of time, methodically selecting food, preparing it and serving to others. This enabled students to hone critical working memory skills, as they had to remember the food that students and teachers ordered, select the food and give it to students and teachers. Seeing students persist with these tasks may suggest that the active nature of project work can have cognitive benefits. The classroom also had a computer for students to use during choice time and nonfiction

print about foods and science. These tools can serve as wonderful resources for students in future project work.

This may suggest that teaches interested in incorporating the project approach may benefit from coaching from a group of educators with experience implementing the Project Approach. Young children's desire to learn through experience is innate. However it may be challenging for teachers to connect these experiences in ways that result in meaningful project work. The ability to attend Project Approach educational workshops can provide teachers with the planning and pedagogical tools needed to make project work more of a reality in diverse early childhood environments.

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Acknowledgments

Ashley Johnson
Early Childhood and Family Studies, Dr. Nancy Hertzog
ashleyjohnsa@gmail.com

As a future doctoral candidate at Kent State University, I will continue to examine the contextual factors that prosoical behaviors in early learning environments.

Pyrolysis Optimization of Lignin

Austin L. Montgomery

Abstract

Biomass has the potential to be converted to transportation fuels after undergoing the oxygen-free thermochemical decomposition, known as fast pyrolysis, and upgrading in a secondary reactor. Wood, one form of biomass, is largely made up of cellulose, hemicellulose and lignin. In the present project, pyrolysis of synthetic lignin and lignin mixed with a HZMS-5 catalyst (5:1 ratio, HZMS-5 to synthetic lignin) underwent fast pyrolysis, and the bio-oil contents were identified by gas chromatography-mass spectroscopy. The catalyst-synthetic lignin mixture yielded bio-oil containing far less oxygenated compounds compared to the sample comprised of solely synthetic lignin. Comparable residence times for the compounds common in both samples confirm consistency in the analysis.

Introduction

Biomass can be used to produce energy in several ways. The easiest, and perhaps most well-known, way to obtain energy from biomass is combustion, a chemical reaction between the biomass and an oxidizer, usually air. Gasification is a similar process to combustion but involves insufficient amounts of oxygen. The end result is a combustible gas. The combustible gas is easily transported and can be used in a combustion engine or boiler.

Similar to combustion and gasification, pyrolysis is a combustion-like process in the absence of oxygen. Pyrolysis involves the heating of biomass resulting in its decomposition. As the biomass is heated the lignin begins to soften and decompose and the cellulose and hemicellulose begin to degrade. The result is a vapor form of bio-oil, permanent gases and char. The bio-oil vapor can then be rapidly cooled to prevent secondary chemical reactions. Pyrolysis usually exists in two forms: fast and slow. Fast pyrolysis is characterized by high heating rates (~500˚C/s), moderate temperature (500-600˚C) and short residence time (1-5 seconds). Slow pyrolysis is characterized by low heating rates (~5 ˚C/min), low temperature (275-400˚C) and long residence time (Bridgewater, Meier, & Radlein, 1999). Generally, fast pyrolysis yields high volumes of bio-oil, while slow pyrolysis yields higher amounts of char.

Many factors will affect the quality and quantity of bio-oil produced from fast pyrolysis. The reactor pressure, temperature, and

heat-up rate will all have an influence on the bio-oil produced. The type of biomass used will also have an effect on the make-up of bio-oil as well as the quantity. For instance, hardwoods and softwoods contain different percentages of lignin, cellulose and hemicellulose and will require different reactor parameters in order to adequate bio-oil. Prior to the biomass being introduced to the pyrolysis reactor it must be dried, usually to less than 10% moisture content, and ground to particles less than 1-2 mm (Bridgewater, Meier, & Radlein, 1999). Reducing moisture content and particle size reduces the amount of energy required to heat the particle and increase the particles ability to receive heat. The end result is a more efficient process and higher quality bio-oil.

The chemical make-up of bio-oil is very complex, usually with high oxygen content. High quality bio-oil will contain minimal quantities of oxygen as high oxygen content will result in lower energy content. Two methods of minimizing oxygen content are: catalytic fast pyrolysis and hydrogenation. Catalytic fast pyrolysis introduces a catalyst either in the feedstock before it enters the pyrolysis reactor or in the reactor as the feedstock enters. Hydrogenation refers to the bio-oil vapor undergoing catalytic hydrogenation in a reactor directly after exiting the pyrolysis reactor. For this process hydrogen is used as the carrier gas. The present project studies catalytic fast pyrolysis.

In this study, pyrolysis of synthetic lignin and lignin mixed with a HZMS-5 catalyst (5:1 ratio, HZMS-5 to synthetic lignin) underwent fast pyrolysis and the bio-oil contents qualified by gas chromatography-mass spectroscopy. A method of operation for the gas chromatography-mass spectroscopy (GC-MS) system will need to be developed in order to produce consistent results. The method will also be used in future testing of chemical standards in order to convert qualitative results to quantitative results.

Methodology
Fast Pyrolysis
Fast pyrolysis was accomplished with the use of a Pyroprobe. The Pyroprobe offers remote control over temperature, both starting and ending, heat-up rate and time spent at the set temperature (Resende & Gustafson, 2012).

*Gas Chromotography-Mass Spectroscopy*
Bio-oil vapor enters the GC where the compounds can be quantified. The bio-oil comes in contact with the stationary phase in the GC column. Each compound interacts with the stationary phase at a different rate, leaving at different times. The time from entrance to exit is

known as residence time. When these compounds leave, they enter the flame ionization detector (FID), where an output comparing abundance to residence time (chromotogram) is generated. The GC gives relative amounts of each compound, not absolute (Douglas).

After the GC, bio-oil vapor enters the MS where the compounds can be identified. The compounds are bombarded by a stream of electrons that cause them to break into fragments. Four electromagnets (quadrupoles) focus the fragments through a slit in the MS detector. The quadrupoles only allow fragments with certain mass per charge ratios (M/Z) one at a time until the full range of ratios are covered. The MS detector produces an output comparing the abundance of fragments to the fragments' M/Z (mass-spectrum graph). Each compound has a distinct mass-spectrum graph allowing the bio-oil contents to be identified (Douglas).

Together, the GC-MS finds relative amounts of the compounds that make up the bio-oil and allows the compounds to be identified (Douglas).
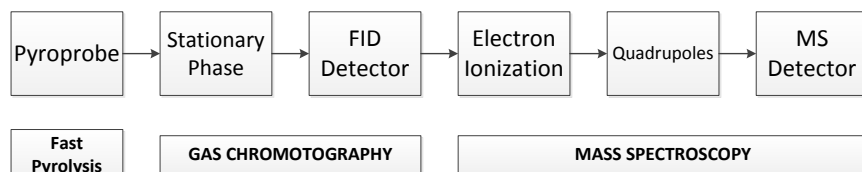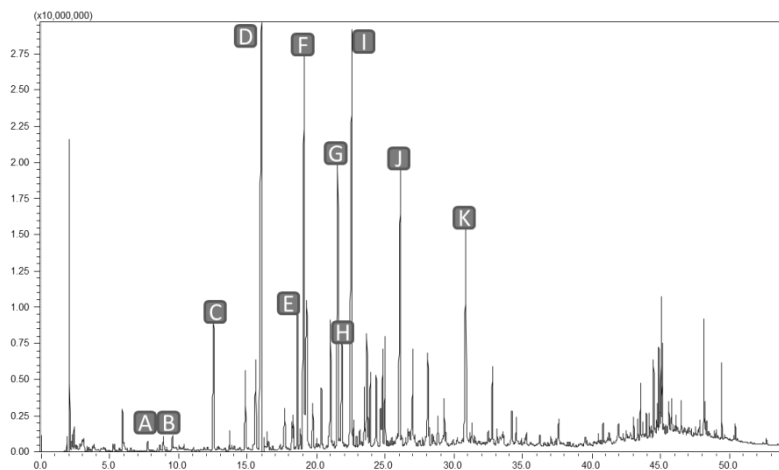

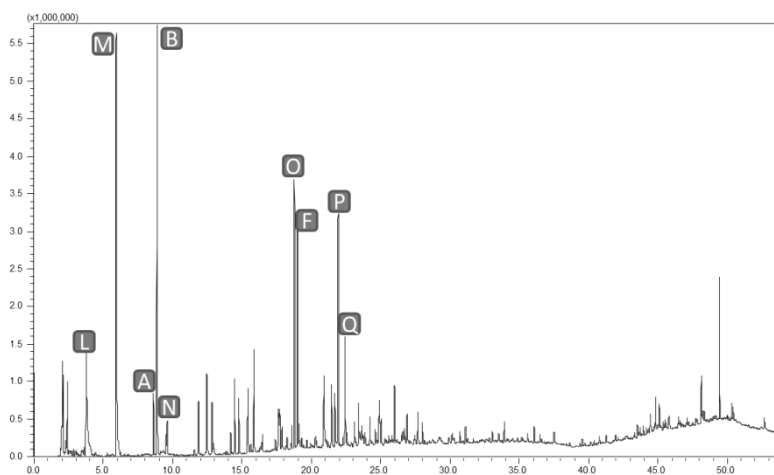**Figure 1.** *Pyroprobe-GC-MS Flow Diagram*

Results

Pyroprobe Parameters:
- Atmospheric Pressure
- 50°C for 5 seconds
- 650°C for 30 seconds
- Interface: 300°C

Figure 2. *Chromatogram for Synthetic Lignin*

Figure 3. *Chromatogram for 5:1 HZMS-5, Synthetic Lignin Mix*

Analysis

Utilizing the Similarity Search function on the GC-MS software, compounds A through Q were identified.

A. Ethylbenzene
B. 1,3-Dimethylbenzene (m-Xylene)
C. Phenol
D. 3-Methylphenol (m-Cresol)
E. 2-Methoxy-5-methylphenol
F. 2-Methoxy-4-methylphenol (Creosol)
G. 4-methyl-1,2-Benzenediol (4-methylcatechol)
H. 4-ethyl-2-methoxyphenol (p-Ethylguaiacol)
I. 2-Methoxy-4-vinylphenol
J. Trans-Isoeugenol
K. 3-Methoxy-2-naphthalenol
L. Benzene
M. Toluene
N. 1,2-Dimethylbenzene (o-Xylene)
O. Naphthalene
P. 2-Methylnaphthalene
Q. 2-Methoxy-4-vinylphenol

Compounds C through K all contain oxygen and are present in the synthetic lignin results. Compound Q is the only compound in the HZMS-5-synthetic lignin results that contains oxygen.

When observing the residence times for the compounds that each sample had in common, it is clear that compounds that were present in both samples had very consistent residence times.

Conclusion

The HZMS-5-synthetic lignin mixed sample yielded far fewer compounds containing oxygen than the sample containing strictly synthetic lignin. This confirms that the HZMS-5 catalyst produces higher quality bio-oil. In turn, this could lead to bio-oil fit for processing in a Fluid Catalytic Cracking Reactor. Testing on both synthetic lignin and HZMS-5-synthetic lignin blends will continue as the catalyst-to-lignin ratio will be varied. These sample results provide a baseline for oxygen content and compound distribution moving forward.

Comparable residence times for the compounds common in both samples confirms consistency in the analysis. The GC-MS method file that produced these results will be used for future sample analysis. The method for GC-MS operation will now be used for testing of chemical standards. The results from the chemical standards will then be used to convert the qualitative to quantitative results.

Future Work

Fast Pyrolysis Experiments Continued

Testing with lignin will continue and testing with the other biomass constituents, cellulose and hemicellulose will start subsequently. Non-catalytic and catalytic (both HZMS-5 and hydrogenation), fast

pyrolysis testing will be conducted as parameters are varied: heat-up rate, final temperature, pressure, carrying gas and relative amount of catalyst used. This will lead to a greater understanding of bio-oil production.

Lab-Scale System Design and Modeling

Currently, a lab-scale fast pyrolysis system is being designed and modeled three-dimensionally. The system is designed for high pressure conditions with parts also being designed for high temperature conditions. A screw feeder will allow the biomass to be introduced to the fast pyrolysis system while keeping the system air tight.
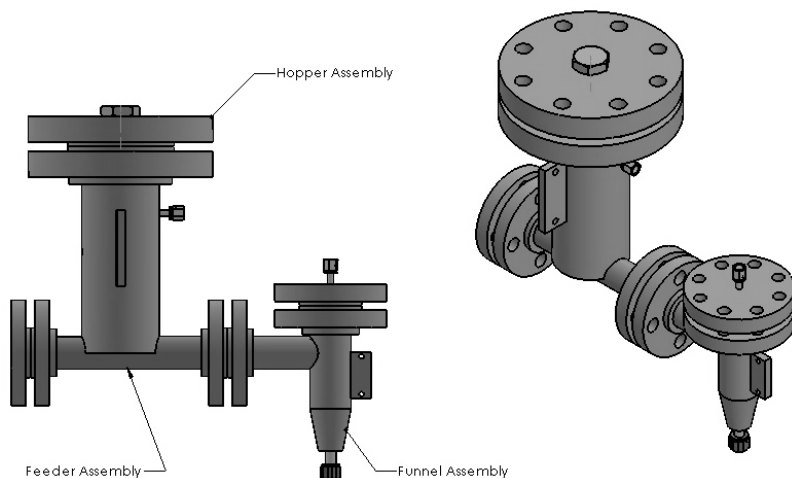
Figure 4. *Screw Feeder Rendering*

There are many reactor designs that can accomplish pyrolysis on large scales. One design is a fluidized bed reactor. The reactor contains sand as a heat transfer medium and uses a gas, usually non-reactive (an exception being hydrogen for hydrogenation), to promote mixing. The gas is pumped through the bed of sand causing the sand to bubble in a manner similar to water boiling. As well as promoting mixing, the gas also aids in heat transfer. As the feedstock undergoes pyrolysis, gases, vaporized bio-oil and char exit the fluidized bed and require separation. A cyclone separator removes particulate and the vapor-gas mixture enters the water-gas shift reactor. Carbon monoxide reacts with water to produce hydrogen and carbon dioxide. The hydrogenation reactor uses the hydrogen produced in the water-gas shift reactor to upgrade the bio-oil by increasing its hydrogen content. The vapor is then quenched in a

condenser. This draws the bio-oil out and prevents further chemical reactions (Resende & Gustafson, 2012).

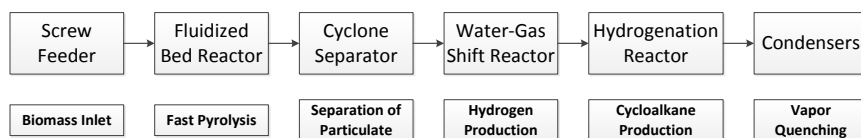| Screw Feeder	Fluidized Bed Reactor	Cyclone Separator	Water-Gas Shift Reactor	Hydrogenation Reactor	Condensers
Biomass Inlet	**Fast Pyrolysis**	**Separation of Particulate**	**Hydrogen Production**	**Cycloalkane Production**	**Vapor Quenching**

Figure 5. *Lab-Scale Fast Pyrolysis Flow Diagram*

The screw feeder, reactors, cyclone and condenser will be connected with a network of piping and tubing. Once small-scale pyrolysis experiments are complete, lab-scale experiments using the fast pyrolysis system will begin.

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Acknowledgments

Austin L. Montgomery
School of Environmental and Forest Sciences, Dr. Fernando Resende
austinlm@uw.edu

My research interests reside in thermochemical biomass conversion, fluids, heat transfer and thermodynamics, particularly in regards to large

scale fluid systems. I will be pursuing graduate study in the Bioresource Science and Engineering program within the School of Environmental and Forest Sciences.

The Juvenile Justice System: All Grown Up

Sandy Nguyen

Abstract

Currently, under Washington State's Automatic-Declination Laws, juveniles aged 16 or17 can be prosecuted as adults in court and held in adult detention facilities. Auto-decline laws are one of three types of discretionary hearings that juveniles can experience while in the criminal justice system. My research explores the history of the juvenile justice system on the state and local level through Supreme Court rulings and laws and synthesizes the ways in which previous laws have shaped and influenced current procedures. Differences between the juvenile court and adult court are examined to characterize the experiences of a juvenile who is facing auto-decline in comparison with their juvenile court counter-parts. Methods include reviewing the current literature on juvenile justice and interviewing courtroom actors and juvenile facility coordinators. This research has revealed that related laws have changed from a focus on the rehabilitative to the punitive and have become more restrictive. The results also point to a possible weakness in the system when the ability to charge a juvenile rests with a prosecutor. My research suggests that one possible way to equalize the balance of power between the prosecutor, the defense attorney, and the judge is to make transfer and discretionary hearings mandatory prior to processing a juvenile as an adult. Future research should focus on assessment of the ability of current juvenile detention centers to handle youths who are prosecuted as adults.

Washington State Juvenile Justice System

Washington State developed its first juvenile justice system in 1913.[1] During this time period, courts had more autonomy in dealing with juvenile offenders because at the time statewide sentencing standards were not established. As a result, sentencing was based more on the welfare of the child than the concepts of guilt or innocence. "…Washington State enacted a juvenile code in 1913 that was solidly within the *parens patriae* philosophy of rehabilitation through

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[1] "Structure and Function of the State's Juvenile Justice System Annual Report." Office of Juvenile Justice, 2010. Web. 7 Jan. 2013.
<http://www.dshs.wa.gov/pdf/ojj/AnnualReport2010/5-Structure&FunctionofJJSystem.pdf>.

benevolent coercion."[2] *Parens patriae* is a Latin phrase that means "parent of the country."[3] Under this philosophy of *parens patriae*, juveniles who were engaged in criminal behavior was interpreted by the state as a sign of a lack of parental guidance and direction. If parents could not make their children abide by laws then it was up to the state to pursue action. Furthermore, the state was encouraged to step in and exercise supervision and control before the juveniles committed more dangerous crimes.

"In 1977, the Washington State Legislature completely revised the state's juvenile code by modeling it after the federal Juvenile Justice and Delinquency Prevention Act of 1974, which went into effect on July 1, 1978."[4] The legislature has made revisions to the code each year since its enactment. In 1997, the Washington State Legislature revised the state's juvenile code with the passage of E3SHB 3900. One important highlight of E3SHB 3900 was "a sentencing grid that resembled a simplified adult sentencing grid with incarceration as a standard option for any juvenile offender. This juvenile grid based sentencing only on the seriousness of the current and prior offenses."[5] This would mean that the age of the defendant and the time span since the prior crimes were committed were no longer be factored into the judge's thinking process. All felonies counted as one point each and misdemeanor convictions were not included in the new grid.

Important Laws that Influenced the Juvenile Justice System

The 1996 amendment of Juvenile Justice and Delinquency Prevention Act of 1974 had three important requirements: first, the Act distinguishes juveniles from adult offenders. "[D]einstitutionalization of status offenders and non-offenders" requirement (1974) specifies that

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[2] "Juvenile Justice and Racial Disproportionality." Race and Criminal Justice Task Force, 28 Mar. 2012. Web. 3 Dec. 2012. <http://www.wsba.org/Legal-Community/Committees-Boards-and-Other-Groups/Access-to-Justice-Board/ATJBLC/~/media/Files/Legal%20Community/Committees_Boards_Panels/ATJ%20Board/ATJ%20BLC%20Materials/2012/Wo>.

[3] Bernard, Thomas J., and Megan C. Kurlychek. *The Cycle of Juvenile Justice*. 2ndnd ed. New York: Oxford University Press, 2010. 95-122. Print.

[4] LaCourse, Dave. "Juvenile Justice Reform: HB 3900 and Beyond." *Washington Policy Center Policy Brief*. N.p., Jan. 1998. Web. 30 Nov. 2013. <http://www.washingtonpolicy.org/publications/brief/juvenile-justice-reform-hb-3900-and-beyond>.

[5] Ibid

juveniles not charged with acts that would be crimes for adults "shall not be placed in secure detention facilities or secure correctional facilities."[6]

A status offender is a juvenile who is charged with behavior that would not be a crime, if it was committed by an adult. "The most common examples of status offenses include chronic or persistent truancy, running away, being ungovernable or incorrigible, violating curfew laws, or possessing alcohol or tobacco."[7] In other words, status offenses are charges that can be brought against only a juvenile because of the fact that they are under-aged and considered a minor. In my time spent observing juvenile detention facilities, I did notice that there was a very small percentage of juveniles being held in detention for these under age.

Second, the Act created boundaries between juvenile and adult inmates. "[J]uveniles alleged to be or found to be delinquent and [status offenders and non-offenders] shall not be detained or confined in any institution in which they have contact with adult persons incarcerated because they have been convicted of a crime or are awaiting trial of criminal charges." This requirement is commonly known as juveniles having to be separated by sight and sound from adult inmates. From my observations of juvenile detention centers and jails, the sight and sound separation policy poses different problems in both facilities.

In order to accommodate the sight and sound separation policy some jails are forced to place auto-declined youth in solitary confinement. Solitary confinement is housing an inmate in a small cell for a majority of the hours of the day and allowing only one hour of recreational time. When officers were asked if solitary confinement was the only option, officers replied that solitary confinement was their best option because they did not have enough room in their facilities to house a few auto-declined juveniles compared to the general population. In addition, officers worried that a youth might be exposed to violence while being held in general population and reasoned that solitary confinement was for the youth's safety.

In regard to juvenile detention centers, auto-declined juveniles are also kept in isolation for the opposite reason: to keep the younger juveniles safe from the auto-declined youth. In both situations, an auto-declined youth is held in isolation pre-trial which begs the questions of

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[6] Snyder, Howard N., and Melissa Sickmund. "Juvenile Offenders and Victims 1999 National Report." *Office of Juvenile Justice and Delinquency Prevention* (1999): 85-109. Web. 10 Dec. 2012. <https://www.ncjrs.gov/html/ojjdp/nationalreport99/chapter4.pdf>.

[7] "Juvenile Status Offenses Fact Sheet." *JJDPA Fact Book*. American Bar Association Center for Children and the Law, n.d. Web. 29 Mar. 2013. <http://act4juvenilejustice.org/media/factsheets/factsheet_17.pdf>.

whether isolation is an appropriate solution because both jails and juvenile detention centers do not know how to house declined youth. Further research should be conducted to see whether keeping a youth in isolation causes physical, emotional, or psychological harm.

Third, the Act addresses the issue of juveniles being held in adult detention facilities. The jail and lockup removal requirement states that "juveniles shall not be detained or confined in adult jails or lockups. There are, however, several exceptions to the jail and lockup removal requirement [such as] if the juvenile is being tried as a criminal for a felony or has been convicted as a criminal felon."[8] In other words, juveniles cannot be held in adult jails unless they have been auto-declined.

Supreme Court Cases

Kent v. United States (1966)

In 1959, 16 year old Morris Kent was arrested and charged with a series of violations such as: housebreaking, robbery, and rape. "As a juvenile, he was subject to the exclusive jurisdiction of the District of Columbia Juvenile Court unless that court, after "full investigation," should waive jurisdiction over him and remit him for trial to the United States District Court for the District of Columbia."[9] Kent's lawyer filed a motion for a hearing so that he could question the waiver. He also requested to obtain files from a probation officer that interacted with Kent for two years. Unfortunately, the court received these motions but chose not to rule on them. Instead "the judge then entered a motion stating that after a full investigation, I do hereby waive jurisdiction over the case."[10] By waiving jurisdiction, Kent would then be tried in an adult criminal court.

After being indicted in adult criminal court, Kent's lawyer moved to dismiss the indictment on the grounds that the waiver from juvenile court was invalid. Also, Kent's lawyer wrote a writ of *habeus corpus* requesting that the government justify Kent's detention. Appellate courts rejected both the appeal and the writ, refused to

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[8] Snyder, Howard N., and Melissa Sickmund. "Juvenile Offenders and Victims 1999 National Report." *Office of Juvenile Justice and Delinquency Prevention* (1999): 85-109. Web. 10 Dec. 2012. <https://www.ncjrs.gov/html/ojjdp/nationalreport99/chapter4.pdf>.

[9] Legal Information Institute. *Kent v. United States (No.104)*. Cornell University Law School, n.d. Web. 17 Feb. 2013. <http://www.law.cornell.edu/supct/html/historics/USSC_CR_0383_0541_ZS.html>.

[10] Snyder, Howard N., and Melissa Sickmund. "Juvenile Offenders and Victims 1999 National Report." *Office of Juvenile Justice and Delinquency Prevention* (1999): 85-109. Web. 10 Dec. 2012. <https://www.ncjrs.gov/html/ojjdp/nationalreport99/chapter4.pdf>.

scrutinize the judge's "investigation," and accepted the waiver as valid. When Kent was tried, "he was convicted on six counts of housebreaking and robbery, but acquitted on two rape counts by reason of insanity."[11] In appealing to the U.S. Supreme Court, Kent's attorney argued that the judge had not made a complete investigation and that Kent was denied constitutional rights of due process.

The Supreme Court ruled that the waiver was not valid, stating that Kent was entitled to a hearing that measured up to "the essentials of due process and fair treatment," that Kent's counsel should have had access to all records involved in the waiver, and that the judge should have provided a written statement of the reasons for the waiver.

Kent v. United States was an important case for several reasons: first, it was the first juvenile case that was ever brought before the Supreme Court. Therefore, it paved a way for other juvenile court cases to be heard in the future. Second, even though the Kent decision applied to only the District of Columbia, it had national importance because of the perspective it took on the issues. For example, the court emphasized that a waiver hearing "must measure up to the essentials of the due process and fair treatment." [12]

This attitude was very different seeing as how the traditional juvenile court view was that due process was less significant because the "best interests of the child" were pursued by the juvenile court system. In addition, the Kent decision raised an important issue of the 14th Amendment. The 14th Amendment says that "no state may deny any person under its government, equal protection of the law."[13] Historically, the Supreme Court had perceived that "people could receive less protection from the law if they received some compensating benefit that could not be obtained without sacrificing that protection." [14] The Supreme Court then took into consideration whether or not juveniles were really given any "compensating benefit" in exchange for having less protection. The Court argued,

"There is much evidence that some juvenile courts, including that of the District of Columbia, lack the personnel, facilities, and

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[11] Legal Information Institute. *Kent v. United States (No.104)*. Cornell University Law School, n.d. Web. 17 Feb. 2013.
<http://www.law.cornell.edu/supct/html/historics/USSC_CR_0383_0541_ZS.html>.

[12] Bernard, Thomas J., and Megan C. Kurlychek. *The Cycle of Juvenile Justice*. 2ndnd ed. New York: Oxford University Press, 2010. 95-122. Print.

[13] *14th Amendment*. Cornell University Law School, n.d. Web. 6 Feb. 2013.
<http://www.law.cornell.edu/constitution/amendmentxiv>.

[14] Bernard, Thomas J., and Megan C. Kurlychek. *The Cycle of Juvenile Justice*. 2ndnd ed. New York: Oxford University Press, 2010. 95-122. Print.

techniques to perform adequately as representatives of the State in a *parens patriae* capacity, at least with respect to children charged with a law violation. There is evidence, in fact, that there may be grounds for concern that children receive the worst of both worlds: that he gets neither the protections accorded to the adults nor the solicitous care and regenerative treatment postulated for children."[15]

In re Gault (1967)

"Gerald Francis Gault was fifteen years old when he was taken into custody for allegedly making an obscene phone call…The police did not leave notice with Gault's parents, who were at work, when the youth was arrested."[16] After proceedings before a juvenile court judge, Gault was committed to the State Industrial School until he reached the age of 21.The question that the Supreme Court focused on was, were the procedures used to commit Gault constitutionally legitimate under the Due Process Clause of the Fourteenth Amendment?

The Court ruled that the procedures were not legitimate. In addition, the Court held the proceedings for juveniles should have followed the rights protected by the Fourteenth Amendment. These requirements were comprised of: "adequate notice of charges, notification of both the parents and the child of the juvenile's right to counsel, opportunity for confrontation and cross-examination at the hearings, and adequate safeguards against self-incrimination."[17] The Court found that the procedures used in Gault's case met none of these requirements.

In *re Gault* was an important case because the Supreme Court rejected the *parens patriae* principle after which the juvenile justice system was modeled. Instead, the Court felt the philosophy was unclear and ineffective and most importantly was not worth denying someone their rights to due process. The court argued, "Juvenile court history has again demonstrated that unbridled discretion, however benevolently motivated, is frequently a poor substitute for principle and procedure."

Roper v. Simmons (2005)

In 2005, the U.S Supreme Court considered biological and psychosocial development in relation to criminal behavior in Roper v.

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[15] Ibid.

[16] *In Re Gault*. The Oyez Project at IIT Chicago-Kent College of Law, 26 Apr. 2013. Web. 2 Jan. 2013. <http://www.oyez.org/cases/1960-1969/1966/1966_116>.

[17] Ibid.

Simmons.[18] The majority argued, "[J]uveniles' susceptibility to immature and irresponsible behavior means "their irresponsible conduct is not as morally reprehensible as that of an adult." Their own vulnerability and comparative lack of control over their immediate surroundings means juveniles have a greater claim than adults to be forgiven for failing to escape negative influences in their whole environment. From a moral standpoint it would be misguided to equate the failings of a minor with those of an adult, for a greater possibility exists that a minor's character deficiencies will be reformed."[19]

Roper v. Simmons was an important case because of how the Court made three distinctions between adults and adolescents. The first distinction is that juveniles are more susceptible to immaturity than adults, which can lead to reckless actions. The second distinction is that juveniles are more likely than adults to be vulnerable to negative influences in their surroundings, such as pressure from their peers. The third distinction is that unlike adults, adolescents are capable of growing and becoming more mature. Essentially, the Court establishes that it would be unfair to equate the faults and shortcomings of adults to juveniles.

Auto-Declination Laws in Washington State

Under current Washington State law, juveniles ranging from 16 to 17 years old can be prosecuted as adults through the process called auto-declination. Auto-declination is a process where a juvenile court will decline jurisdiction over a juvenile offender causing the juvenile to be transferred and processed in the adult criminal justice system. This process can typically be initiated by three important courtroom actors: the juvenile court judge, the prosecutor, or the defendant themselves.

A juvenile court judge may decline jurisdiction after a discretionary hearing has taken place. A prosecutor may look at case and decide to charge a juvenile with an auto-decline offense and have the juvenile be transferred to adult court. A juvenile can also auto-decline if

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[18] "A Reexamination of Youth Involvement in the Adult Criminal Justice System in Washington: Implications of New Findings about Juvenile Recidivism and Adolescent Brain Development." Washington Coalition for Just Treatment of Youth, Jan. 2009. Web. 3 Dec. 2012. <http://www.columbialegal.org/files/JLWOP_cls.pdf>.

[19] "Roper, Superintendent, Potosi Correctional Center v. Simmons." Supreme Court of the United States, 1 Mar. 2005. Web. 8 Feb. 2013. <http://www.supremecourt.gov/opinions/04pdf/03-633.pdf>.

he/she does not want to be processed in the juvenile court system because of many factors such as: agreeing to a plea bargain with the prosecutor or not wanting to drag out a case for months. Although juveniles and auto-declined youth can participate in plea bargains, it is questionable as to how cognitive the juvenile is aware when they must choose from the options they prosecutor poses. In order to be automatically declined, a juvenile offender must meet the following requirements with regard to offense type and prior criminal history. (See Table 1 for the criteria for automatic declination).

Table 1. *Criteria for Automatic Declination*

Serious Violent Offense	Violent Offense <u>AND</u> Criminal History	Criminal History
Murder 1 Murder 2 Homicide by Abuse Manslaughter 1 Kidnapping 1 Rape 1 Assault of a Child 1 Robbery 1 Rape of Child 1 Drive-by Shooting	Attempted Solicitation-Class A Manslaughter 1 Manslaughter 2 Indecent Liberties w/ Forcible Compulsion Kidnapping 2 Arson 2 Assault 2 Assault of a Child 2 Extortion 1 Robbery 2 Drive by Shooting Vehicular Assault/Homicide (while under the influence or driving recklessly) Burglary 1 (AND one prior felony/misdemeanor)	1+ Prior Serious Violent Offenses 2+ Prior Violent Offenses 3+ Any Combination of the Following*: Class A Felony Class B Felony Vehicular Assault Manslaughter 2 *All offenses must have been committed before age 13 and prosecuted separately **OR** juvenile allegedly had firearm

Once a juvenile is automatically declined into the adult court, they are not allowed a discretionary hearing. In a majority of cases, this means that "no court is allowed to consider factors such as the youth's age, history of trauma, mental health issues, developmental delays, or other mitigating circumstances, nor is a court allowed to consider

whether the youth could be more amenable to rehabilitation in the juvenile system."[20]

Additionally, once transferred to adult court, a youth is automatically transferred to the adult court for all future criminal charges. This is known as the "once an adult, always an adult" rule. Essentially, once a juvenile is processed through the adult court system, they will officially have an adult record, even if the juvenile is not convicted. Having an adult record is nearly impossible to seal, unlike a juvenile record. Sealing a record is when a person tries to prohibit public access (future employers, evaluators, and the media) to their criminal record. A juvenile criminal record can be sealed when the juvenile becomes an adult, pays court fees, and pays restitution.

The auto declination statute eliminates both prosecutorial and judicial discretion over the treatment of juveniles and forever prevents consideration of the youth's potential for rehabilitation or other mitigating factors. Once declined to the jurisdiction of an adult criminal court, youth are subjected to the adult sentencing guidelines structures if convicted. The juvenile sentencing grid is measured out by the number of weeks a juvenile is sentenced to jail in comparison to the adult sentencing grid that is measured out by the number of months.

Prosecutorial Discretion

A juvenile's transfer from juvenile to adult court is initiated by the prosecuting attorney's original filing decision. The type of charge that is brought against the youth usually dictates the ultimate outcome of the case. According to all court actors interviewed for this report the general consensus is that the prosecutor maintains an enormous level of discretion and solely determines whether a youth will remain in the juvenile system or be transferred to the adult court. As explained by a King County Juvenile Court Judge, "[Auto-decline cases] that's about the only area where I feel like I don't have much discretion, at all. That there's just nothing I can do. A 16-year old is still very young." This high degree of discretion is the subject of much debate within the criminal justice system, with both judges and defense attorneys advocating for greater equity regarding the distribution of discretion among the various court actors.

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[20] A Reexamination of Youth Involvement in the Adult Criminal Justice System in Washington: Implications of New Findings about Juvenile Recidivism and Adolescent Brain Development." Washington Coalition for Just Treatment of Youth, Jan. 2009. Web. 3 Dec. 2012.
<http://www.columbialegal.org/files/JLWOP_cls.pdf>.

The issue of prosecutorial discretion becomes particularly relevant due to the lack of consistent declination practices. In an interview with a King County prosecutor who works with juveniles, "there is no formal policy for declining youthful offenders and transferring jurisdiction to the adult system". Though prosecutors concentrate primarily on the facts of the alleged offense, there are no established standards for interpreting the circumstances of an incident. After reviewing a case for jurisdiction and legal sufficiency, charges must be submitted within 72 hours by the prosecutor determines what charges will be filed; if the juvenile is being held in detention. If a juvenile offender is charged with an adult crime (see Table 1) the transfer to adult court occurs without any judicial decision or oversight.

Discretionary Decline (RCW.13.40110)

A juvenile can also be transferred to the adult criminal justice system by means of a discretionary decline, which can be initiated by the prosecutor, respondent, or juvenile court.[21] In such cases, a decline hearing takes places before a juvenile court judge who makes the decision to transfer jurisdiction to the adult court following a thorough review of facts, opinions from probation counselors, case workers and expert witnesses, as well as substantial consideration of a juvenile's life circumstances. The latter is evaluated in light of the *Kent* Factors, which provide guidelines for assessing the seriousness of the alleged offense, the juvenile's maturity and level of sophistication and his or her previous history and the potential for future rehabilitation (See Table 2 for the complete list of *Kent* Factors).

Table 2. *Kent Factors*

Kent **Factors**
1. The seriousness of the alleged offense to the community and whether protection of the community requires declination.
2. Whether the alleged offense was committed in an aggressive, violent, premeditated, or willful manner.
3. Whether the alleged offense was against persons or property (with greater consideration being given to crimes against persons, particularly in cases of personal injury).

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[21] RCW 13.40.070

4. The prospective merit of the complaint.

5. The desirability of trial and disposition for the entire offense in one court when the juvenile's associates in the offense are adults.

6. The juvenile's sophistication and maturity (determined by his home, environmental situation, emotional attitude and pattern of living).

7. The juvenile's record and previous history (including previous contacts with law enforcement agencies, juvenile courts in other jurisdictions, prior periods of probation to the court, or prior commitments to juvenile institutions).

8. The prospects for adequate protection of the public and the likelihood of reasonable rehabilitation of the juvenile by the use of procedures, services and facilities currently available to the juvenile court.
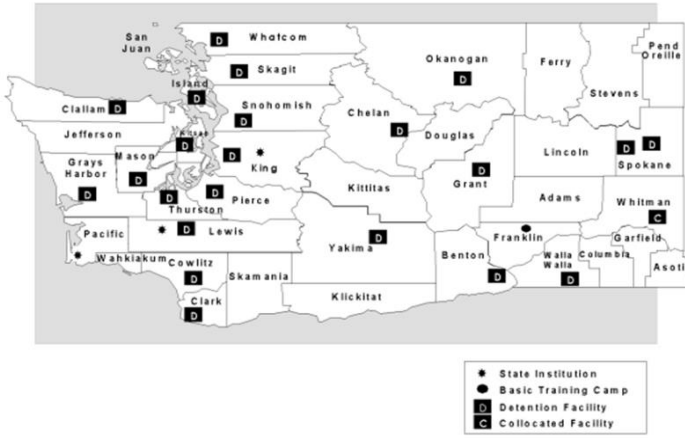
Detention Facilities in Washington State

Juvenile Detention Center (JDC)

There are 22 local juvenile detention facilities in Washington state.[22] Juvenile Detention Centers are run by the county and are designed for housing juveniles for a short amount of time. JDCs hold youth before they are sentenced, while they go through the trial process, and while they serve their sentence if the sentence is less than a year. A JDC is the parallel juvenile facility to an adult county jail. (See Figure 1 for a map of Juvenile Detention Facilities in Washington State.)

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[22] Murray, Christopher, M. M. Bell, and William Collins. "Juvenile Detention Standards in Washington State." *Report Detail*. Washington Institute for Public Policy, Dec. 1998. Web. 22 Jan. 2013.
<http://www.wsipp.wa.gov/rptfiles/juv_detention.pdf>.

Figure 1. *Juvenile Facilities in Washington State*
Map sourced from:
http://www.dshs.wa.gov/pdf/ojj/AnnualReport2010/5Structure&FunctionofJJSystem.pdf

Jail

      Jails are county operated facilities. Jails, like JDCs, are designed to hold adult inmates pre-trial, during trial, and if they have a short sentence (less than one year) to fulfill. Once a youth has been declined, whether by the auto-decline or discretionary decline process, they can be placed in an adult jail for the remainder of their trial. There may also be youth in adult jails pre-trial if the county does not have an available detention facility just for youth.

Juvenile Rehabilitation Administration (JRA)

      The JRA runs statewide facilities designed to hold juveniles for longer sentences. Both declined and non-declined juveniles are housed at JRA facilities. The JRA is the parallel juvenile facility to a DOC facility or prison.

Department of Corrections (DOC)

      DOC runs statewide prisons that hold adult inmates for sentences that are longer than one year. Juveniles are generally not housed in prison; however there are some cases if the juvenile commits a heinous crime. If declined juveniles receive prison sentences they are transferred to the JRA until they are 21 and depending on good behavior. The DOC is the adult parallel to the JRA-prison facilities.

The Juvenile Justice System vs. The Adult Criminal Justice System

The juvenile justice system is very distinct from the adult criminal justice system. The juvenile justice system's primary objective is to rehabilitate the juvenile whereas the adult criminal justice system's goals are more punitive in nature. One of the main differences between the two systems is the terminology that is used. (See Table 3 for Adult versus Juvenile Justice System Terminology).

Table 3. *Adult vs. Juvenile Justice System Terminology*

Adult Criminal Justice System	Juvenile Justice System
Defendant	Respondent
Crime	Offense
Trial	Fact Finding Hearing
Parole/Probation Officer	Juvenile Probation Counselor
Convicted	Found Guilty
Sentencing	Disposition
Jail/Prison	Juvenile Detention Center, Juvenile Rehabilitation Administration, and Department of Corrections.

Rather than using harsh and punitive language such as being called a "defendant", being found "guilty", and undergoing "sentencing", terminology used with juveniles is reflective of a softer approach. In addition, juveniles who are not auto-declined are detained in a juvenile detention center instead of a jail. Finally, an auto declined juvenile can be sent to a JRA facility where there are other auto declined youth instead of being sent to a state prison.

Juvenile Court vs. Adult Court

According to the King County Juvenile Court, "If a juvenile is placed in detention, Screening Juvenile Probation Counselors talk to the youth and also talk to the youth's parents or guardian. The youth stays in

detention until a judge can review the case at a court hearing."[23] Based on visits to juvenile detention centers in Washington the intake and screening process will usually involve fingerprinting, taking the juvenile's photo, and having them wear the JDC uniforms. After evaluating the juvenile's physical and mental health state, the JDC will detain the juvenile. A juvenile appears before a judge during their first appearance hearing. (See Figure 2 for the Juvenile Incarceration Diagram).

During the first appearance hearing, "the juvenile respondent is informed of the exact nature of the charges against him/her."[24] At this hearing, the court must determine whether enough evidence exists to believe the youth was involved of the crime. The first appearance hearing should not be confused as being the first trial. However, the juvenile respondent will have an attorney at this hearing. It is in the first appearance hearing that the court decides where the juvenile will be housed in the future: either kept in detention or released with conditions.

The arraignment hearing is where the Prosecuting Attorney's Office formally notifies the youth that criminal charges have been filed. The youth will work with their attorney and decide whether to enter a guilty or non-guilty plea. After the arraignment hearing, both parties prepare for an adjudication hearing. The adjudication hearing is when both the prosecutor and the defense must disclose information (such as evidence) to the other party.

The disposition and sentencing hearings occur when a person has pleaded guilty or has been found guilty at the end of their trial. The judge will review the case and hear from all parties in the case as needed and then sentence the youth. The restitution hearing is when the juvenile respondent pays the victim back for losses that are related to the crime. The full amount of restitution owed must be paid in full, even if the juvenile turns 18 years old. Failing to pay restitution can result in not being able to seal juvenile court records.

After observing juvenile court trials and adult court trials, the experiences are extremely different. In juvenile court, it appears that the defense and the prosecution work together along with the respondent's parents, probation officers and judges in order to rehabilitate the child

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[23] *Juvenile Court Probation Services*. King County , 2013. Web. 23 Feb. 2013. <http://www.google.com/url?q=http%3A%2F%2Fwww.kingcounty.gov%2Fcourts%2FJuvenileCourt%2Fprobation.aspx%23Intake&sa=D&sntz=1&usg=AFQjCNGKnYBI47gDe9gZ2itGAIb1lGCCAQ>

[24] *Juvenile Court*. Clallam County, Washington, 2013. Web. 23 Feb. 2013. <http://www.clallam.net/courts/juvenilecourt.html>.

through outreach programs and creative sentences. An example of an outreach program in the King County Juvenile Court is the Youth Eastside Services (YES) Program. YES offers a variety of services such as: chemical dependency treatment, sexual abuse counseling, and suicide prevention.

An example of creative sentencing is writing a paper in order for a respondent to conduct research and reflect on the harm that was caused. Typically, the court may assign particular essay topics that reflect their wrongdoing or about what the youth believes they need in terms of services. Factors such as parents being present, home life, mental health, and poverty, are taken into consideration. Unlike the adversarial nature of adult criminal court, the juvenile justice system takes into account of other mitigating factors that might explain how the respondent ended up in the juvenile justice system. When asked how important parents' presence in the courtroom is, a judge who presides over juvenile matters responded,

> "It's a factor, and certainly if there is no presence there is a void there you notice it. If there is someone there you notice it. Now, sometimes, parents' challenges are really high as well. Their lives have been difficult as well and so they often times may not have the stability you would like to see. Sometimes they are a positive influence and sometimes they're not so positive based upon a lot of factors, like their own criminal history. Often times they'll convey their abusive history, mental health issues. You get a sense of how transitory they are because the phone number changes 6 or 7 times."
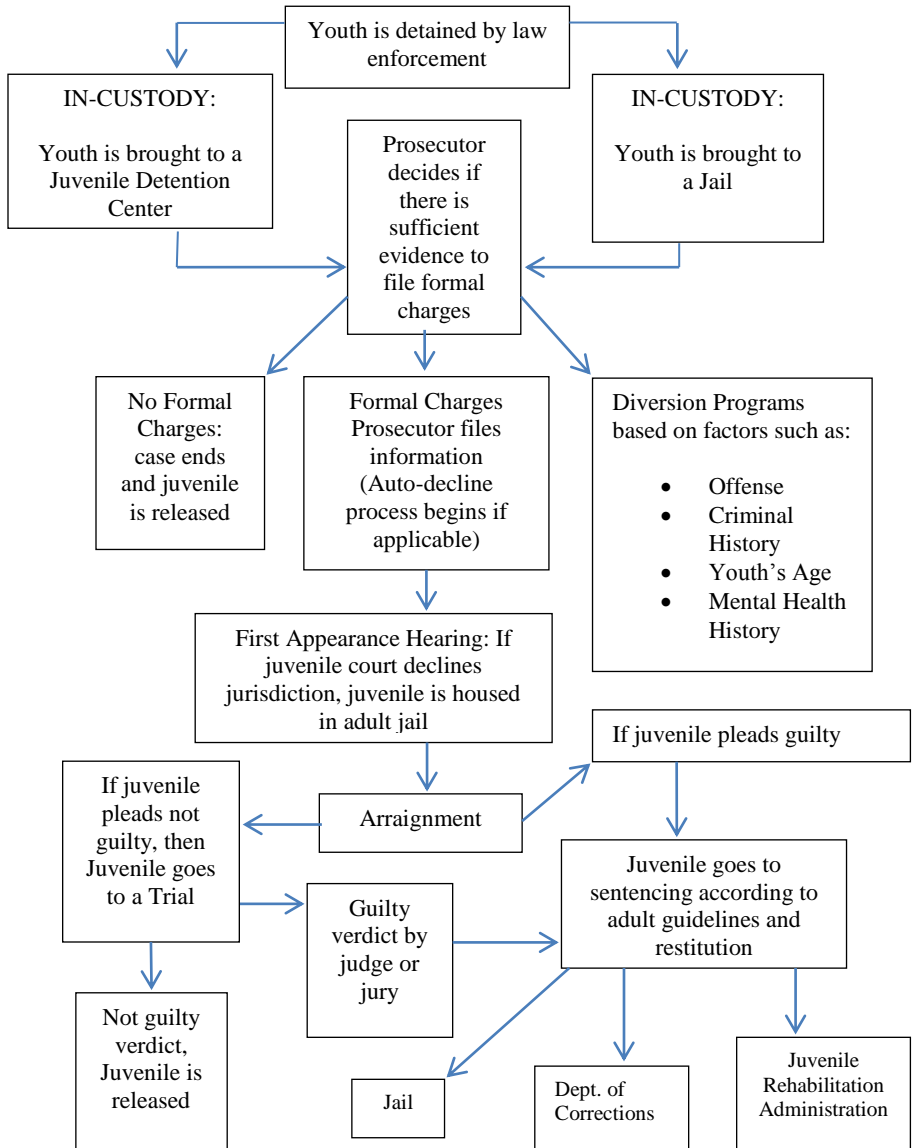>
> -King County Juvenile Court Judge

Figure 2. *Juvenile Incarceration Diagram*

Inmate Experiences: Juveniles in Adult Court

In order to gain insight on what juveniles felt about their individual courtroom experiences, we interviewed 14 residents of the Green Hill School. Green Hill School is a Juvenile Rehabilitation Administration (JRA) facility in Washington that houses a majority of

auto-declined youth if they are sentenced to more than one year of jail. One inmate named Logan believed that his attorney was inadequate: "He acted like he didn't care and was just doing his job. I got more time, so I took a plea bargain."

An inmate named C.T. discussed how he misunderstood a plea bargain: "When I was getting my plea bargain they told me it would be 48 months and I was like that doesn't sound long at all. Then I went back to my cell and was like wait 48 months that's 4 years. I thought they were talking about weeks." As discussed before, one of the main differences between the adult court system and the juvenile court system is that juveniles get sentencing lengths in periods of weeks where as adults get sentences that are in months. An inmate named A.L. recalls feeling confused about the court procedures: "A lot of people when they go there, they don't know. Their attorneys just tell them, "this is how much time you are looking at, this is how much they could give you; this is how much time I can give you, what your chances are, the maximum, what they can give you and what you want to do."

These interviews give interesting and different perspectives that try to answer the question whether auto-declined youth truly understand the adult court process.

Inmate Experiences: Juvenile Detention Centers, County Jails, and JRA Facilities

In order to gain insight on what auto-declined youth felt about their time spent in juvenile facilities and adult detention facilities, we conducted 14 interviews of male inmates who were being housed at Green Hill School. "Most professionals agree that there is not one particular risk factor leads a young child to delinquency."[25] Some responses from the Green Hill inmates featured in this report were able to shed some light on the issue.

When asked what led to being in the juvenile justice system, four Green Hill inmates had different things to say on the matter. L.K. stated that he grew up in a poor family and needed money. A lack of financial

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[25] *Child Deliquency*. Ed. Robert J. Flores. U.S. Department of Justice, Apr.

2003. Web. 28 Feb. 2013.

<https://www.ncjrs.gov/pdffiles1/ojjdp/193409.pdf>.

resources led him to hang around with other neighborhood boys who also were desperate for money. L.K. was housed in Adam's county jail for three days when he was 14 years old and was arrested for murder.

During his time in jail, he did not receive any educational services and was held in isolation for a majority of his stay. Due to his young age, L.K. was transferred to the Martin Hall Juvenile Detention Center where he would spend the next 8 months in isolation. L.K. preferred being housed in the jail compared to the juvenile detention center because "[I]n juvenile hall there were a bunch of little kids, and the guards tell you what to do and how to do it. I remember the guards calling me names. In jail, the guards let you do what you want. They don't treat you like a kid." At the time of the interview L.K. was 16 years old.

Another inmate, named C.T. also said that wanting money is what began his downward spiral into delinquency. "I started committing thefts and got involved in drugs." C.T. was 17 when he was arrested and charged with attempted murder and theft. C.T. was held in the Chelan County Jail for 93 days in a maximum security unit where he received no educational services and only an hour of recreational time per week.

C.T. was not separated, but was mixed in with the general population with about 25 to 30 other inmates. Similar to L.K., C.T. preferred jail to the juvenile hall, but for a different reason: he could not stand being held in isolation from other inmates. "[Y]ou're just in solitary confinement the whole time. That's just how it is for everybody. Even if you're doing two days." Eventually C.T. accepted a plea bargain and was charged with burglary in the first degree and 2 assaults in the second degree which meant four years in prison. C.T. turned 18 at the time of the interview.

Other inmates, like J.B., had an exceptional story. J.B. said, "I ran away from an orphanage and joined some guys who let me live with them. I basically did what they did in order to survive." Thus, homelessness and survival played a pivotal role in what led to the path of committing crimes. J.B. was 16 when he was arrested and charged with multiple counts of burglary and thefts. J.B. was held at the Pierce County Jail for 98 days, where he was housed in a cell with three other auto-declined youth aged from 16 to 18 years old. J.B. was able to receive educational services during his solitary confinement, however he mentioned that he had "[T]wo subjects: history and math. It was very hard to do school in that environment." J.B. was 17 at the time of the interview.

Finally, J.N. responded that he was "affiliated with a gang and so fighting and drugs got me into trouble." Like many of the other inmates

we interviewed, most of the delinquent juvenile behavior occurred with other juveniles. J.N. was arrested when he was 16 and charged with robbery, assault, and possession of a firearm. He spent 15 months in the King County Regional Justice Center before accepting a plea bargain that sentenced him to 7 years in prison. J.N. also preferred spending time in jail rather than a juvenile detention center due to the long period of incarceration. "[W]hen you're the person looking at a long time being incarcerated, and you are with people looking at only a couple of weeks, it gets stressful. So, I would rather prefer being around people that are in my time range with being incarcerated." J.N.'s age was unknown during the time of the interview.

One unexpected finding that emerged from the 14 interviews with Green Hill School residents was that a majority of them preferred to be housed in a jail than being in a juvenile detention center. A minority of the inmates did prefer being in a JDC than jail because of the wider accessibility to programs and being near to family members. In addition, these same residents had negative experiences in jail. Some talked about the traumatic experience of solitary confinement: "In my county (Spokane) they took you upstairs and take you to your cell. Which is basically in the hole for 23 hours and 1 hour outside of your cell." A few residents talked about the poor services the jail offered: "The phones are often broken. In my county, when everybody would come out for break time it would be so loud you could barely hear your family while they were visiting."

On the other hand, the general consensus was that JDCs housed many young juveniles who were charged with lower level offenses and thus displayed little to no respect and maturity. In addition, many residents felt that some of the JDC staff were disrespectful and treated the older auto-declined youth like children. At the jail, some auto-declined youth recalled being able to seek advice and knowledge from older inmates on how to survive in jail and not become trapped in the criminal justice system. All in all, many Green Hill School residents experienced isolation in both jails and JDCs and many had negative experiences.

Despite their pasts of serving time in juvenile and adult detention facilities, it was enlightening to hear that many of the residents have plans for the future when they are released from Green Hill School. L.K. said that he would like to "have my own restaurant that focuses on Mexican cuisine, because that's what my family is really good at cooking." C.T. planned on training and learning how to become a massage therapist. J.B., who has been taking auto mechanic classes at Green Hill said, "I'd like to run my own auto shop business." And J.N.

said "I want to be a Chef and stuff so I'm just trying to keep it in the family."

Other Green Hill School residents were very hopeful for their future and said, "The time here (in Green Hill) opens your eyes a lot more. You see it's really not worth it. But Green Hill has helped me out. If you want to change, you can change." While others were confident in their future plans, one particular resident seemed hesitant and said, "With my lifestyle I might do good when I get out, I might not, I don't know. I'll probably end up going back to prison."

Policy Recommendation

The policy recommendation I have to help improve the balance of power between courtroom actors is to make transfer and discretionary hearings mandatory prior to automatically declining a juvenile into the adult court jurisdiction. Essentially having a transfer and discretionary hearing would allow the court to consider important elements of a youth such as: age, history of trauma, mental health issues, developmental delays, or other extenuating circumstances, and whether the youth would be amenable to rehabilitation in the juvenile system.

A discretionary hearing would allow a juvenile to have a hearing in the juvenile court with dedicated youth professionals. Rulings would be made on a variety of factors as in the interest of the child and community safety rather than having to rely solely on a prosecutor and an adult sentencing grid. Furthermore, a juvenile court judge has more experience presiding over juveniles than an adult court judge. As previously discussed, the juvenile court has a much more rehabilitative perspective than a punitive adult court. In addition, this would allow a juvenile to be slowly integrated in the court process rather than being automatically thrown into an adult court setting.

Conclusion

Juvenile offenders who are auto declined into the adult criminal justice system are a result of an ever changing legal system that was once built on a foundation *of parens patriae* to being transformed by a need to protect public safety. This research has revealed that related laws have changed from a focus on the rehabilitative to the punitive and have become more restrictive. The results also point to a possible weakness in the system resulting from a majority of the power in charging a juvenile resting with prosecutors.

My research suggests that one possible way to equalize the balance of power between the prosecutor, the defense attorney, and the

judge is to make transfer and discretionary hearings mandatory prior to processing a juvenile as an adult.

Clearly, there is a community of professionals that focus on rehabilitating the youth. Juvenile probation officers, counselors, mental health evaluators that have backgrounds and experience working with youth are more critical for the court when considering a ruling. In adult court, these resources for auto-declined youth are almost non-existent, and as a result juveniles face an incredible disadvantage for fairness and justice.

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Sandy Nguyen
Law, Societies, and Justice Department, Dr. Steve Herbert
sandyn2@uw.edu

I am very interested in researching about health law, ethics, and policy. I plan on pursuing a Masters in the UW Public Health Genetics Program.

Contribution of the *N*-Methyl Glutamate Pathway to Methylamine Oxidation in *Methylobacterium extorquens* AM1

Sandy Nguyen

Abstract

Methylotrophic bacteria have the unique ability to grow on reduced single carbon compounds as an exclusive source of energy and carbon (Anthony, 1982). Single carbon (C_1) compounds, such as methanol and methylamine, contain no carbon-carbon bonds and comprise a chemical class inaccessible to most organisms. This specialized ability establishes methylotrophs as important players in the global carbon cycle and provides potential for biotechnological manipulation (Chistoserdova, 2003). Although ubiquitous in nature, methylotrophs are found commonly on the surfaces of plants where they experience periodic bursts of methanol from the stomata (Crowther, 2008). These microorganisms must adapt rapidly in response to the intermittent availability of carbon substrates while preventing accumulation of toxic compounds (Skovran, 2010). Increased understanding of the regulatory mechanisms that dictate production and consumption of metabolic intermediates during C_1 metabolism will be applicable towards future biotechnological applications.

Methylobacterium extorquens AM1 is one of the most well studied methylotrophs and serves as a model organism for C_1 metabolism (Chistoserdova, 2009). This pink-pigmented facultative methylotroph is capable of alternating its mode of growth between single carbon and multi-carbon compounds depending on carbon substrate availability (Peyraud, 2011 and Gourion, 2006). In *M. extorquens* AM1, metabolism of C_1 compounds occurs in three major oxidation steps (refer to Figure 1). Periplasmic methanol or methylamine is first oxidized to the toxic intermediate formaldehyde and then incorporated into the cytoplasm. Intracellular formaldehyde condenses with dephosphotetrahydro-methanopterin (dH_4MPT) to form methylene-dH_4MPT. The next step to generate methenyl-dH_4MPT can be catalyzed by either MtdA (methylene-H_4MPT/H_4F dehydrogenase) or MtdB (methylene-H_4MPT dehydrogenase). Once formate is generated there is a carbon split where carbon flux is partitioned for either dissimilation with oxidation to carbon dioxide or assimilation by entering the tetrahydrofolate (H_4F) pathway. MtdA participates in a reversible reaction to produce methylene-H_4F, a precursor intermediate for the biomass cycles (Martinez-Gomez, 2013).
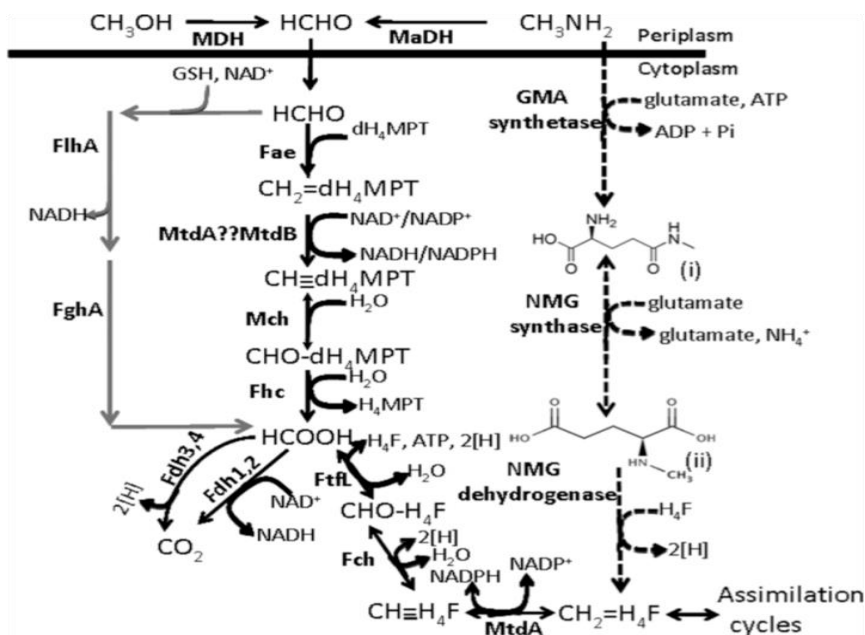
Figure 1. *Methanol and Methylamine Oxidation Pathways*

MtdA plays an important role in assimilation, but its secondary role in oxidative metabolism is not well understood. Previous characterization studies demonstrate MtdA to catalyze the conversion of methylene-dH4MPT to methenyl-d4HMPT more efficiently *in vitro* when compared to MtdB. However, this contradicts with *in vivo* observations since an *mtdB* mutant is auxotrophic on methanol (Hagemeier, 2000). Additionally, an alternative pathway for methylamine oxidation has been described in other organisms called the *N*-methyl glutamate (NMG) pathway. This pathway consists of three enzymes: an NMG synthase, a gamma-glutamylmethylamide synthetase (GMA synthetase), and an NMG dehydrogenase (NMGDH) (Latypova, 2010). Despite detection of low levels of NMGDH activity in extracts of *M. extorquens* AM1, the functionality of this pathway is questionable in a wild type strain (Chistoserdov, 1994). Interestingly, a strain where the gene for MtdB is disrupted or deleted shows a partial recovery of growth when methylamine is provided as the carbon substrate (Martinez-Gomez, 2013). We proposed the NMG pathway to function actively in methylamine oxidation and allow carbon flux to bypass the H_4MPT dependent pathway in the absence of MtdB.

Contribution of the *N*-Methyl Glutamate Pathway to Methylamine Oxidation in *Methylobacterium extorquens* AM1

   In our experiment, homologous genes for the NMG pathway were identified using the Basic Local Alignment Search Tool (BLAST). A deletion of *mgsa* (the gene encoding NMG synthase) was generated using the allelic suicide vector pCM184 (Marx, 2001). Primer sequences specific to the regions upstream and downstream from this target gene were amplified using PCR and subsequently cloned into pCM184. This vector was transformed into *E. coli* S17-1 and later used as a donor during conjugation with *M. extorquens* AM1 cells (Martinez-Gomez, 2013). Antibiotic markers were removed using the *cre-lox* expressing plasmid pCM157 (Marx, 2002). PCR analysis was used to corroborate the deletion of *mgsa* in this strain. Phenotypic studies were conducted to compare the growth rates of the *mgsa* single mutant, the *mtdB* single mutant, the *mtdBmgsA* double mutant, and wild type *M. extorquens* AM1 strains. These strains were grown aerobically at 30 degrees Celsius in a minimal media containing succinate (15 mM). Once the cells reached late exponential phase, biological replicates were subcultured into flasks containing 100 mL of minimal media containing methylamine (35 mM). The optical density was monitored over time at 600_{nm} (OD_{600}) using mass spectrometry (Martinez-Gomez, 2013).
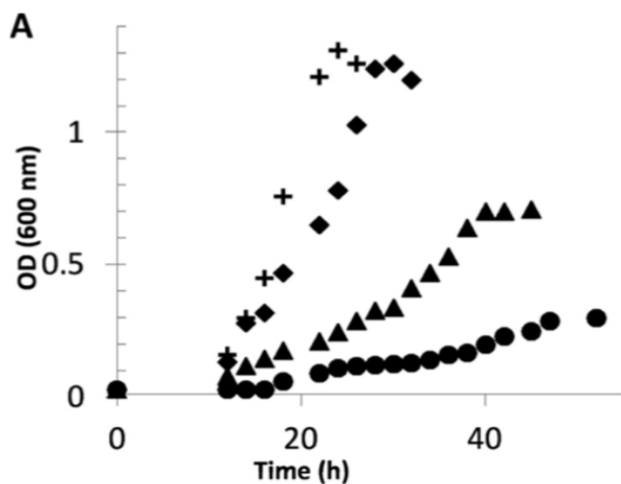
Figure 2. Contribution of the NMG pathway to methylamine growth. Growth of wild-type M. extorquens (crosses), mtdB mutant strain (triangles), an msgA (encoding N-methyl glutamate synthase) mutant strain (diamonds), and a double mtdB msgA mutant strain (circles) grown on succinate and subcultured into medium containing methylamine (35 mM).

Based on our results, the NMG pathway was confirmed to be present and functional during growth on methylamine in an *mtdB* mutant strain. The *mgsa* mutant showed no growth defect while the *mgsa mtdB* double mutant experienced a defect in growth with a final OD_{600} of .2 to .3 (Figure 2). During this study, NMG dehydrogenase activity was also measured and demonstrated to be 89-fold higher in the *mtdB* mutant compared to the wild type strain. Therefore, the difference in growth observed between the *mgsA mtdB* mutant and *mtdB* mutant is dependent on the presence of the NMG pathway. Although it is still unclear why MtdA cannot fully substitute for MtdB to allow for growth on methanol, these studies provided biochemical and phenotypic evidence of a functional NMG pathway that had been previously hypothesized, but not yet demonstrated in *M. extorquens* AM1 (Martinez-Gomez, 2013).

Future research will investigate the role of nucleotides as small molecule regulators of carbon distribution in *M. extorquens* AM1. MtdA dual role in the oxidative and assimilatory pathways may shift nucleotide ratios in the cell and alter carbon distribution. Drastic changes in nucleotide pools have been demonstrated to correlate with lack of growth in response to switches in carbon substrates (Skovran, 2010). Levels of reduced and oxidized pyrimidine nucleotides as well as metabolites of the assimilatory pathways will be measured to determine if the changes in nucleotide pool correlate with alterations in carbon distribution for energy production and growth.

A manuscript detailing the full results of this experiment was submitted to and published in the *Journal of Bacteriology* during May of 2013.

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Acknowledgments

Sandy Nguyen
Department of Microbiology, Dr. Mary Lidstrom and Dr. N. Cecilia Martinez-Gomez
snguyenn@uw.edu

My research interests involve clinical and laboratory studies of oral disease as well as treatment development for patients with disabilities or resource deficient communities. After graduation, I intend to enroll in a DDS/PhD dual program to become a clinically trained dental scientist.

A Quantitative Approach to Researching Video Game Use in Education

Geoffrey M. Phillips

Abstract

Video games represent a powerful educational paradigm; nevertheless, strong devotion to convention, as well as the highly stigmatized reputation of video games as a purely recreational medium, has led to an overarching reluctance to implement them within higher-level course curricula. Emerging research on the outcome of using real-time interactive simulations as educational tools consistently shows marked improvement in student learning; however, a rigorous means of quantitative analysis is lacking from all such research. To date, all studies correlating learning outcomes with the intrinsic components of video games rely on one of three different methods of data acquisition, none of which are quantitative in nature and thus results are often inconclusive. This study proposes an alternative model, capable of quantitatively evaluating the educational efficacy of video games as well as isolating each control variable within the games. The primary long-term goal of this research is to develop a model for an educational game that implements this framework and affords future studies a new tool to overcome the aforementioned limitations in data acquisition.

Background

Studies correlating learning outcomes with the intrinsic components of video games rely on one of three different methods of data acquisition: 1. Surveys—consisting of student and teacher questionnaires given after gameplay. This often gives rise to the "halo effect" (in which an enjoyable experience influences a favorable response even if actual changes in learning were not perceived). 2. Pre-gameplay versus post-gameplay evaluations—which attempt to isolate learning outcomes by comparing a student's pre-gameplay understanding to their post-gameplay understanding. The limitations of such an approach are that it becomes impossible to isolate the specific components that affect learning outcomes. 3. Recorded observation—in which the actual gameplay is monitored in order to analyze later. The problem with this is that gameplay must take place within a lab or other unnatural environment and analysis of the data is slow and expensive. of play activity (Wideman, 2007). Each of these methods has its own inherent limitations pertaining to the quantity and quality of data acquisition. In addition, these methods prohibit researchers from being able to dynamically alter and thus isolate any of the targeted control

variables inherent within video games such as: challenge, contextual motivation, or narrative. This would be accomplished by embedding the data collection methods and algorithms directly into the framework of the game itself, also allowing for dynamic alterations of each variable according to the parameter requirements of the inherent statistical methods. In this way, we can directly correlate changes in student learning outcomes to the changes made within the game. The framework within the game could also capture this data and upload it to a server for storage and later analysis. This would drastically increase the possible number of participants—thereby increasing the sample size—while simultaneously allowing for more modular data analysis.

Traditionally, the computer industry has been driven forward by video game technology. The computers commonly used today were designed to play video games (Macedonia, 2006; Luebke, 2007) and only incidentally edit documents, send email, and everything else. While it is difficult to fully grasp how much video games have changed in only the last 30 years, the curricula within our university education system has, for the most part, remained largely static since at least the 18th century. Although the application of video games to education has started gaining momentum in the K-12 environment (Barab, 2009), there has been little to no incorporation within college-level curricula. This is despite the growing body of research that indicates teaching based solely on lecture presentations to be one of the least effective models of instruction when compared to learning through print, auditory, or visual means (Rutten, 2011).

Student motivation has been in steady decline due, in part, to instruction being decontextualized from its historical evolution and real-world relevance (Jenkins, 2005). Unlike university learning that engages only the auditory sense (and in a comparatively monotonic way), video games have the added potential of reaching a much wider audience by better engaging students through multimodal layers of media and interaction.

The primary impedance of incorporating video games within upper-level curricula is the stigma they carry. Many traditional educators and policy makers observe their frequent recreational modality as impediments to learning and perceive them as a purely recreational waste of time. This same type of aversion took place with the advent of moving pictures in the early twentieth century, and since then programs like Nova have effectively taught difficult and obscure concepts to people from all walks of life—regardless of whether or not they thought themselves interested in science. Nova pushed the envelope of learning by engaging interest through the use of video, music, animation,

historical context, captivating narrative and dialogue. Video games go beyond that by adding the extra dimension of interactivity and personalized experience. They are uniquely captivating through their adaptability, and virtually all games produced today address varying levels of aptitude and skill level. This quality allows educational games to be tailored to different learning styles as well as different levels of prior experience and skill acquisition.

Arguably the most important educational component offered within video games is their failure-based environment. Deep learning within complex domains is a difficult procedure that involves enduring numerous obstacles and failures (Gee, 2003). This happens to also be a key mechanic within nearly all modern video games. Perhaps the greatest advantage of video games is that they take place in an environment where it is not only acceptable to be wrong and fail continuously, but it is necessary in order for the game to have any lasting appeal. In contrast, the average college course operates on the principle of 'try once, and if you fail, your grade will reflect it'. Getting the opportunity to try and improve is arguably the most fundamental element to learning and is almost completely absent within contemporary college curricula.

Methodology

The three current methods of data acquisition within studies of this nature, mentioned in the previous section, each have limitations in producing quantifiable results (Wideman, 2007). One method consists of attempting to isolate learning outcomes by comparing a student's pre-gameplay understanding to their post-gameplay understanding. The primary limitation of such an approach is that it becomes impossible to isolate the specific components that affect learning outcomes. Another method is relying on student-teacher surveys to indicate the effectiveness of games in education; however, this often gives rise to the "halo effect" in which an enjoyable experience influences a favorable response even if actual changes in learning were not perceived. The last method is monitoring the actual gameplay in order to analyze it later. The two limitations associated with this method are that gameplay must take place within a lab or other unnatural environment and that analysis of the data is slow and expensive. All of these methods suffer from the additional limitation that researchers cannot alter any of the control variables.

In order to bolster research within educational gaming, an alternate method of gathering data, which is intended to be more quantitative in nature, must be developed and is suggested here. This would be accomplished by embedding the data collection methods and algorithms directly into the game itself, allowing for real-time alteration

of individual elements of the learning environment in order to examine any correlating changes in student understanding. Specific educational components will be malleable dynamically, so that both the data collection algorithm as well as the later analysis of raw data could elucidate any correlating changes in educational efficacy by observing the learning outcome of the student. For example, the game itself would alter the amount of context available to the player and measure the effects of each alteration through player learning outcomes. Context, here, refers to the amount of historical or background information pertaining to current obstacles encountered. The solution to that obstacle is then presented, in a challenging way, at the precise time the obstacle is encountered, which allows the player to associate the solution to a relevant problem. Adjustment of such variables would take place within the game by the game engine itself. To illustrate the dynamics of altering such a variable I will explain how that might be done in accordance to context. At one extreme we have no context: this would entail stripping the game of any relevant background information and giving access only to the specific instructions that pertain to solving a particular problem. This extreme would model the game to textbook standards, where only the steps are outlined prior to the homework problems utilizing them. At the other extreme we have full context. This would model the basic and essential element of most current video games, in which a narrative is given to motivate the student's progress through the homework problems. For instance, tasks relevant to the subject being learned could vary the amount of historical or background information given as well as the way in which subsequent levels within the game are reached.

In order to extrapolate data used in dynamic gameplay alteration, at least a basic statistical package would need to be embedded within the game. Dynamic gameplay alteration would target specific variables in accordance with the standards developed to correlate each element. Some factors that indicate positive student learning outcomes include:

- Length of play exercised by the average player
- Amount of failures associated with a reattempted success
- General progress through the game
- Whether a player continues engagement within a level given that access to the next level has already been presented
- In game testing levels to determine understanding
- Communication with other players of the same game through forums and the like
- Enthusiasm for the subject after course completion

Some additional factors inherent within video games that may also be correlated to positive student learning outcomes are:

- **Failure Components** – The number of attempts allowable to the student can be reduced to one (before the student must move on to the next level), thus differentiating between a failure-based and non-failure-based environment.
- **Observable Progress** – Variations can be made in a student's experience of their accomplishments by varying the amount or frequency of rewards given to the player for progression.
- **Feedback** – Normally, access to subsequent levels is only granted after the current level is mastered. In order to vary this, access beyond the current obstacle would have to be allowed without imparting any information as to how well the player performed. The antithesis of the no-feedback scenario is one in which the player is given specific performance details upon completion of each level.

Additional features could be subsequently studied; however, it should be noted that implementation of any variable feature would be better correlated to learning outcomes if that feature itself was somehow devised to be continuous rather than discreet—to allow for greater resolution, and therefore sampling, of each correlation graph. The modularity of the study comes from the ability to extract raw data from the game for later analysis.

Discussion and Conclusion

The obvious objection is that embedding difficult or math-based problems within video games goes a long way toward eliminating the 'fun factor'. However, this has not been shown to be the case and there are even instances where the exact opposite was true. This is perhaps most evident from the release of games like *Foldit* (Cooper, 2011), in which players solve computationally difficult scientific problems of folding protein structures. Players of *Foldit* were able to accurately model an enzyme of the Mason-Pfizer monkey virus (M-PMV) within just 10 ten days, a problem that eluded scientists for more than fifteen years (Cooper, 2011). *Foldit* has since been featured in countless articles as not only a video game that could help develop life saving vaccines but also as an alternative method of solving difficult scientific problems through the use of video games and utilizing crowd sourcing to tap the specific skills common to video game players.

What has been demonstrated by even the most "casual" gamers is an inherent desire for the ability to experience their accomplishments in an empirical way. This is apparent from games like *Farmville* – where even the leading experts within game development and comparative media studies were astonished by the game's exceptionally wide-spread demographic. That game and many others like it have consistently shown that people are willing to perform tedious tasks for hours on end in order to gain even a small sense of accomplishment. This sense of accomplishment is ascertained by gaining new abilities, items, story elements, experience points, etc. It's only a small step beyond that to imagine incorporating challenging homework problems within similar engaging media so that the emphasis of time spent playing the game is used solving those problems.

Prolonged learning always involves enduring numerous failures, regardless of whether or not that is specifically publicized. The less impact failure plays on self-worth, the more willing we are to take a chance and learn from those failures. Video games provide a perfect platform to help educators take advantage of this learning method. It is my hope that further research utilizing the proposed model will help lead to a deeper understanding of the fundamental components of learning and provide compelling evidence for educational potential within video games.

Future research, which would reduce abstraction relative to similar studies, would be the design of a game that implements the proposed features outlined above. This game could then be used to test student retention and understanding of key concepts during actual gameplay. The analysis by preliminary models should also incorporate methods of extrapolation to account for the scenario that greater production value would boost efficacy of this model.

Further studies are also needed to examine the data acquired from large-N distributions. It is believed that higher education could benefit from the incorporation of video games within its curricula in myriad ways and that the new method of analysis proposed could provide irrefutable evidence of just that.

I believe this research can contribute to a paradigm shift within the educational system that actually rewards the learning experience as opposed to the artificial motivation incited with grades and other fabricated devices. We're in an age where we have been given the unprecedented opportunity to take advantage of vast technological developments. We should capitalize on these in order to produce all new sets of teaching tools to better captivate students and raise the education level of all who are inclined. Currently, the incorporation of technology

at the college level typically results in a sort of ad-hoc wrapper—adding extra layers of complexity without actually compelling the students to engage with that curriculum. Although the use of projectors, computer labs, clickers, course web pages and other technologies have widened the toolbox of educators—unless the actual curricula also evolve with technology, instead of clinging to its eighteenth century underpinnings, we can expect the rates of engaged and motivated students to continue declining.

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Geoffrey M. Phillips
Department of Physics, Marty Stepp, Computer Science and Engineering
thegodsthemselves@inbox.com

Geoff plans to pursue a Master's Degree and eventually a PhD in Computer Science and Game Development and is currently in the process of deciding between the University of Utah, the University of Southern California or Digipen Institute of Technology.

University of Washington NEW Leadership™ Outcomes, Evaluations and Implementation: Taking Steps towards Evidence Based Practice

Jennifer B. Rubio

Abstract

This study focuses on the experiences and outcomes of self-identifying women who have participated in the NEW Leadership™ Institute at the University of Washington. It is anticipated that this study will reveal the ways in which NEW Leadership™ at the University of Washington can be modified to meet the needs of the community it serves. The results of this research will lend reason to the planning and implementation of the program in years to come, allowing the curriculum to more accurately reflect the needs of participants: college women. The goal is for this project to contribute to the eventual development of the NEW Leadership™ program as an evidence-based practice (EBP). The objective of EBP is the integration of participant perspectives, scientific evidence, and expert opinion to provide high-quality services that mirror the interests, needs, values and choices of the population being served.

Introduction

For the past 10 years, the University of Washington has been hosting the six-day NEW Leadership™ Institute at their Seattle Campus. NEW (National Education for Women's) Leadership™ is a national bi-partisan program to educate college women about the political process and teach them to become effective leaders (Rutgers CAWP, 2012). The program was developed at Rutgers University Center for American Women and Politics. In an article from Liberal Education, it is stated that the focus of the NEW Leadership Program is "to help ensure that people will continue to see women on the ballots and in public leadership roles" (Liberal Education, 1992, vol. 78).

This study responds to an absence of research on NEW Leadership™ outcomes. Despite having over 10 years of programming and widespread support for the institute, no formal research has been conducted. The researcher aimed to unveil the outcomes of participants while soliciting program feedback and evaluation.

Population

This survey is specific to University of Washington NEW Leadership™ Alumnae. The women surveyed range from 19-56 years

old and represent classes from 2002-2012. All identify as female, 81% were U.S. Citizens, and 32% identified as persons of color. As listed in the graph below, the majority of women who responded are white.
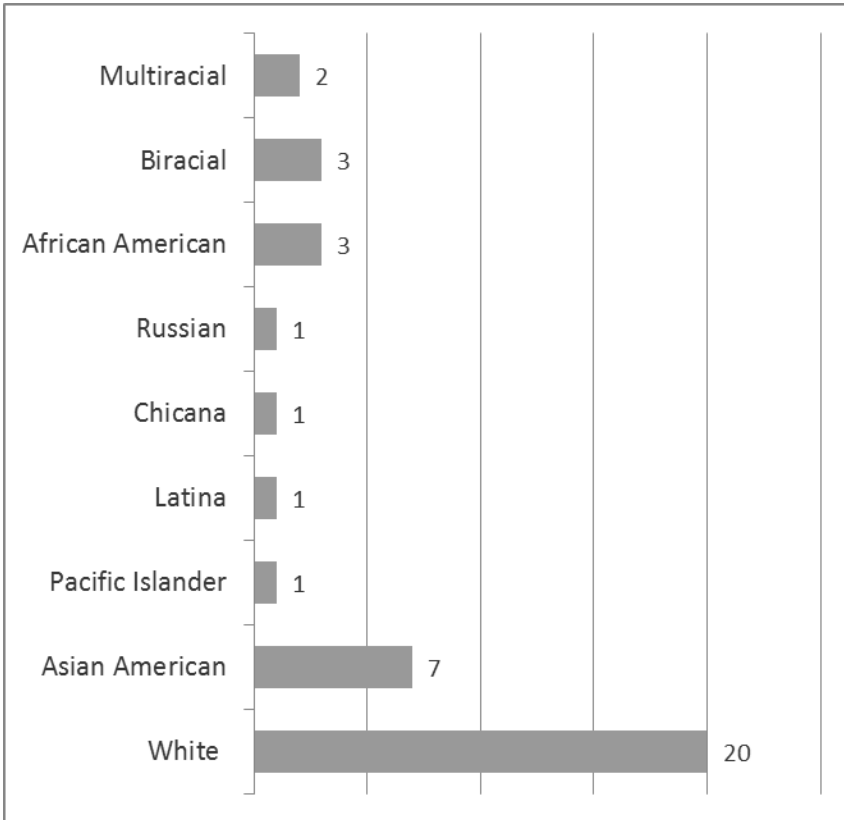
Figure 1. *Participant Ethnicity Demographics*

Methods

This research is a mixed methods program evaluation design. The researcher created a survey in order to collect both qualitative and quantitative data using Likert scales and open-ended questions. This questionnaire was designed to extract information about participant outcomes while gathering data concerning their satisfaction and dissatisfaction with the program curriculum and institute structure.

A catalyst survey was sent to 150 email addresses. Of those, 37 NEW Leadership Alumnae from the University of Washington responded. A $10 incentive was offered in the form of an e-gift card, and the survey was anonymous.

Results

  Several themes occurred throughout the coding of data. One major theme was the value participants placed on field trips, consistently rating them highest among Likert scales. On a scale of 1-4, 1 being "very valuable" and 4 being "not valuable" at all, 23 participants chose option 1, "very valuable." Eleven (11) women selected option 2, "valuable." It is during these excursions that the class is able to visit Olympia or City Hall to meet with elected officials and tour prominent non-profit organizations in the Seattle King County area.

  Another major subject that reoccurred was the significance of networking during the institute. Eleven (11) participants noted this importance in written responses, indicating that they felt networking was the number one aspect of the institute. In the Likert scale section, twelve (12) women rated networking highest as 1, "very valuable."

  When asked to rate other aspects of the curriculum using Likert scales, four (4) participants rated the parliamentary rules session as 4, "not valuable." Two participants felt that the etiquette lunch was also "not valuable" to them.

  When Alumnae were asked if they included NEW Leadership™ on their curriculum vitae, twenty-nine (29) participants indicated they did. Additionally, 2/3 of participants indicated that NEW Leadership™ lead to a job or career placement for them personally. Participants were asked openly if they felt they were currently holding a position of leadership and twenty-four (24) stated they did, detailing their current titles in qualitative answer form.

  Among other qualitative answer sections, participants utilized space for written commentary to recommend the inclusion of women of color and LGBTQ women in the selection of trainers and guest speakers. In total, nineteen (19) participants felt that social identities such as race and sexual orientation were missing from the institute. Although the survey asked about more than two genders, there were no specific comments relative to transgender or other gender identities. Here are a few direct quotes from participants.

> "NEW Leadership students are very diverse; I think it would be helpful to have cultural presenters."

> "Trans or queer identities may have been lacking."

> "I feel like the participants covered a broader array of ethnicities, sexual orientations, gender, [and] national origin than the speakers/lecturers."

> "At the time it appeared to be a lily white organization. I
> hope there's been change in this area over the years."

When asked if they would recommend the program, 97% said they would recommend NEW Leadership™ to another self-identifying woman. Data were also collected on scholarships that were awarded to Alumnae and the following chart demonstrates their responses.
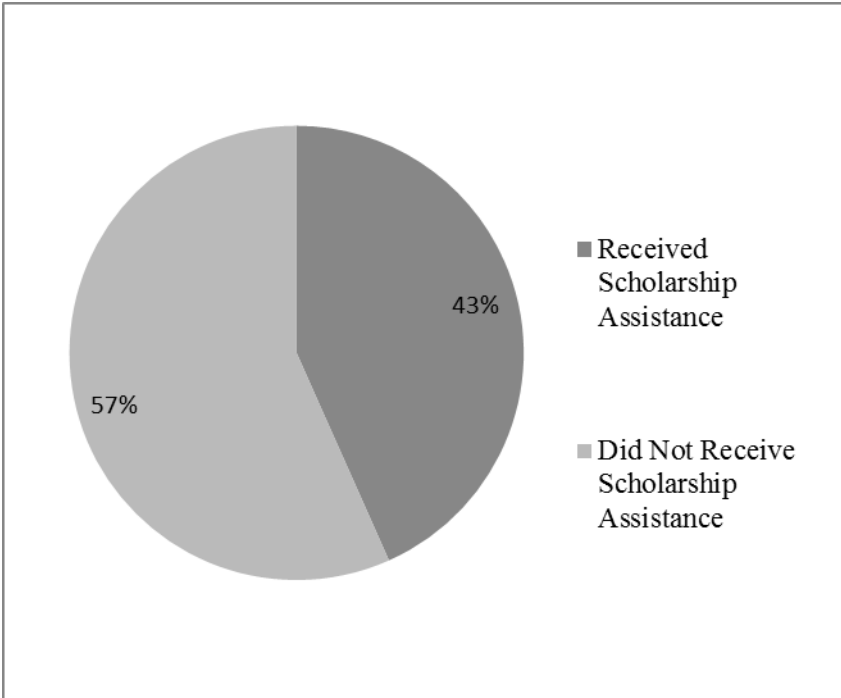
Figure 2. Participants that received scholarship assistance.

It should also be noted that when asked about the $150 registration fee for the program, one participant pointed out that they would be willing to pay up to $400 due to the fact that she spent all day at the institute and was provided all meals. Twelve participants indicated they would pay between $200 and $250 and fifteen thought $150 was a fair price. Only one participant suggested $0 was a reasonable fee.

Limitations

Some factors encountered during the study posed limitations to the research. One limitation was the amount of active participant contact information available. Of the 258 email addresses on file for Alumnae,

only 150 were deliverable/active. Another major limitation was the number of Alumnae responses gathered. Though a lot can be garnered from the participants, thirty-seven responses are not enough to represent statistical significance.

Additionally, it should be noted that this research marks the very beginning stages of program evaluation and steps towards the EBP process.

Conclusion

As this is the beginning of Evidence-Based Practice, additional research is needed. The survey will be implemented at the end of each annual institute prior to graduation from the program. The information will then be gathered to support the planning of the following year's curriculum. The researcher has made the following suggestions based on the current data collected:

Table 1. *Researcher Recommendations*

1. Expand alumnae outreach efforts electronically and physically host more engagement events both during and after the program.
2. Offer a more balanced and diverse pool of mentors, speakers, trainers, and sessions to reflect the diversity of participants.
3. Implement a sliding scale for the registration fee ranging from $50-$400 while continuing to offer full scholarships.
4. Implement an entry survey for newly admitted participants to provide feedback so the agenda may be modified to meet expectations.

These recommendations were made after careful examination of participants' responses. Some suggestions are based solely on the data provided in the survey while others are a combination of participant feedback and current research in the field of women's leadership and mentoring.

Referring to recommendation number one: the researcher noted that many participants desired more interaction with their classmates, both during and after the program. One participant suggested that all of the women "dorm together."

Referring to recommendation number two: it has been discovered that one reason women don't run for office is because they don't have role models in their field (Miller & Kraus, 2004, p.423). The researcher considered this data and the input of participants while

coming to this conclusion. Given this information and the diversity of participants, the researcher recommends offering a more diverse selection of speakers and trainers for the networking aspect of the program.

Recommendation number three is mentioned to offset the cost of the program. It is suggested that the program continue offering full and partial scholarship support while implementing a sliding fee scale that may tap into available resources among accepted NEW Leadership™ applicants.

Recommendation number four takes into consideration the variability of the applicant pool each year. It is recommended that a pre-evaluation survey be administered to newly accepted NEW Leadership™ applicants. This is suggested as an attempt to tailor and adapt each institute to the needs of the current pool of eligible women based on their desired outcomes.

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Acknowledgments

Jennifer B. Rubio
School of Social Work, Norma Timbang
jbr2151@columbia.edu

My research interests include social and economic justice, geographical health disparities, international social work, poverty, immigration, mental health and addiction. I will be attending Columbia University to pursue a Master of Science degree in Social Work. It is my ultimate goal to pursue a Doctoral Degree in Social Policy.

African Immigrants and Susceptibility to Hypertension and other Cardiovascular Disease-Related Risk Factors

Cynthia Simekha

Abstract

Because African immigrants are often lumped into the same category as African-Americans, there has been very little research conducted on the health outcomes of African immigrants. This study is based on self-reported information and asks the question: What are the differences in susceptibility to hypertension and other cardiovascular disease-related risk factors among different African immigrant groups in the Pacific Northwest, specifically those from Somalia, Nigeria and Ethiopia. The hypothesis of this study is that Ethiopian and Nigerian immigrants will be at a lower risk for hypertension and other cardiovascular diseases as compared to Somali immigrants. Results provide a complex and mixed picture of health for the groups studied.

Introduction

Studies on health outcomes of African immigrants are often misleading because they commonly do not differentiate between African immigrants and American-born African-American subjects. This study not only examines the health of an understudied immigrant group, but also variation in health among African immigrants by country of origin. This research is essential because cardiovascular diseases is one of the top five causes of death in high-income countries, and it has started to become a concern in immigrant communities in the United States (U.S.). This research will give a clear presentation and health outcome analysis of African immigrants, which will contribute to the creation of improved health interventions in these populations.

This research will also assist in promoting the ideology of preventative behavioral medicine versus treatment, thus saving money incurred in the more costly treatment setting. By focusing on one of the most critical chronic illnesses that is increasingly common among African immigrants, this study will create awareness and increase our understanding of factors influencing African immigrant health.

Background

It is essential to study more about cardiovascular diseases and related-risk factors because it is among the top five leading causes of the global burden of diseases and has high mortality rates. According to the World Health Organization (WHO) report of 2004 on DALY (Disability

Adjusted Life Years), ischemic heart disease is ranked fourth with a 62.6 million DALYS. Data show an increasing number of immigrants being diagnosed with cardiovascular disease and related risk factors (Okwuosa 2012, CDC Reports, Healthy People 2010 Reports).

In this research, I examined the health systems of the country of origin and current immigrant status of Somali, Nigerian and Ethiopian immigrant groups and related them to the factors contributing to susceptibility to cardiovascular diseases. A literature review on the health systems for the three countries revealed that Nigeria is found to have a stable and easily accessible health system compared to Ethiopia and Somalia. This makes it easy for Nigerian citizens to have at least annual check-ups at various health facilities, allowing them to know their health conditions and accordingly maintain their health as compared to Ethiopian and Somali residents.

Immigrant status also plays a major role in immigrants' health. Generally, studies show that most Nigerians immigrate to the U.S. for work, school or on a green card visa thus making it easier for them to navigate the U.S health system and society at large as compared to the Ethiopian and Somalian immigrants, a majority of whom come seeking asylum in the U.S. (Awokoya 2012; Oluwakemi 2012; Pavlish et al. 2010). Additionally, this affects how they acculturate to the U.S society. Nigerians tend to easily acculturate to the U.S. society whereas Ethiopians and Somalis tend to live in their own community enclaves (Homer 2011; Awokoya 2012). This has both positive and negative impacts in that communities that rarely stay in enclaves tend not to maintain some of their cultural practices like cooking cultural foods and eating together as a community or always being there for one another for moral support. On the other hand, the communities that stay in their own enclaves may find it difficult to navigate the healthcare system, and may feel 'othered' due to maintaining their traditions which at times are seen as being anachronistic by outside groups (Pavlish et al. 2010; Ghazal et al. 2005; Oluwakemi 2012).

Methods

This study used surveys, which were distributed to the Ethiopian, Somali, and Nigerian community members at various community centers in the Seattle region and University of Washington (UW) students of Ethiopian, Somali and Nigerian ancestry by involving the African student associations at UW. Participants were 18 years of age and older. Before filling out the questionnaires, the participants read and signed consent forms approved by the UW IRB. The survey incorporated questions from the Behavioral Risk Factor Surveillance System (BFRSS), the National

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Health Interview Survey (NHIS), the National Longitudinal Study of
Adolescent Health (Add Health), the Medical Research Council (MRC),
the National Health and Nutrition Examination Survey (NHANES) and
theYouth Risk Behavior Survey (YRBS). For privacy purposes, the
questionnaires did not include markers for name and address, and the
participants placed the questionnaires in empty envelopes, which only
had the P.I.'s address. The entire process of filling out the surveys was
voluntary as the participants were free to stop at anytime and answer or
skip any questions they wished. The process of administering surveys
and collecting data was from March 25th 2013 to April 18th 2013. Out of
the 80 surveys issued, only 61 were correctly and completely filled out,
while 19 were incomplete (refer to Table 1).

Table 1. *Survey and subject statistics.*

Sample Characteristics		
Surveys issued	80	100%
Surveys filled	61	76%
Incomplete surveys	19	24%
Males (of completely filled survey)	15	25%
Females (of completely filled survey)	46	75%
Age range (for all the 3 groups)	18-54 years old	
Ethnicity	**Mean Age**	**Age Range**
Somali	21.2	18-26 years old
Ethiopian	27.9	18-54 years old
Nigerian	24.6	18-48 years old

Analysis

In order to analyze the data, I compared the three different
groups across various factors such as general health, health behaviors
and emotional health, based on survey responses. Additionally, I
analyzed the data using various generational categories so that I could
clearly understand the degree of risk of hypertension and other
cardiovascular-related diseases the subjects have depending on
generation and length of time stayed in the U.S. These generations
include: 1st generation defined as migration to the U.S. at age 18 or older;
1.5 generation defined as migration to the U.S. between ages 17-13; 2nd
generation defined as migration to the U.S. between ages 12-6; 2.5
generation defined as migration to the U.S. between ages 5-1; and 3rd
generation defines as born in the U.S. with immigrant parents.

Results

The results of the data collected are represented in three tables and one figure. The first table shows the demographic characteristics by country of origin (refer to Table 2). This includes gender, age, level of education, most spoken language, country of birth, and immigrant generation.

Table 2. Demographic characteristics by country of origin.

	NIGERIA (N=18)	ETHIOPIA (N=20)	SOMALIA (N=23)
Gender			
Female	67%	80%	78%
Male	33%	20%	22%
Age (mean in years)	24.6	27.9	21.2
Marital status (Married)	17%	25%	9%
Has children	11%	25%	4%
Education			
Less than high school	11%	50%	17%
High school	22%	30%	39%
College or higher	67%	20%	44%
Spoken Language Skills			
English only	83%	50%	48%
English and native language	11%	20%	22%
Native only	1%	30%	30%
Body Mass Index (weight in kg/ height in meters^2)	27.1	25.6	26.7
Height (inches)	66	64.1	59.6
Weight (pounds)	168.3	149.5	135.1
Country of Birth			
Africa (Nigeria/Ethiopia/Somalia/ Ghana/Kenya)	56%	75%	78%

Saudi Arabia	0%	0%	4%
Canada	0%	0%	9%
UK	6%	5%	0%
US	39%	20%	9%
Immigrant Generation			
1st (Came to US age 18 and older)	28%	35%	4%
1.5 (Migrated to US between age 17-13)	28%	20%	13%
2nd (Migrated to US between age 12-6)	6%	20%	35%
2.5 (Migrated to US between age 5-1)	0%	5%	39%
3rd (Born in the US with immigrant parents)	39%	20%	9%

The next table shows the health status according to country of origin (refer to Table 3). This includes general health demographics, emotional, behavioral characteristics, report on various chronic diseases, and average number of hours spent on daily activities.

Table 3. *Health status by country of origin*

	NIGERIA (N=18)	ETHIOPIA (N=20)	SOMALIA (N=23)
General Health demographics			
General health (1: Poor - 5: Excellent)	4.2	3.6	3.8
Number of times visited ER	0%	5%	13%
Number of times with reported shortness of breath	27%	10%	39%
Days missed work or school due to health	0.2	1.0	0.8
Years since last check-up	1.3	1.3	0.9y
Access to health (1: Poor – 5: Excellent)	3.8	2.9	3.0
Has a personal doctor	56%	35%	26%
Has health insurance	94%	50%	39%
Denial of healthcare due to lack of insurance	11%	25%	26%

Stopped/ missed health services due to cost	47%	75%	70%
Emotional health			
Life satisfaction (1: Very Dissatisfied - 4: Very Satisfied)	3.3	3.0	3.2
Rate of happiness (1: Very Unhappy - 5: Excited)	4.2	3.6	4.0
Availability of emotional support (1: None – 6: Always)	4.2	3.7	5.1
Behavioral characteristics			
Smoke (daily smoker)	0%	15%	9%
Drink (weekly drinker)	50%	75%	4%
Consumption of fresh fruits and vegetables - not canned (1: Never – 5: Daily)	3.3	3	3.2
Engagement in physical activities	89%	45%	70%
Accessibility to grocery stores (1: Extremely Far – 5: Close)	4.1	3.9	3.4
Chronic Diseases			
Blood cholesterol	5%	10%	0%
Diabetes	11%	5%	13%
Hypertension	22%	20%	9%
Obesity	11%	5%	4%
Asthma	11%	5%	13%
Average number of hours per day spent on…			
TV/ computer screen	5.8	4.4	5.6
Socializing via text/ phone calls/ chats	6.2	6.0	7.3
Driving (to work/school/grocery stores/run other daily errands)	6.2	1.3	1.8

The bar graph shows the comparison of the disease prevalence among the three groups under study (Figure 1).

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Comparison of Disease Prevalence Among Three Groups of African Immigrants
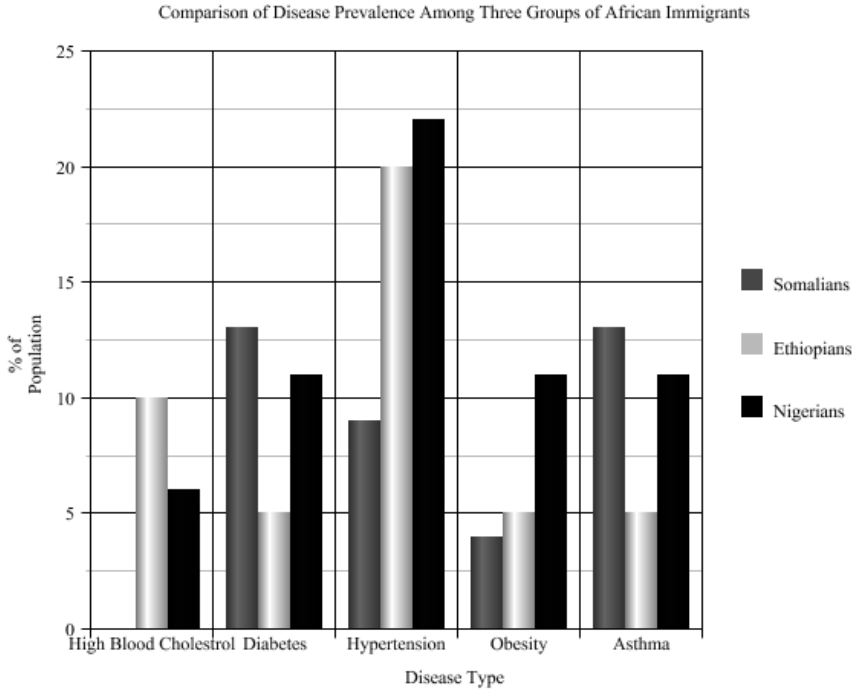
Figure 1. Disease prevalence among Somali, Ethiopian and Nigerian immigrant populations.

The final table shows the various diseases and the country of first diagnosis across the three different immigrant groups. This table helps to get a clear picture of the ideology that immigrants' health tends to deteriorate when they reach U.S. (Table 4).

Table 4. Country of first diagnosis for diseases of concern.

Ethnicity	SOMALIA (N=23)		ETHIOPIA (N=20)		NIGERIA (N=18)	
Country of First Diagnosis	USA	Outside USA (N=21)	USA	Outside USA (N=16)	USA	Outside USA (N=11)
High Blood Cholesterol	0%	0%	50%	0%	14%	0%
Diabetes	100%	0%	25%	0%	29%	0%
Hypertension	100%	0%	100%	0%	57%	0%
Obesity	0%	5%	25%	0%	29%	0%
Asthma	100%	5%	25%	0%	14%	9%

Conclusion/Discussion

The survey results show that for this representative sample the Nigerian population exhibited the highest percentages of the diseases being studied in all three groups. This may be attributed to Nigerians easily acculturate to the U.S. and therefore this affects their living in small enclave communities, behavioral practices and eating habits. An alternative interpretation is that the Nigerian population has a greater access to health care therefor leads to more discovery of underlying conditions earlier. Additionally, hypertension was reported as having the highest number of cases across all groups as compared with all other diseases being studied. The Somali population was at the least risk of all cardiovascular diseases in comparison with the other two groups. This may be a result of the Somali population's tendency to live in community enclaves, hence providing support to each other and continuing cultural practices, especially pertaining to the consumption of food.

Generally, across all three groups, women indicated a higher prevalence among all the diseases. This may be due to a higher number of women participating in the surveys. Also, a majority of the individuals without health insurance reported the highest prevalence of the diseases being studied. Nevertheless this is because majority of the participants reported health insurance was expensive and would prefer not having it. This is because they would rather provide their families with immediate basic needs than spend their earnings on monthly health insurance coverage. In addition to this, all reported cases of diseases were diagnosed in the U.S. This may show that immigrants' health starts to become worse when they migrate to the U.S., but what should also be put to question is how occasionally they went for health check up while in their countries of origin. Overall, acculturation, access to education, health services, affordable wholesome foods and improved living conditions play a major role in determining the prevalence of the diseases being studied across all the three groups.

Nevertheless, this study has various limitations, which include having a limited sample. There may be instances of bias that may have occurred when answering questions pertaining to disease. This may have been due to some of participants indicating they don't have the disease when they may have been diagnosed in the past but their health has subsequently improved.

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YRBS (Youth Risk Behavior Survey) Sample Survey Questions.

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Cynthia Simekha,
Public Health Department, Dr. Hedwig Lee, Jerald Herting (Sociology Department) and Natasha Rivers (CSDE)
cynthiasimekha@gmail.com

In the future, I intend to continue conducting more research on health policies and social determinants of health affecting African immigrants and U.S. born children of African immigrants as very little research has been conducted in this area. My intended PhD program of study is Public Health with a focus on social determinants of health, health policies and health economics of developing nations.

Converging Genome-Wide Association Studies and Candidate Genes for Autoimmune Diseases

Lisa Lynn Stuart

Abstract

Genome-Wide Association Studies (GWAS) determine the places in the genome where there are single base pair changes (aka Single Nucleotide Polymorphisms or SNPs [pronounced 'Snips']) in the genetic sequence of individuals who have a disease as compared to control individuals who do not have the disease being studied. I compared candidate genes and SNPs which have been previously proposed in the scientific literature and performed meta-analyses on published GWAS for Autoimmune Disorders using the Human Genome Epidemiology (HuGE) Navigator. This comparison allowed the identification and establishment of those locations (loci) within the genome that share risk of the development of autoimmune diseases. Such a systematic review of existing studies highlights the utility of eliciting as yet unseen patterns of shared risk genes when data from two or more autoimmune GWAS studies are compared to previously proposed candidate genes. Although clinically distinct, autoimmune diseases may share common disease pathogenesis mechanisms that may only be implicated by using analysis of genetic factors between diseases. Further characterization of shared genetic risk factors may help to define any environmental interventions that may be used to prevent the development of autoimmune diseases.

Introduction

Hundreds of candidate genes for autoimmune disorders have been published in scientific articles. Genome-Wide Association Studies (GWAS) determine the places in the genome where there are differences, Single Nucleotide Polymorphisms or SNPs, in genetic sequences of individuals who have a disease as compared to a control group. By combining widely and publicly available data obtained from GWAS, a comparison can be made between previously proposed candidate genes and published GWA studies to increase the ability to identify locations in the genome that may be shared by Autoimmune Diseases and thus share increased risk for their concurrent development.

Autoimmune diseases are the result of the inappropriate immune response of an individual's body such that their own tissues or organs become attacked by the immune system as if it was a foreign substance resulting in damage and disease of various manifestations. It is estimated that a substantial minority of the population suffers from the more than eighty diseases caused by autoimmunity. They include more commonly known diseases such as diabetes and lupus in addition to many less well-known diseases, many of which are only currently suspected to be autoimmune mediated. Autoimmune diseases can be chronic, often debilitating and sometimes life-threatening, greatly affecting the quality of life of those suffering from them. Due to the clustering within families of multiple autoimmune diseases, at least some common genetic susceptibility has been suggested. It is well-known that many traits are polygenic or multigenic and that it may be the smaller contribution of many genes in an individual that influences the risk and is a better indicator of developing a disease. Pleitropy is said to occur where multiple traits or disease phenotypes are affected by a single mutation or gene[8].

Methods

I used the Human Genome Epidemiology (HuGE) Navigator online database to analyze the literature on GWAS related to autoimmune disorders. My meta-analysis focused on published literature that had combined multiple GWAS with previously published findings on candidate genes for multiple autoimmune diseases and that had also established shared risk genes. Using these studies as models, I took sets of autoimmune disorder GWAS and combined that information with previously proposed candidate genes for which studies were lacking. I systematically explored possible shared genetic locations to discover any novel and significant associations[10].

Discussion

Using a list of autoimmune diseases[9], I compiled a list of all of the previously proposed candidate genes that are associated with them. Of over 1000 genes in the original list compiled, I was able to narrow down the list to 351 genes that are associated with 2 or more Autoimmune Diseases and that also had GWA studies. Of those, Crohn's Disease (CD) had the most previously proposed candidate genes that also had GWAS (169), followed by Type 2 Diabetes (97), Rheumatoid Arthritis (94), Multiple Sclerosis (93), etc. (see Figure 1). Several previous studies have looked at the increasing number of CD associated loci[5].
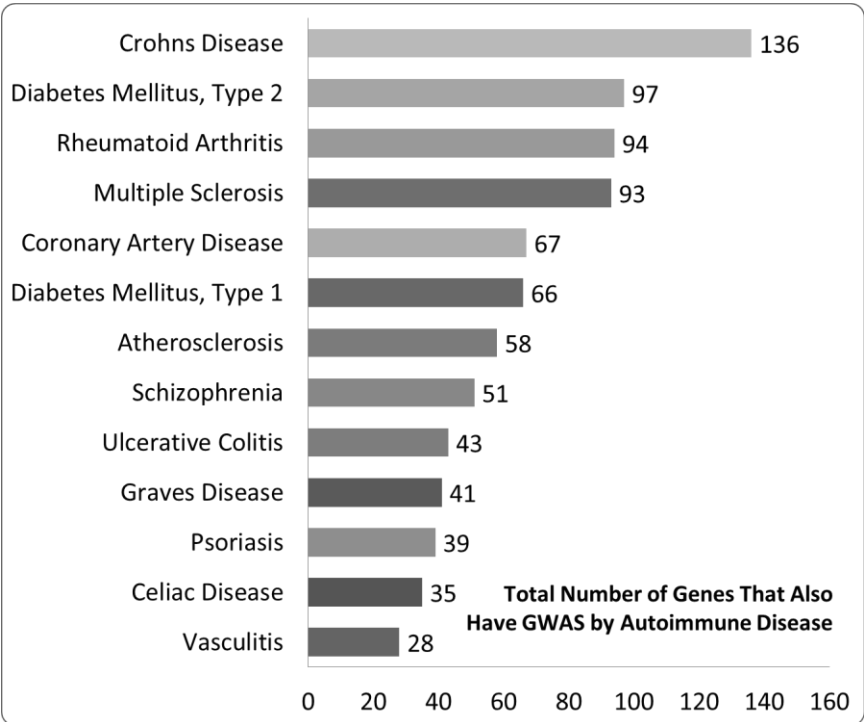
Figure 1. *Total Number of Genes That Also Have GWAS by Autoimmune Disease.*

I then looked at the number of autoimmune diseases associated with each gene in the narrowed list. The gene IL23R had the most autoimmune diseases associated with it (17), followed by HLA-B (15), PTPN22 (12), etc. (see Figure 2).
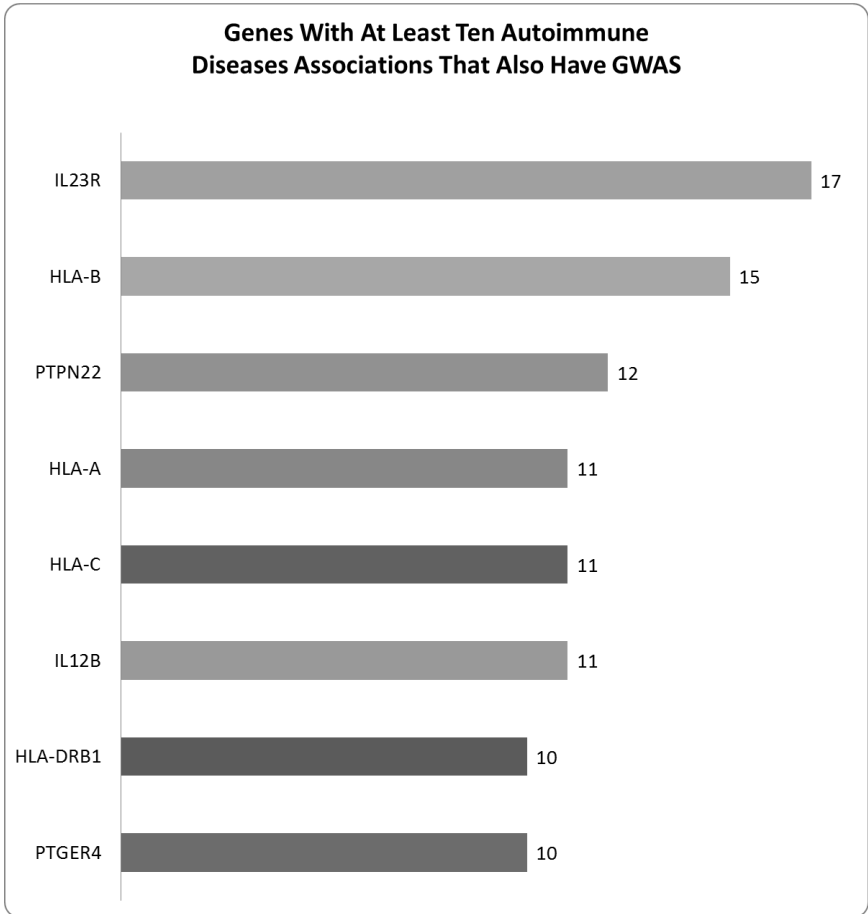
Figure 2. *Genes With At Least Ten Autoimmune Disease Associations.*

The number of genes in common between Autoimmune Diseases was elicited by examining shared patterns, finding 32 genes that were associated with Coronary Artery Disease (CAD), Crohn's Disease (CD), Type 1 Diabetes (T1D), Type 2 Diabetes (T2D), and Rheumatoid Arthritis (RA). This was followed with 22 shared genes by Multiple Sclerosis (MS) and Schizophrenia (SC) and, also with 22 shared genes by CD and Psoriasis (PS). See Figure 3 for additional patterns elicited. Many of the shared risk loci patterns I elicited have been previously discussed in published literature[1,4,5], more specifically Crohn's Disease and Psoriasis in the references used in this meta-analysis[2,3].
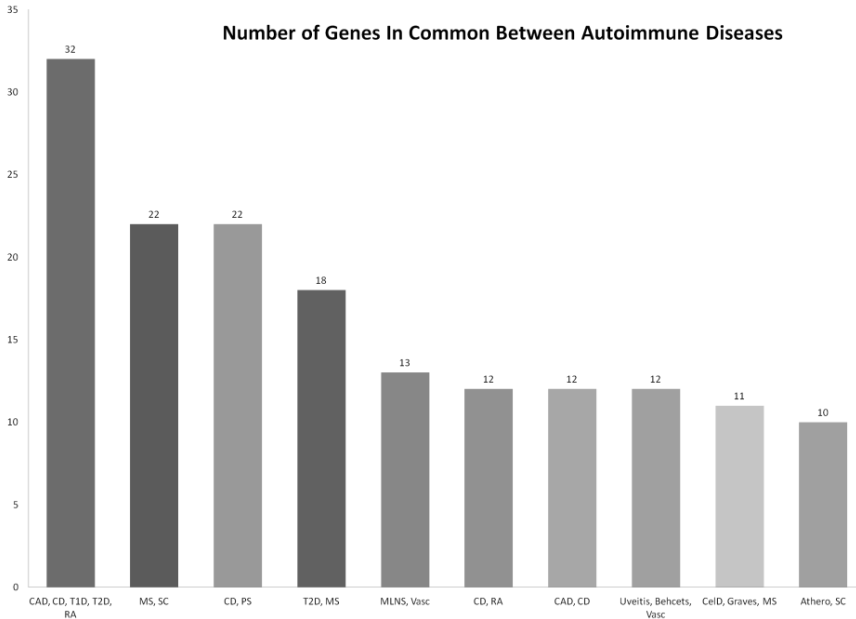
Figure 3. Number of Genes in Common between Autoimmune Diseases. CAD, Coronary Artery Disease; CD, Crohn's Disease; T1D, Type 1 Diabetes; T2D, Type 2 Diabetes; RA, Rheumatoid Arthritis; MS, Multiple Sclerosis; SC, Schizophrenia; PS, Psoriasis; MLNS, Mucocutaneous Lymph Node Syndrome; Vasc, Vasculitis; CelD, Celiac Disease; Athero, Atherosclerosis

       And, finally, owing to the sheer volume of previous associations and forthcoming confirmatory GWA studies, I created a table (current through May, 2013) that shows the final list of genes grouped by their associated autoimmune diseases and annotated with findings from previous studies (see Table 1).

Table 1. *Genes in Common between Autoimmune Diseases. See Brief Overview section following this table for phenotypic characteristics.*

Gene	Diseases In Common	Total
BSN	CAD, CD[a,d,e], T1D, T2D, RA	
C2orf65	CAD, CD [d], T1D, T2D, RA	
C6orf10	CAD, CD [d], T1D, T2D, RA	
C8orf85	CAD, CD, T1D, T2D, RA	
CARD15	CAD, CD [a], T1D, T2D, RA	
CDKN2B	CAD [d], CD, T1D, T2D, RA	
CLEC1B	CAD, CD, T1D [a], T2D, RA[d]	
EIF4H	CAD [d], CD, T1D, T2D, RA	

ERBB3	CAD, CD, T1D [a,d], T2D, RA	
FAM135A	CAD, CD, T1D [d], T2D, RA	
FCGR2A	CAD, CD, T1D, T2D, RA	
HFE2	CAD [d], CD, T1D, T2D, RA	
HMGCS2	CAD, CD, T1D [d], T2D, RA	
IL23R	CAD, CD[a,d,e,f], T1D, T2D, RA	
KLHDC1	CAD, CD, T1D, T2D, RA	
NAA25	CAD, CD, T1D, T2D, RA	
NDST3	CAD, CD, T1D, T2D, RA[d]	
NOD2	CAD, CD[a,d,e], T1D, T2D, RA	
NR2F2	CAD, CD, T1D, T2D, RA	
OLIG3	CAD, CD, T1D, T2D, RA[d]	
OS9	CAD, CD, T1D, T2D, RA[d]	
POFUT2	CAD, CD, T1D, T2D, RA	
PSRC1	CAD[d], CD, T1D, T2D, RA	
PTGER4	CAD[d,e,f], CD, T1D, T2D, RA	
PTPN22	CAD[e,f], CD[a,d,e], T1D, T2D, RA[a,d,e,f]	
RNPEPL1	CAD, CD, T1D, T2D, RA	
TDRD9	CAD, CD, T1D, T2D, RA	
ZDHHC1	CAD, CD, T1D, T2D, RA	
ZFAND6	CAD, CD, T1D, T2D[d], RA	
ZFAT	CAD, CD, T1D, T2D[d], RA	
ZGPAT	CAD, CD[d], T1D, T2D, RA	
ZNF300	CAD, CD[d], T1D, T2D, RA	32
ARNTL	MS, SC	
CCL2	MS, SC	
CEACAM6	MS, SC	
COL25A1	MS, SC	
CSMD2	MS, SC	
CTNNA3	MS, SC	
GRIN2B	MS, SC	
HLA-A	MS, SC	
HLA-B	MS, SC	
HLA-DQA1	MS, SC	
HLA-DQA2	MS, SC	
HLA-DRB1	MS, SC	
HTR2A	MS, SC	
MCTP2	MS, SC	
NPAS3	MS, SC	

NRXN1	MS, SC	
PIP5K1B	MS, SC	
PPA2	MS, SC	
SLC17A3	MS, SC	
SNX29	MS, SC	
SOX5	MS, SC	
UNC5C	MS, SC	22
CD300LF	CD, PS[e]	
FUT2	CD[c,e], PS[c]	
GSDMB	CD[e], PS	
HLA-C	CD, PS	
HLA-DRA	CD, PS	
IL10	CD[e,f], PS[f]	
IL12B	CD[c,e], PS[c,e]	
IL13	CD, PS	
IL23R	CD[a,c,e,f], PS[c,e,f]	
IL6R	CD[b], PS[b]	
IRF1	CD[b,e], PS[e]	
JAK2	CD[c,e], PS[c]	
NAT9	CD, PS[b]	
PRDX5	CD[c,e], PS[c]	
REL	CD[c,e], PS[c]	
SLC22A4	CD[e], PS[e]	
SLC22A5	CD[b,e], PS[e]	
SLC9A3R1	CD, PS[b]	
SOCS1	CD[c], PS[c]	
TNIP1	CD, PS	
TYK2	CD[c,e], PS[c]	
YDJC	CD[c,e], PS[c]	22
A2BP1	T2D, MS	
ALX4	T2D, MS	
ARNTL	T2D, MS	
ATM	T2D, MS	
C6orf10	T2D, MS	
EPHA4	T2D, MS	
FTO	T2D[a], MS	
GPC5	T2D, MS	
IL2RA	T2D, MS[e,f]	
KCNQ1	T2D, MS	

PRICKLE1	T2D, MS	
PRKCA	T2D, MS	
PTGER4	T2D, MS[e,f]	
PTPN22	T2D, MS	
RREB1	T2D, MS	
ST6GAL1	T2D, MS	
THADA	T2D[e], MS	
TMEM195	T2D, MS	18
BLK	MLNS, Vasculitis	
CSMD1	MLNS, Vasculitis	
FBXL19	MLNS, Vasculitis	
FCRL3	MLNS, Vasculitis	
ITPKC	MLNS, Vasculitis	
LNX1	MLNS, Vasculitis	
MIA	MLNS, Vasculitis	
NAALADL2	MLNS, Vasculitis	
PELI1	MLNS, Vasculitis	
PPP1R14C	MLNS, Vasculitis	
RAB4B	MLNS, Vasculitis	
TCP1	MLNS, Vasculitis	
ZFHX3	MLNS, Vasculitis	13
C1orf106	CAD, CD[e]	
DCTN5	CAD, CD	
ELOVL2	CAD, CD	
GCKR	CAD, CD[e]	
MACROD2	CAD, CD	
NDUFAB1	CAD, CD	
PALB2	CAD, CD	
PRODH	CAD, CD	
SLC22A1	CAD, CD	
SLC22A4	CAD, CD[b,e]	
SLC2A9	CAD, CD	
SLC7A13	CAD, CD	12
ADAD1	CD, RA	
C12orf30	CD, RA	
CARD9	CD[e], RA	
CCR6	CD[e], RA[e]	
DCTN5	CD, RA	
HLA-DRB1	CD, RA[a]	

IL12B	CD, RA	
IRF5	CD, RA	
NDUFAB1	CD, RA	
PALB2	CD, RA	
TNF	CD, RA[a]	
TSPAN8	CD, RA	12
HLA-A	Uveitis, Behcet's, Vasculitis	
HLA-B	Uveitis, Behcet's, Vasculitis	
HLA-C	Uveitis, Behcet's, Vasculitis	
HLA-DMA	Uveitis, Behcet's, Vasculitis	
HLA-DRA	Uveitis, Behcet's, Vasculitis	
IL10	Uveitis, Behcet's[e], Vasculitis	
IL12RB2	Uveitis, Behcet's, Vasculitis	
IL13	Uveitis, Behcet's, Vasculitis	
IL23R	Uveitis, Behcet's[e,f], Vasculitis	
KIAA1529	Uveitis, Behcet's, Vasculitis	
UBAC2	Uveitis, Behcet's, Vasculitis	
UBASH3B	Uveitis, Behcet's, Vasculitis	12
ABCF2	Celiac, Graves, MS	
B4GALT1	Celiac, Graves, MS	
CTLA4	Celiac, Graves, MS	
DERL3	Celiac, Graves, MS	
FUT8	Celiac, Graves, MS	
IL6ST	Celiac, Graves, MS	
MEIS2	Celiac, Graves, MS	
SMARCB1	Celiac, Graves, MS	
SMARCD3	Celiac, Graves, MS	
ST6GAL1	Celiac, Graves, MS	
SUV420H1	Celiac, Graves, MS	11
CAMTA1	Atherosclerosis, SC	
CPS1	Atherosclerosis, SC	
CSMD1	Atherosclerosis, SC	
CSMD2	Atherosclerosis, SC	
DISC1	Atherosclerosis, SC	
HLA-B	Atherosclerosis, SC	
HLA-C	Atherosclerosis, SC	
MTHFR	Atherosclerosis, SC	
RET	Atherosclerosis, SC	
SLC17A3	Atherosclerosis, SC	10

[a]See Burton et al.[1]
[b] See Danik et al.[2]
[c] See Ellinghaus et al.[3]
[d] See Feng et al.[4]
[e] See Franke et al.[5]
[f] See Ramos et al.[8]

Brief Overview of Discussed Autoimmune Disease Characteristics

Many of the patterns elicited in this meta-analysis are between clinically distinct autoimmune diseases. A brief discussion of the main phenotypic characteristics may help to highlight the importance of this fact. The autoimmune diseases that follow are in order of their first appearance in the previous table.

Coronary Artery Disease (CAD), Crohn's Disease (CD), Type 1 Diabetes (T1D), Type 2 Diabetes (T2D), and Rheumatoid Arthritis (RA)

Coronary artery disease has increasing evidence as to its immune-mediated nature. It is considered a subset type of atherosclerosis (described below)[9]. It is characterized by the formation of plaques made up of a lipid and fibrous matrix that are deposited on the walls of the coronary arteries and is chronically degenerative. Crohn's Disease is an intestinal epithelial disorder caused by chronic inflammation triggered by the interactions of an activated cellular immune system in response to environmental stimuli, including commensal intestinal bacteria[1,3]. Type 1 diabetes is a chronic autoimmune disorder, typified by early childhood onset whereby the autoimmune destruction of the insulin-producing beta cells in the pancreas results in dependency on external insulin sources. Type-2 diabetes is a chronic autoimmune disorder that is metabolic in nature, is strongly associated with obesity, and usually develops later in life and may or may not result in insulin dependency. Rheumatoid arthritis is characterized by chronic inflammatory processes in the synovial joints that result in painful and debilitating autoimmune destruction of the joints[1].

Multiple Sclerosis (MS) and Schizophrenia (SC)

Multiple sclerosis is characterized by the autoimmune destruction of the myelin sheath around neurons in the central nervous system (CNS) resulting in eventual cognitive and physical disability[9]. Schizophrenia is only suspected to be caused by autoimmune attack of the brain at this time, but is characterized by a breakdown of contextually appropriate emotional responses and lucid thought processes[10].

Psoriasis (PS)
Like Crohn's disease, Psoriasis is also an epithelial disorder caused by chronic inflammation of cells in the skin and is characterized by plaques that are red and scaly in nature and most commonly found on the scalp, knees, elbows and lower back[3].

Mucocutaneous Lymph Node Syndrome (MLNS) and Vasculitis (Vasc)
Mucocutaneous lymph node syndrome is characterized by mucosal changes of the oropharynx such as erythema (redness) and dryness or fissuring of the lips. Vasculitis is characterized by inflammation and lesions in the small (most notably coronary) and medium-sized arteries. Curiously, both of these conditions are commonly seen in Kawasaki's, a disease seen mostly in children under the age of 2[9].

Uveitis and Behcet's Disease
Autoimmune Uveitis is characterized by the autoimmune-mediated inflammation of structures of the eye. Behcet's disease is a chronic inflammatory autoimmune condition involving multiple systems, most generally the arteries and veins and predisposes those with the disorder to arterial and venous thrombosis. When first described by its namesake (Behcet), it was for a triad of symptoms including uveitis, oral ulcers and genital ulcers[9], so it is not at all surprising that these diseases share many suspected genes and accompanying GWAS.

Celiac Disease (CelD) and Graves Disease
Celiac disease is a chronic inflammatory condition of the small intestines caused by cross-reaction of proteins found in wheat with small-bowel tissue. It commonly leads to vitamin deficiencies due to lack of proper absorption of nutrients caused by the chronic inflammation of the intestines in those genetically predisposed and who also have a diet that contains gluten. Graves disease is an autoimmune condition that commonly affects the thyroid gland, often causing its enlargement. Graves also frequently affects the eyes, characterized by the eyes bulging, as well as many other systems affected by symptoms of hyperthyroidism caused by its enlargement and subsequent overactivity, including muscle weakness and increased heartbeat, as well as disturbed sleep[9].

Atherosclerosis (Athero)
Similar to coronary artery disease, atherosclerosis is characterized by the formation of plaques made up of a lipid and fibrous

matrix that are deposited on the walls of the arteries in parts of the body other than the coronary arteries and is chronically degenerative[9].

Software and Statistics for Continued Future Analysis

I plan to deepen my meta-analysis on existing literature so that I may elicit the most commonly used statistical methods in an effort to examine whether the novel patterns uncovered in this meta-analysis and illustrated in Figures 1-3 and Table 1 are of any significance. For those that show significance, the next step is to obtain data sets and begin replication studies, including the use of the following biostatistical software toward that endeavor: Developed as a freely available R package, snpMatrix is used for analysis of genome-wide associations[1]; BEAGLE 3.0 is used to infer haplotypes in each gene or block[4]; and GRAIL (Gene Relationships Across Implicated Loci) applies statistical text mining to PubMed abstracts. It takes the number of relationships observed across shared risk loci and compares those relationships to a null model in which the relationships between genes occur by random chance, resulting in a statistical significance estimation for any observed relationships. These observed relationships are the input into GRAIL as a list of SNPs and, using VIZ-GRAIL, the output can be visualized[3,5].

Conclusion

Many replication studies have already been performed as discussed in previously published journal articles on the matter[1,4,7,8]. However, in order to establish a definitive relationship with any novel and significant associations, replication studies are still of great necessity[1]. In addition, as the number of GWA studies continue to be published at an exponential rate, it serves to be reminded that just because a previously published candidate gene does not have a GWAS associated with it in no way means that such a relationship does not exist, it simply means that a GWAS may not yet have been performed for that loci for that disease; that pending results have yet to be published; that "significant" results were not obtained; or that replication has not been performed since journals now require replication before publishing significant results. Continued identification and further characterization of the variants that may be causative for the shared biochemical pathways and subsequent development of autoimmune diseases can be used to not only improve the health of those currently suffering, but also to develop targeted treatments to help prevent their development in those individuals who are genetically predisposed.

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Acknowledgments

Lisa Stuart
Biostatistics, Dr. Bruce Weir
lisa5678@uw.edu

My research interests include researching the genetic patterns that influence the predisposition and environmental interactions leading to the development of diseases. I intend to apply for Ph.D. programs that involve molecular and cellular genetics, genetic epidemiology, and biostatistics.

How Gender Shapes the Migratory Experiences of Mexicans in Eastern Washington

Henedina Tavares

Abstract

According to recent estimates from the PEW Research Hispanic Center in 2006, more than half of all the unauthorized migrants (6-7 million) living in the United States entered the country clandestinely by evading customs and immigration inspectors at ports of entry by hiding in vehicles, trekking through Arizona desert, wading across the Rio Grande or otherwise eluding the Border Patrol. However, the Mexican border experience encompasses more than crossing a physical barrier in dangerous conditions. This experience begins from the time individuals decide to make the treacherous crossing to the time they settle in their U.S. communities. Although previous research has examined the border-crossing experience (Durand & Massey, 2004), few have offered a comprehensive understanding that considers the context of preparation, crossing, and consequently the context of arrival. This research attempts to make such a contribution. This case study of twenty-two rural, low-income, Mexican men and women residing in the lower Yakima Valley also explains how gender shapes three stages of the migration process - pre-migration, border-crossing, and settlement – that is visible in macro-structural patterns and individual-level experiences. An analytical review of literature in gender and immigration provides the framework for understanding the macro structural forces that shape the migration experience for Mexican immigrants to Washington State. However interviews of Mexican immigrants illustrate how gender informs their behaviors throughout the migration process. Accordingly, both methods of inquiry provide an in-depth exploration of distinct Mexican migration experiences to the lower Yakima Valley.

Introduction & Background

Gender, referring to the product of social relationships in which men and women are embedded, influences individual decisions and action (Smith-Lovin & McPherson, 1994). Therefore, an analysis of migration that considers the macro- and micro-level effects of gender depicts a much more accurate portrayal of the gendered migration process. This case study illustrates the interrelationship between cultural normative ideas about gender and migration behavior shaping distinct concerns and decisions in the pre-migration, crossing and settlement stages. Furthermore, this research shows the distinct migration

experiences of Mexican men and women in their concerns and decisions within these stages that reveal the reinforcement of normative ideas about gender.

Historical Background

The current gender system in Mexico is androcentric, or male-centered; that is, males and male experiences are regarded as a norm for the culture. On the other hand, females and their experiences are categorized as "the other" and treated as a sex specific deviation (Bem, 1993, pg 41). However, Mexico's androcentrism has a socioculture historical background based upon union of a conqueror and conquered. Before the conquest of Mexico by Spain in the early 16th century, Nahua (Aztec) people had a reciprocating system of gendered, cosmic duality (Rogers, 2007, pg 2). They believed that a well-functioning civilization should incorporate equal authority from men and women. Pre-Columbian Aztec communities provided women with social, religious, and political power, making them significant contributors to Aztec social world (Rogers, 2007, pg 2). However, Spanish colonial rule restructured the gender relations of colonized people; Spanish and Christian androcentric ideologies pacified Nahua female roles and removed them from positions of power (Rogers, 2007, p 1).

Gender as Process, Stratification, and Structure

In order to understand gender as a process, stratification, and structure we have to examine not only the way individuals experience gender but gender as a social institution. Social statuses are carefully constructed through prescribed processes of teaching, learning, emulation, and enforcement (Lorber, 1994, pg 60). As a process, gender creates the social differences that define "woman" and "man." In social interaction throughout their lives, individuals learn what is expected, see what is expected, act and react in expected ways, and thus simultaneously construct and maintain the gender order: "The very injunction to be a given gender takes place through discursive routes: to be a good mother, to be a heterosexually desirable object, to be a fit worker, in sum, to signify a multiplicity of guarantees in response to a variety of different demands all at once" (Butler, 1990, pg. 145).

Moreover, as part of a stratification system, gender positions men above women of the same race and class (Lorber, 1994, pg 60). From society's point of view, one gender is usually the standard, the normal, the dominant, and the other is different, deviant, and subordinate (Lorber, 1994, pg 60). The status "woman", and its attendant behavior and role allocations, is usually held in lesser esteem than the status

"man" (Lorber, 1994, pg 61). In a gender-stratified society, what men do is usually valued more highly than what women do because men do it, even when their activities are very similar or the same.

Furthermore, as a structure, gender divides work in the home and in economic production, legitimizes those in authority, and organizes sexuality and emotional life (Connell, 1987, pg 91-142). When gender is a major component of structured inequality, the devalued genders have less power, status, and economic rewards than the valued genders. For instance, many roles in various societies are gendered; women do most of the domestic labor and child rearing, even while doing fulltime paid work; women and men are segregated on the job and each does work considered "appropriate"; women's work is usually paid less than men's work (Lorber, 1994, pg 61). Men dominate the positions of authority and leadership in government, the military, and the law; cultural productions, religions, and sports reflect men's interests. This spatial separation of women and men reinforces gendered differentness, identity, and ways of thinking and behaving (Coser, 1986).

Macro Structural Forces

A patriarchic structure persists into contemporary Mexico and exists due to macro-structural forces that reinforce gendered ideologies. The fact is evident in institutions involving the military, technology, universities, science, religion, political office, and finance. For instance, the Mexican chief of state and his cabinet members are currently comprised of eighteen men and only three women: Claudia Ruiz Massieu, Mercedes Juan López, and Rosario Robles (Hernández, 2012). Although, Massieu and Robles' positions as Secretary of Tourism and Secretary of Social Development, respectively, have been appointed to women in previous years, Juan López's position as Secretary of Health has formerly been appointed to men. The latter cabinet position is the lead agency responsible for government policy on health in terms of applicable legislation, according to the Government Health Secretariat of Mexico, a government official position presumably appropriate for male legislators. Consequently, the government sector espouses an androcentric political system that is dominated by men that accedes limited privilege or influence to women.

Scholars examining the migration process and experiences of Mexican men and women have argued that they are fundamentally shaped by gendered cultural considerations. For instance, sex-specific preference among Mexican families to send men as migrants corresponds with U.S. demand for male labor to fill agriculture and unskilled urban jobs; this has been occurring for over a century (Donato, 2010; Gamboa,

1990; Calavita, 1992). This is especially reflected in the Bracero program, where U.S.-sponsored temporary worker programs facilitated Mexican men's legal migration. Moreover, in receiving countries such as the United States, policies managing immigration often give greater rights and possibilities of regular migration to those taking up jobs usually done by men; hence, generating a steady stream of migration for men (Jolly, 2005, pg 10). However, with the amnesty provisions of the 1986 Immigration Reform and Control Act (IRCA), Mexican men who received legal documentation went on to sponsor the undocumented and documented entry of female relatives (Donato, Wakabayashi, Hakimzadeh & Armenta, 2008). In this way, macro-level immigration policies have produced a gendered migration process that favors men and culturally reinforces ideas and practices that favor men as being the principal migrant. How do men and women talk about the migration process in the pre-migration, crossing, and settlement stages in gendered ways?

Methods
Qualitative Study

I formed a purposive sample consisting of Mexican immigrants residing in the Yakima Valley, which has a large Latino immigrant population where 1 in 6 residents are Latino immigrants, according to the 2010 U.S. Census Bureau. My sample varied in gender and age in an attempt to record and examine their migration experiences and thoughts related to the migratory process to the United States. I employed a snowball sampling approach to identify potential interviewees who volunteered their participation; all were granted anonymity and pseudonyms. The interview sample was comprised of twenty-two Mexican men and women who are living in low-income households in rural areas. Interviews were predominantly conducted in Spanish except for one that was conducted in English. In these largely open-ended interviews, lasting on average forty-five minutes, participants were invariably asked questions addressing the decision making process of migration, the border crossing, and settlement in the United States. All interviews were audio recorded to capture the accuracy of responses. In addition, I evaluated recordings as well as field notes in order to code general themes, examine patterns, and to extract direct quotes.

Demographics

Table 1. *Total number of participants separated by gender.*

| Interviewees	Men	Women	Total
# of Each	10	12	22

       A total of 22 individuals volunteered to take part in the study, 10 men and 12 women. Participants migrated to the US beginning in the early 1980s, the majority since the 1990s and a few in early 2000. The average age for men who participated was 47 years of age and for women the average age was 43. All women stated they lived with family members and 10 said they were married, whereas 7 men stated they lived with family and were married. Only 3 men stated they lived alone without any family members and were single. One of these 3 men explained he lived with roommates during the university school year and lived with his family during his breaks. It is key to mention that the two women who said they were single, explained that the term "single" meant receiving no financial support from their partners

Birthplace
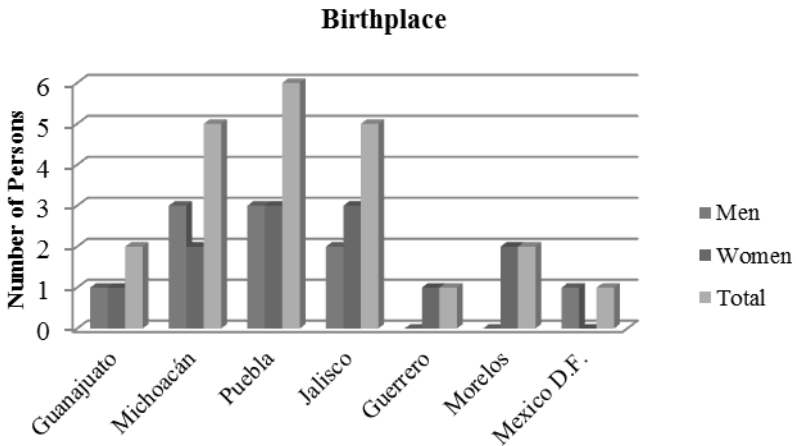
Figure 1. *Graph of Mexican states where participants were born.*

       Most interviewees were born in three Mexican states: Michoacán, Puebla, and Jalisco. This is also, reflected in two of the three largest Mexican communities living in the lower Yakima Valley: Michoacán, Jalisco, and Guanajuato; Guanajuato is the 4th state that most participants were born in. This echoes the three western states from where most *braceros* in the mid-1940's and mid 1960's migrated

(Durand, Massey & Zenteno, 2001, pg 107). As a result, the Bracero program created a steady stream of migration from these three states to the lower Yakima Valley. However, in the late 1980s, the regional composition was shifting away from its historical origins in Western Mexico toward new sending areas in the north, the south (Oaxaca and Guerrero), and the central regions of the country (the Federal District and the states of México and Puebla) (Durand, Massey & Zenteno, 2001, pg 107). In this manner, the lower Yakima Valley has experienced a large presence of Mexican immigrants from southern Mexican states and Mexico's central regions in the last few decades.

Years in Washington
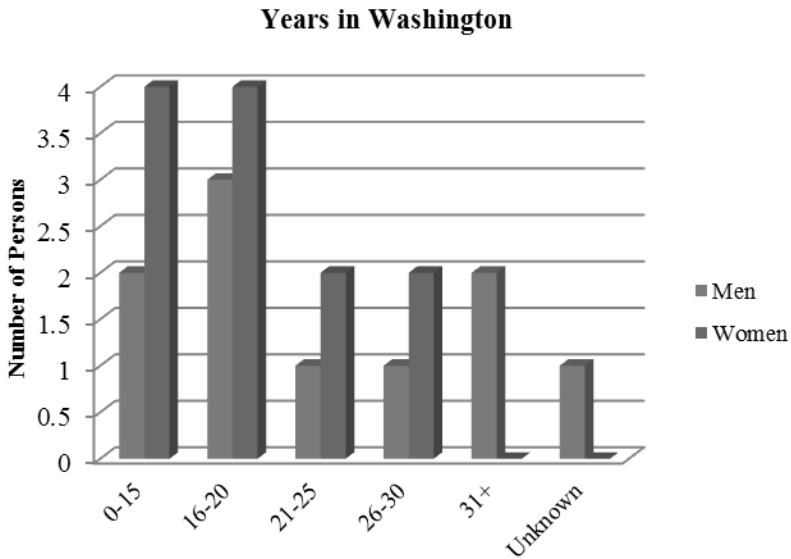
Figure 2. Graph illustrating the number of years participants have resided in WA.

All interviewees have been living in the United States for over a decade, except for one woman who had only been living in the U.S. for eight years. The number of years in Washington ranged from 1.5 years to 32 years. However, four women and two men had previously settled in California before migrating to Eastern Washington. One participant did not mention how many years he had been living in the state of Washington; however, he migrated to California in 1986.
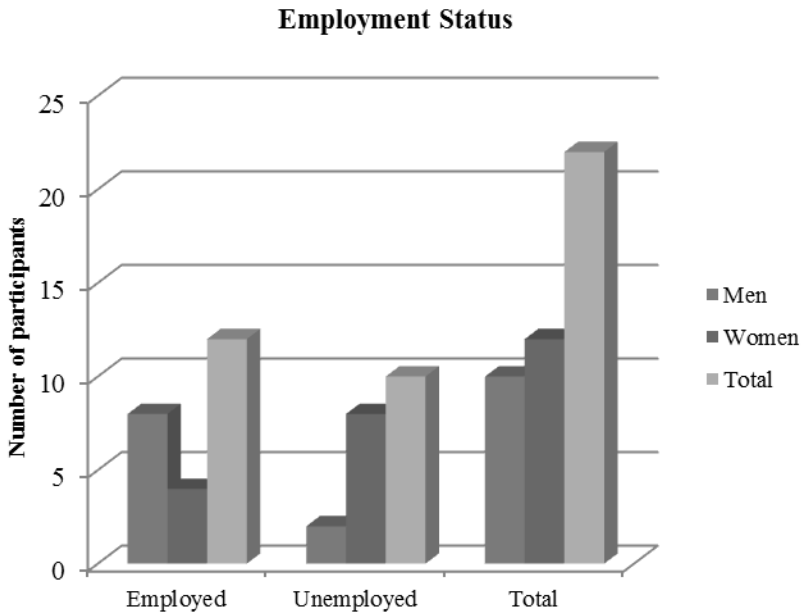
Employment Status

Figure 3. *Graph illustrating the employment status of participants.*

At the time this study took place, 9 men were currently employed in agricultural labor, 2 women were employed in factories and 2 women ran their own businesses. One male was unemployed at the time because he was attending a state university, but during his summer breaks and occasionally during his spring breaks he worked in agricultural labor. Also, 8 women were unemployed at the time; 1 was an expectant mother, 1 had injured herself previously at work, and 6 were waiting for the seasonal factory jobs to begin.

Setting

The study took place in the lower Yakima Valley of Washington state. The Yakima Valley has become more culturally diverse over the past quarter century with the passing of the Immigration Reform and Control Act (IRCA) of 1986, which encouraged many former migrant workers to settle permanently in the lower valley. The Latino population is approaching 50% of all residents in Yakima County. The county's economy is anchored by agriculture and agricultural support businesses. According to the Yakima County Development Association, the valley consists of more than 350,000 acres of farmland that yields asparagus, grapes, apricots, apples, cherries, mint, a variety of berries,

pumpkins, and 30 other types of fruits and vegetables. Most of the farming is done by Mexican farm workers.

Results

Participants' accounts of their migratory experiences illustrate the manner in which macro-level forces have gendered the migration experience for Mexican men and women. However, it also illustrates the agency that individuals have in shaping the migration process. As a result, this case study sheds light on how we understand how gender shapes the migration process in macro- and micro-level ways that is visible in the pre-migration, crossing and settlement stages.

Pre-Migration

When asked about their decision to migrate to the United States, women and men varied in their responses. All men except one, whether married or single during the time of their migration, stated that they were the ones who made the decision to migrate to the United States. One male explained that his parents made the decision since he was a child at the time. Conversely, 6 out of 7 women who were married at the time of their migration reported that their husbands, who were already established in the U. S., made the migration decision. This male-led migration from Mexico is driven by gendered social relationships in families. Analysis of Mexican families explains how decision-making about migration is linked to patriarchal norms. For instance, the dynamics of the Mexican family are rooted in two fundamental propositions: the absolute supremacy of the father and the necessary and absolute self-sacrifice of the mother (Alder, 1993, p. 201). In this way, when the husband makes a decision about migration, the wife follows his lead. As reflected in the literature "decisions are a consequence of the decision made by the primary movers [men]" (Balan, 1981, pg 228).

However, interviews uncovered much more about the gendered process of migration illustrated in the distinct responses men and women gave about the preparation for the border crossing. When asked about how they prepared for their migration to the United States, women invariably answered in terms of emotion.

> Gris expressed: "I prepared myself emotionally by telling myself that I was no longer going to be with my family; I'm going to need to migrate and I'm always going to be alone. I'm going to succeed in life; however, on my own because I will not have that maternal or paternal guidance. When I wanted some advice I knew I

> had him [father] or her [mother] to guide me, and now I had to guide myself to know which path was right or wrong."

Gris' response largely reflects responses that women, especially single women at the time of departure, gave about the preparation process prior to migrating to the United States. Many women expressed preparing for their departure in terms of emotion; they had to become accustomed to the idea of not having parental encouragement at all times once settled in another country. Women as family caregivers fathomed the difficulty of not having emotional support at all times from family members staying behind.

However, men expressed the preparation for migration in economic or financial terms. As financial providers, men are inclined to think about the preparation of migration from an economic standpoint.

> Rodrigo stated: "Well, what I needed was money to afford to come [United States]. I was saving for a few months, maybe a year. I was saving money for my passage because my intention was to come here [U.S.] one day. So I knew it was expensive to travel from my state, which is Guanajuato, to the state of Washington. The passage was going to be costly… at that time [1981] the cost [smuggling price] was elevated. They [smugglers] charged $500 [U.S. dollars] to bring someone from the border to here [Washington]. So in Mexican money, it was a good amount of money. So I was preparing myself with money."

As illustrated in Rodrigo's response, it is a cost that needs to be carefully calculated: assessing the cost to travel to the border from one's home state, calculating the smuggling price, while bearing in mind that Mexican pesos saved up need to be converted into U.S. dollars. Similarly, women, like Gris, also talked about costs, but weighed it differently, in terms of emotional well-being and support.

Border Crossing

One particular question that generated unique responses from informants concerned the assistance they received during the border crossing evidenced in the distinct and insightful ways that men and women perceived the term "assistance" which yielded varying outcomes in their responses. Women in general, with the exception of two, stated

that they received or gave assistance in the form of encouragement and emotional support during the trek, in order to carry on with the harrowing journey.

> Elva's response to the assistance question [crossing in the Arizona desert]: "I felt sad for my cousin, because she was not used to walking for many hours. Without water, without food…she began to cry because she couldn't stand her feet anymore, they were blistered, and she didn't want to walk anymore. But we, me and my uncle, gave her encouragement and when she couldn't walk anymore we helped her walk, we grabbed her by the arm and took her. She would say 'I can't walk anymore, you go ahead,' but I would tell her 'walk, we're almost there.' We would always tell her 'we're almost there' so that she didn't get discouraged."

Women provided physical help, but concentrated on motivating practices to keep each other afloat. For women, keeping their spirits up throughout the journey was necessary in order to maintain their perseverance and continue on. Moreover, a sisterhood was established among many migrating women.

Conversely men generally stated that they received no help at all or if when received, they conceptualized assistance as a last resort beneficial to their well-being as seen in the following example:

> Ernesto [crossing in the Arizona desert]: "I remember a person who did see me rather tired, did not help me a lot, but he did help me maybe 100 meters carrying my son. He was the only person who took my son for a bit, but not for long, then he gave him back to me…we came as companions, we weren't friends; we just met there and he saw that I was a bit tired. I think when one crosses the border, there are always people that lend each other a hand; as Hispanics that we are and because of what we are all going through. So I think that the spirit of camaraderie is born in oneself during these situations and that's when we support ourselves more."

As illustrated in Ernesto's response, men viewed assistance, if any, solely based on the fact that they are similarly placed in situations of adversity. This sort of rationality is associated with masculine ideals of

self-sufficiency. By accepting help in any form, men must rationalize the help as necessary; otherwise deem themselves emasculated. In other aspects of masculinity, some men viewed the border-crossing as an adventure, as expressed by Gustavo's story:

> Gustavo [crossing Tijuana]: "Well, I was crossing through the hills and that's when the helicopters of the border patrol were searching for me, in the hills. Then, they saw me and they started to chase me with patrol cars on land and helicopters in the skies. Then they caught me, but they chased me for awhile; I was out of terrain to run to. There were some houses [detention centers] and that's where we were detained, me and the one who was crossing us [smuggler]. They locked us. For me it was fun because I had never been in a situation like that...it was my first time and I felt like a delinquent. I was 19 years old...it was an adventure."

Gustavo explains that the border serves as a rite-of-passage for men, in order to prove their manhood where they seek thrills and test their courage and virility. This sort of youthful adventurism is associated with traditional Mexican masculine ideals and practices related to self-determination, assertion and independence. For men to attempt the border crossing states that they have fortitude, but to accomplish the trek proves their manhood (Guajardo, 2010, pg 6).

Settlement

Many participants expressed their desire to return home to Mexico, however, situations arose that prolonged their stay in the United States. Families grew, housing was established, and before long many settled into their new homes in Washington State. Although both men and women began work in arduous agricultural labor, with time, women diverted from such work and shifted into other jobs such as factories, some even beginning their own businesses.

When asked whether the participants wanted to return to México, repeatedly, they all stated they did. However, the reasons for wanting to return varied. Many of the men wanted to return to establish themselves as prosperous individuals who succeeded in the United States. On the other hand, women yearned for their return in order to reunite with family and friends. In the case of Leti, the separation from family was unbearable to the point that she risked the possibility of gaining citizenship if she was to be detained leaving or entering the country.

> Leti [three months after giving birth]: "We [son, spouse, Leti] traveled to Mexico and I definitely did not want to return here [U.S]. I was leaving with the mindset of staying over there [Mexico]; not returning back. But as days passed, months, I was running out of money I had brought, and I told my dad 'you know, I'm going to stay, I'm going to stay because I'm afraid to leave again with my son…I rather stay,' and he said no, that if I wanted something better for my son I had to come back here [U.S]."

She would later explain to me that she did not trust anyone in the U.S. with her son because of an incident that occurred with the babysitter which had placed her son in grave conditions. Leti also explained that her parents' love and support was the reason she migrated back to Mexico because she knew they were individuals she could trust. However, it was also her parents who encouraged her to return back to the United States. Although she longed to be with family members she could depend on, she also became conscious that life in Mexico, or at least in her hometown, would be a difficult one to raise her son since there were not many employment opportunities.

Conversely, the men's desire to return to their homeland having the ability to afford material luxuries as well as status in their hometown fueled their interest to return. These men portray their material possessions as a visible indicator of their success. They take pride in their accomplishments and aim to obtain assets such as a home, or plot of land in México. These symbols mark their success in the U.S. and confer upon them a social standing that serves to set them apart from those who have not made the trek. Similarly women, also talked about acquiring material goods in Mexico, however, they longed for their return to Mexico for family reunification.

Conclusion

It is key to note that this research analysis did not address social factors such as race, ethnicity, nationality and class, although these considerations distinctly intersect with gender to shape the particular outcomes of this study. However, given the time and resources allocated in this stage of my research, I gave more attention to the mechanisms through which the effects of gender play out in the migration process; pre-migration, crossing, and post-migration lives.

This case study of 22 Mexican immigrants residing in the lower Yakima Valley provides insight to the ways in which gender shapes the

migration process, in this case from Mexico to the United States. By interviewing Mexican men and women, their accounts reveal the interwoven gender relations and expectations that fundamentally differentiate migration experiences. However, it is important to bear in mind that gendered ideologies in Mexican society have been historically transformed and have continued to persist as a result of macro-structural forces that espouse such notions. Furthermore, U.S. immigration laws have historically favored men, hence, contributing to how migration patterns and practices develop in gendered ways. In this manner, intersections between gender and migration are a critical backdrop to understanding migration behavior and outcomes.

As a result, there is a concurrent engagement between cultural normative ideas about gender and migration behavior shaping distinct concerns and decisions in the pre-migration, crossing and settlement stages. In addition, this research shows the distinct migration experiences of Mexican men and women in their concerns and decisions within these stages that reveal the reinforcement of normative ideas about gender.

Furthermore, this case study offers a more complete analysis that considers the context of preparation, crossing, and context of arrival resulting in a better comprehension of the consequences of migration. As illustrated in the responses of the men and women, the migration process entails conscientious preparation, complex border crossing, and long settlement. Thus, in order to understand the border crossing experiences of men and women it is essential to examine the process from a holistic viewpoint, rather than concentrating solely on the physical border that is being crossed.

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Acknowledgments

Henedina Tavares
Department of American Ethnic Studies, Dr. Carolyn Pinedo-Turnovsky
ht6@uw.edu

Henedina's interests include: examining factors that shape the Mexican migration process, the effects of gender systems on human behavior in the migration experience, and Latino settlement in the Pacific Northwest. She is pursuing an M.Ed at the University of Washington beginning in Autumn, 2013.

Appendices

Appendix 1: Demographic Question Guide

Age:
Gender:
Birthplace (state, country):
Employment status:
Spouse/partner:
Children:
Years living in United States:
Years living in Washington:
Living alone or with family members:

Appendix 2: Qualitative Interview Question Guide

Pre-migration
1. Can you tell me a bit about your reasons to migrate the United States?
    a. When did you decide to migrate to the United States?
    b. What did you think about the United States before you migrated?
    c. Did you think it would be a permanent stay?
    d. Why did you move to Washington State?
2. What were your concerns before leaving?
3. How did you prepare?
4. Did you speak with anyone about the trip or did you know anyone already settled in the U.S.?

Border-crossing
5. What was the journey like? Can you please describe?
    a. How long was the crossing? Do you remember the route?
    b. Did you know any of the people who crossed with you?
    c. Did anyone help you during the trip?
    d. How much did it cost?
    e. What was the most difficult part of the journey?
    f. What was the easiest part of the journey?
6. What were you most concerned during the crossing?

Settlement in the United States

7. What was it like living in the U.S. when you arrived?
    a. Did your thoughts about the U.S. change from your initial perception?
    b. Did you like living Washington?
8. What were your plans?
    a. What was your work situation once you arrived?
    b. How long did it take you to find a job? What type of job was it?
    c. Did you [want to] return to Mexico? Why?

De pie//On Our Feet: Exploring Fandango as a Decolonial Mode of Resistance and Healing

Iris C. Viveros Avendaño

Abstract

Fandango is a centuries old community based musical tradition from Veracruz, Mexico dating from the first half of the XVIII century. With Indigenous, African, and European influences, this tradition takes place around a tarima, a wooden platform where mostly women improvise foot percussion as a group, involving each other and engaging the community in a musical dialogue. The intent of this research is to explore the tarima as a space of female empowerment and communal decolonial praxis. This research uses as its primary method the collection of oral histories from women participants in the fandango tradition in the U.S and Mexico. Considering the community building nature of Fandango and the tarima as an important space for women it is anticipated that the results of this research will also reflect the empowerment women and communities have found through this practice. Moreover, this research focuses on the collection of personal narratives that support this argument to further explore its implications of resistance and healing. My interest in theorizing and writing about these oral histories is to elicit examples and create community for other women and individuals who might want to explore community based arts such as but not limited to fandango, as a mode of healing and resistance. Furthermore this research is an important part of my future research interests in which I plan to explore and propose community-based arts as tools for recovery from trauma and violence prevention for individuals and communities at large. Furthermore, this research will also open the door for other scholars in the field to consider these new ways of responding to trauma.

> *De Jarocho y Oaxaqueña*
> *es mi ritmmo en la tarima*
> *y este zapatear se anima*
> *como el fuego con la leña*
>
> *De cinco la mas pequeña*
> *heredera de alegria*
> *con mi padre como guia*
> *que revive en cada son*
> *percusion su corazon*
> *como luz de cada dia[1]*

Antecedents of Research

I first knew about *fandangos* and *Son Jarocho*[2] in Xalapa, Veracruz, where I grew up. This tradition originated in Veracruz during colonial times. *Fandango* was the party or celebration that bestowed identity to Whites, Blacks, Mestizos, and Mulattos, by and large people who did not identify as either Indigenous or Peninsular. As a part of the syncretism between Mesoamerican, Andalusian, and African magical complex, *sones Jarochos,* the musical pieces played in *fandangos*, were also related to rituals, and healing (García de León, 2009, p. 25). Fandango almost always includes various-sized instruments evolved from the early Spanish colonial guitar prototypes, including *jarana* (an eight-stringed rhythm instrument), the *guitarra de son* or *requinto* (a four-, sometimes five-stringed solo instrument), a *leona* ("lion," a four-stringed bass instrument), a *pandero* ("tambourine" with animal skin head), a *quijada* ("jaw of a horse or donkey"), and, of course, the driving pulse of the son, the *tarima* (González, 2008, p. 367) . The first time I attended a fandango I was intrigued by the fact that the whole celebration seemed to be revolving around the *tarima*[3], platform drum, where mostly women from all ages improvised foot percussion through the use of *zapateado*[4]. The *tarima* is the center of the fandango and *bailadoras*[5] are respected and praised for their ability to maintain balance, timing, and grace while improvising their movements (González, 2008, p. 366). Musical pieces danced in fandango are divided by *sones de pareja* (danced by couples), and *sones de monton* (danced exclusively by women). Women dance most of the musical repertoire played in fandangos.

In 2007 I met Rubi Oseguera Rueda, a well-known *bailadora,* dancer within the *fandango* tradition, also an Anthropologist who has dedicated her life to study *fandangos,* the *tarima*, and the important space women have within this tradition. Rubi was the first person who talked to me about the *tarima* as a dignified space in which women are respected and admired. Even though I grew up in the state where *fandango* originated, yet it was not until I moved to Seattle that I became an active practitioner of this celebration after joining the Seattle Fandango Project in 2009. Taking its model from the *fandango* celebration, the Seattle Fandango Project forges community, identity, and relationships through music, dance, and song. When I joined the Seattle Fandango Project I met University of Washington Ph.D. student, Martha González and her husband Quetzal Flores, both co-founders of the Seattle Fandango Project. González talked to me about the *tarima* as a space of empowerment for women and communities at large. Her narratives included the struggles, beliefs, and values of Chicanos and

Chicanas *artivistas*[6] and the ways in which the community building
nature of *fandango* merged with the visions of Chicanos/Chicanas and
their struggles which served as a catalyst to initiate dialogues and
collaborations between Mexican and Chicanas/Chicanos *artivistas* across
the Mexican-US border.

Conversations similar to these inspired me to collect oral
histories of *bailadoras* in the United States and Mexico. My interest in
theorizing and writing about these oral histories is to elicit examples and
create community for other women and individuals who might want to
explore community based arts such as but not limited to *fandango*, as a
mode of healing and resistance.

Methods

This research incorporates a qualitative mixed method approach
that includes the collection of oral histories from women practitioners of
fandango in Mexico and the United States alongside an analysis of
musical and dance forms generated in *fandango*. Furthermore, this
research seeks to connect with previous theories that locate decolonial art
practices that enable empowering spaces for Latinas and
underrepresented communities. For the collection of oral histories I used
a semi structured interview format, which means that each interview was
supported following an outline rather than submitting to a strict set of
questions. The interview outline served the purpose of helping to keep
focus on themes related to *fandango,* personal and community healing,
and resistance in response to gender, institutional and social oppression.
This format allowed each interview to progress in distinctive ways. Oral
histories were video and audio taped recorded. The Collection of oral
histories is a very personal and powerful research method that requires a
lot of practice and a deep act of listening. Furthermore, video interviews
do more than transmit factual information. This medium also visibly
preserves emotion. A video recording shows humor, rage, sadness,
loneliness, and other emotions that are less evident-or event absent- in
written source material (Keller & Pieterse, 2008, p. 231).

The Force of Community

The *tarima* is a physical and symbolic space where many stories,
hopes and struggles are shared. In order to participate in a *fandango*
people have to be present, listen and cooperate. This is the act of
Convivencia[7]. *Convivencia* is essential within the *fandango* tradition. It
starts days, even months before a *fandango* takes place. In all the oral
histories collected women recognized the important role everyone played
in the process of *convivencia*. Fandangos are put together and maintained

by an entire community. During the preparation stage and in the actual fandango everyone is encouraged to participate, hence from the beginning, to the end *fandangos* are communal experiences. The multiple interactions present during the preparation all the way to the culmination of a *fandango,* is one of the means through which communities build communication and trust. During the interview with Carolina Sarmiento, activist, and member of *El Centro Cultural de Mexico based in* Santa Ana CA. she mentioned that the act of organizing a *fandango* helped the community learn and practice strategies that are eventually used in our day to day interactions. Additionally, the type of interactions that happen within the *fandango* context have helped its members build the type of relationships that are required for political organizing. As Audrey Lorde points out, change starts with self, and relationships that we have with those around us must always be the primary site for social change (Hill Collins, 72).

But, how are these *fandanguero/ra*[8] communities composed? "The first time I walked into a *fandango* workshop at El Centro de la Raza[9,] I was surprised to see all the kids and families interacting. This environment brought a sense of comfort. I felt I belonged there." These were the words that Paulette Thompson, an educator and member of the Seattle Fandango Project shared with me. In the context *fandango* is not unusual to see entire families interacting. This characteristic has strengthened relationships within members of the community who have found a welcoming space for mothers to interact with other community members. Interactions within the *fandango* context have become so strong that communities have evolved into extended families. Teresita Bazan, an educator and activist native of Mexico City and member of the Seattle Fandango Project mentioned that moving to Seattle was hard, but her involvement with the community of immigrants from Oaxaca and the relationships she has build in the Seattle Fandango Project have helped her found a community of support.   Taking the community one step forward, *Fandangueras* see the inclusive nature of fandangos as a space where collective action starts. The act of participating in a *Fandango* invites the community to be aware of each other. In most of the cases *fandangos* are events in which at the very least twenty people with different levels of musical experience are playing together. It is always a challenge to have all these people playing together at the same time. Through unspoken *fandango* protocols people take turns to participate. Martha González shares her experience in terms of the protocols on the *tarima*: "Bailadoras dance in continuous rotation on the tarima, and at the point where they have completed a cycle of verso and *estribillo*[10] they are immediately followed by waiting dancers who gently tap them to

indicate that their time is up." (González: 2008: 366). During *fandangos* participants are aware and reminded that collective musicality is achieved though the act of *convivencia* by listening carefully to others, through the awareness and respect of other people's needs and experiences. In this sense, the act of being together is not always easy. *Fandanguera* communities are composed of numerous people who come with different experiences and expectations (Image 1). Kristina Clark and Paulette Thompson from the Seattle Fandango Project talked about the ways in which we all have been affected by oppressive ideas and carry some level of privilege. What makes *fandango* a potential healing space is the act of organizing and relating with others who come with different expectations, backgrounds and experiences. There is a willingness of individuals to transcend barriers created by race, class and gender, and use these as categories of connection, by building relationships and coalitions that will bring about social change (Hill Collins: 76). Furthermore, even though communities are not perfect, the diversity of experiences and ideas in many cases has developed into projects supported and inspired by the community[11].

Image 1. *People on the tarima during a fandango workshop in Seattle WA, 2010. Picture by Scott Macklin.*

Una Alianza Entre Mujeres/An alliance Among Women

Image 2. Iris Viveros and James Kessler (left to right) high five after getting a step. Seattle WA, 2012. Picture by Scott Macklin.

Fandango is one of the very few musical traditions that have accepted women as musicians (through their percussive dance). Although the footwork is considered dance, it also has a key musical function. It provides the driving percussion for the musicians. As part of the dance protocol dancers face each other, but keep a considerate distance between them in order to execute the footwork. According to the women I interviewed one of the most important aspects of resistance and healing in the *tarima* is that women are not expected to act in stereotypical or essentialist ways, in which women have the space to explore who they are and find their own voice. This makes the *tarima* a space of agency and dignity. Moreover, the *tarima* is a space of communication and solidarity (Image 2). As noted by Kristina Clark, durying her first visits to workshops offered by the Seattle fandango Project her teacher, Rubi Oseguera talked about the *bailadoras* carrying a light in their chest. This light had the purpose of illuminating the other women with whom you are sharing the *tarima*. When an experienced *bailadora* shares the *tarima* with other women who are less experienced, she is expected to musically support the *bailadoras* who are still learning. In many cases she has to keep the beat of the *fandango* in executing unadorned percussive steps this way the less experienced *bailadoras* can practice new steps without feeling excluded. As previously mentioned, women connect and interact with each other by listening.

In the act of listening and *convivencia,* all the women I interviewed talked about an unrecognizable filling while being on the *tarima* or participating in a *fandango* altogether. When I asked how they would describe this experience, all of my respondents said they could not, that it was difficult to explain, but that it was a very powerful individual and collective connection. In this context, the multiple stories that the *fandangueras* shared with me reflect the sentiment of what Audrey Lorde calls "Erotic Power."

> There are many kinds of power, used and unused, acknowledged or otherwise. The erotic is a resource within each of us that lies in a deeply female and spiritual plane, firmly rooted in the power of our unexpressed or unrecognized feeling. In order to

perpetuate itself, every oppression must corrupt or
distort those various sources of power within the culture
of the oppressed that can provide energy for change. For
women, this has meant a suppression of the erotic as a
considered source of power and information within our
lives. (Lorde, 1984, p. 53)

The erotic power in the context of the *tarima* is reached
through a collective experience. With this in mind the *tarima is*
then a source of collective erotic power.

Fandango and the Tarima as Spaces to Contest Gender Violence

One of my interests through this research has revolved around
the exploration of community-based arts as tools for recovery from
trauma and violence prevention for individuals and communities at large.
When we look at interventions to end gender violence, we cannot leave
aside the context within which these acts take place. To understand
violence in women's lives we have to look at it violence from multiple
perspectives, that way we can build holistic strategies in which the
different aspects that surround violence are addressed.

Gender violence is a pervasive practice rooted in the subjugation
and control of any individual based on her gender. This violence can take
many forms, either through physical abuse, psychological abuse,
deprivation of resources for physical and psychological well-being,
and/or the co-modification of individuals (Schuler, 1992, p. 12).

I will now offer a brief explanation and exemplification of the
multiple levels in which violence operates using social science's levels of
analysis (micro, meso, and macro levels of analysis) as a point of
departure.

The Micro Level

Gender violence at the micro level operates as means of
interpersonal associations. The most evident place where interpersonal
violence takes place is within the family. The family socializes its
members to accept hierarchical relations (Schuler, 1992, p. 12). Violence
at the micro level manifests through acts of partner violence, domestic
violence, incest, sexual abuse, etc.

The Meso Level

Moving to the level of community, the social, cultural, religious
ethnic or racial reference groups play a critical role in reinforcing the
structure of the family and the position of women within it (13). In

culturally sanctioned violence women are expected to submit to particular expectations that perpetuate experiences of vulnerability and marginalization. Violence at the community level is practiced in individuals' places of worship (for example forced marriage), sexual violence as a form of punishment between members of opposite groups, violence perpetrated in the workplace, the over and cover violence perpetrated in school settings, informal sectors of employment, commercialization of women' sexuality, etc.

Macro and Global Levels

The macro and global levels of analysis in relation to gender violence reflect values of society rooted in patriarchal hierarchies of gender division. These values are transmitted trough messages that normalize and promote gender violence. Economic forces, globalization, the government, the state, the implementation of laws and education that promote violence and that intentionally or unintentionally fail to implement procedures to end violence are examples of macro and global levels of violence. Mass media plays an important role in the transmission of these messages.

One of the most significant challenges when trying to implement strategies to end violence resides in our limitations to recognize the multiple mechanisms through which violence is perpetrated. The main reason strategies stagnate and lose their vitality or fail to develop at all, however, is that they often center solely on one aspect of the problem or rely on one solution without reference to the total picture (Schuler, 28). However even though most of us have been socialized to perceive violence as separate and random events, the levels of analysis previously presented challenge these notions and help us understand the multiple circumstances that intersect with one another to create gendered-violence environments.

Some of the work done by feminists and activists of women's rights is focused on creating dialogues to encourage women to seek community-based alternatives to violence (Schuler, 1992. p.7). Our interventions to end violence and help victims heal from its consequences have relied solely or primarily on institutions that have not being able to resolve our problems. With this perspective we are able to recognize that in order to create effective interventions that help prevent and ultimately end violence it is important to consider the role of communities, cultures, and institutions. In this case, *fandango* and the *tarima* contain the seeds for social changed in which a whole community, which includes women's involvement, is put at the center of the solution.

Following this trend, in *The Color of Violence,* an anthology of
Incite. Women of Color Against violence co-writers talk about the
importance of putting women at the center of the analysis and the
organization against domestic violence (and violence in general). What
would it take to end violence against women of color? What would this
moment look like? When we shift the center to women of color, the
importance of addressing state violence becomes evident. This
perspective benefits not only women of color, but all peoples because it
is becoming increasingly clear that the criminal justice system is not
effectively ending violence for anyone (Incite: Women of Color Against
Violence, 2006, p. 4). In the *fandango* practice women are placed at the
center of the celebration. The *tarima* is the most important aspect of a
fandango and is around this space where the whole celebration takes
place. As previously mentioned most of the music played in *fandangos* is
danced by women. Without women, there cannot be *fandango.*

Conclusion

The practice of this tradition involves the concept of feminist
embodiment into expressive modalities of working through violence,
trauma and reconnecting with the power of one's body. In the *tarima,*
there are boundaries in a constrained state; thus it is enactment of the
kind of relationship that is needed for violence not to exist. Moreover,
fandango practice contains the seeds of violence prevention as well. As
survivors become empowered by reconnecting with their bodies in a
supportive group through dance movements, the possibility for them to
respond from a place of confidence and share information about
appropriate boundaries and domestic violence resources become
activated.

The practice of this tradition challenges culturally sanctioned
violence by challenging the idea that women must want to embody
defined expectations of beauty and men must want to possess women
who embody it (Parameswaran; Schniedewin, 2012, p. 120). The
participation of women in fandangos is not one of visual elements.
Women are there as part of the percussion of the celebration and become
the heart of the fandango. By participating as musicians in the
celebration women engage musically with one another, they listen and
interact with each other to share this healing space called *tarima*.

By creating dialogues in which all members of the community
have a space to participate we are challenging systems that ignore the
many forms of violence that affect women's lives. This is a decolonial
practice. One of the consequences of structural violence and the legacy
of colonialism is to disconnect us from one another based on our race,

class, and gender, to dehumanize us. Through organization and participaton in *fandangos*, a universal human drive to build communities awakes. This universal drive is grounded in memories and experiences that constitute the house, the dwelling place of different people (Mignolo, 2006, 315). As Paulette Thompson says: "this is humanizing, in many ways. One of them is that it allows us to connect with ourselves, and with others."

An effective strategy to end violence must include the participation of a community and the society that holds everyone accountable of the wellbeing of its members. Creating spaces that recognize the participation of women and minority groups are modes of resistance and healing from violence, colonization and trauma.

Notes

1. Iris Viveros. Author.
2. Son jarocho refers to the music played in southern Veracruz, Mexico. Jarocho is a cast term that was used as a derogatory term to refer to people of Indigenous and an African descent. Nowadays it us used to refer to people from Veracruz.
3. *Tarima* is a wooden platform measuring anywhere from 10X4 to 10X12 feet. This instrument/resonator is the heart of the fandango (González: 2008: 376).
4. *Zapateado* uses stomps, strikes, slides, shuffles, and silences (pauses), using the shoe in positions that are fully flat as well as the toe and the heel, to create sounds on the *tarima* (González: 2008: 367)
5. Dancer in *fandango jarocho.*
6. Artist/ Activist.
7. The act of being together, sharing.
8. People who practice *fandango.*
9. Since 2009. The Seattle Fandango Project hold free weekly workshops at El Centro de la Raza located on Beacon Hill Seattle.
10. Such is the case of the collection of oral histories for this research that has received so much support and feedback from *fandangueras* and *fandangueros* in Seattle.
11. Verso means verse, and is sung in call and response. Estribillo means refrain (González: 2008: 367).

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Acknowledgments

Iris C. Viveros Avendaño
Gender, Women and Sexuality Studies, Dr. Angela Ginorio and Dr. Michelle Habell-Pallán
iviveros@uw.edu

Beginning in Autumn 2013, Iris is pursuing a PhD at the University of Washington.

"Black Folks Passing for Black Folks": The Black Middle Class, Literature, and "Black Authenticity" in the 21st Century

Janelle White

Abstract

In Touré's 2012 book, Who's Afraid of Post-Blackness?: What It Means to Be Black Now*, Touré quotes Henry Louis Gates, stating, "if there are 40 million black Americans, then there are 40 million ways to be black." While there exist as many ways to be black as black Americans, and while American pop culture and mainstream media are experiencing new exposure to different modalities of blackness, the rhetoric of black authenticity and the perceived need to prove oneself based on a racial category are still prevalent. Through a close reading of excerpts from Stew's play* Passing Strange*, Colson Whitehead's novel* Sag Harbor*, and Paul Beatty's novel* White Boy Shuffle*, I establish analytics of authenticity and blackness in literature to explore how identity manifests itself for black males of the post-Civil Rights Era generation. I complicate a static popular image of blackness that is transformed through different modes of socio-economic status and education level by these works. My research explores the lingering rhetoric of authenticity, focusing on contemporary intersectionalities of identity in regards to gender, socio-economic status, and race. These intersectionalities can conflict and influence one another for individuals who struggle to personally define themselves, while simultaneously being defined by their communities. In focusing on how black identity is created within the arts, specifically literature and music, my research aims to unpack the idea of "authenticity" surrounding blackness and make meaning of the ways in which black male teenagers and young adults explore, qualify, and define their identity in regards to race. Ultimately, my analysis sheds light on a more heterogeneous representation of black identity, while suggesting that restrictions on identity for black Americans are not obsolete in the 21st Century.*

> That is our challenge, how to be bigger than black, when there is no word for it, when there is no precedent in the culture... – Lionel, *Dear White People*

In June 2012, a video entitled "Dear White People" was published to YouTube that caused a stir across the Internet. "Forget Hollywood and forget Tyler Perry," a group of well-dressed black youth called out in line at a movie theater, "Can we get a movie with, you

know, characters in them instead of stereotypes wrapped up in Christian dogma?" In the three minutes that followed, director Justin Simien introduced viewers to a complicated world of race relations at a fictional university called Manchester College. The trailer's protagonist, Sam, a young black woman, runs a radio show where she berates white people for their perceptions of and interactions with blackness. "Dear White People," Sam exclaims, "Please stop touching my hair; does this look like a petting zoo to you?" Sam is then joined onscreen by other characters, each with their own concerns regarding race. One of Sam's peers at Manchester, Lionel, is a timid black student, who approaches the film's "cool" black kids to "do a profile piece on black culture at Manchester." Upon his inquiry into black life on campus one of his peers responds, "Of which you are so *clearly* an expert." Lionel himself struggles with understanding if he is "black enough" to be black. "Are you even in the black student union?" one of the girls asks, "You think I'm black enough for the union?" Lionel responds. [1]

Simien's work is noteworthy for a multitude of reasons. First, it calls into question not just white perceptions of blackness via Sam, but also black perceptions of blackness via Lionel and the film's opening scene. Simien suggests that Tyler Perry, while often celebrated for making films about black life, films that do extremely well with black audiences, hardly speaks for the race and more importantly, says little of relevance for his generation. In an interview with CNN, Simien stated, "I have a problem with the system, where only one kind of depiction of black people is out there… Unfortunately, when I see a Tyler Perry movie, I don't necessarily see myself on the screen."[2] For Simien, as an upper-middle class, college educated black man, he personally feels there that are few representations projected to mainstream audiences that are relatable to his daily life. In identifying the absence of other narratives of blackness—apart from one image of blackness codified under images of the ghetto, financial instability, and violence, and the other image of blackness, codified under Tyler Perry's heavily Christian, heteronormative films—Simien conceived of and began working on, "Dear White People."

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[1] Simien, Justin. "Dear White Peope," YouTube video, 3:02, posted by "DearWhitePeople," June 13, 2012,
http://www.youtube.com/watch?v=watjO62NrVg.

[2] Simien, Justin interviewed by Carol Costello, "The man behind 'Dear White people'." *CNN* video, 2:19, July 17th, 2012,
http://inamerica.blogs.cnn.com/2012/07/17/the-man-behind-dear-white-people/.

If Simien's critique catalyzed his own creative work, it also sparked a noteworthy response. While Simien's work explicitly addresses white people in its title, its message seems, perhaps more importantly, to be directed at black people as well. If Simien felt an absence of relevant narratives about blackness, and thus, sought to address this gap with his own work, what can be revealed in the response of viewers? In order to fund his project, Simien posted his fictional trailer for "Dear White People" on IndieGogo, "an international crowdfunding site where anyone can raise money for film, music, art, charity, small businesses, gaming, theater, and more." In a few short months Simien not only met his goal of $25,000 in donations, he surpassed it by over $16,000.[3] Looking past the numbers to comments on his work, these posts reveal numerous viewers who share Simien's feelings, and genuine excitement over a story that may be more closely related to their lives than what is currently accessible to a mainstream audience. Simien was producing a desperately needed narrative; yet the narrative he constructed, pulling on threads of blackness, authenticity, and identity, was hardly new at all.

Introduction: Why We Can't Just Forget About Race

What the brief trajectory of "Dear White People" reveals, and what this paper seeks to unpack, is a 21st Century understanding of blackness in a post-Civil Rights context. According to the US Census Bureau in 2000, twenty-six percent of the Black population are considered middle class.[4] While not the majority, one out of every four black Americans constitutes a significant statistic. The types of mainstream narratives surrounding blackness, however, do not mirror reality. Author, journalist, and commentator Touré pointed out in his book *Who's Afraid of Post-Blackness*, that we as Americans have often been bombarded with particular images of Black America that are more connected to poverty and crime than tennis or country clubs. Touré's rendering of the connection between blackness and socioeconomics was affirmed by his friend, and CNN commentator, Roland Martin in an interview conducted by Touré. In the interview, Martin revealed "the [black] authenticity pecking order" that he believes to exist:

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[3] Simien, Justin, "Dear White People Campaign," *Indiegogo*, accessed April 22, 2013. http://www.indiegogo.com/projects/dear-white-people.
[4] Lacy, Karyn R. *Blue-chip Black: Race, Class, and Status in the New Black Middle Class*. Berkeley: University of California, 2007. Print, 5.

> The platinum-level Negro, is you grew up in public housing, crime, drugs, poverty. The gold level is you grew up in a middle-class Black neighborhood and you went to public schools and maybe to a Black college so you got a pretty good Black experience. Silver is you lived in a neighborhood that was really diverse where you had a mix of educated African-Americans and whites and you may have gone to a Black church but it wasn't a Black Baptist church, it was probably Episcopalian or something on those lines…And then there's bronze. You grew up in the suburbs and you didn't really see many of us. You went to a prep school and an all-white college and your experience of Blackness is really third person, something you heard and read about versus what you know and experienced.[5]

As Touré then points out, following Martin's explanation, these experiences are based on one's proximity to the "ghetto experience," as if the ghetto is the definition of blackness. Consequently, this poses a problem for many middle class black Americans who, because of the achievements of the Civil Rights generation before them, no longer experience segregation and find their admission into particular spaces that were exclusively white fifty years prior to be fairly easy. It is the fourth group Martin describes that I am is most concerned with, the so-called "bronze" Black folks.

Although Henry Louis Gates has stated, "If there are 40 million Black Americans, than there are 40 million ways to be Black," Martin's assessment of a black pecking order reveals that there remain certain expectations tied to blackness. Therefore, I am intensely interested in the various forms these expectations of blackness take for black individuals, specifically for middleclass youth of the post-Civil Rights generation. I turn to literature in order to create particular analytics that trace the ways that blackness is measured. I have selected material that pulls on these threads in order to parse out some of the ways blackness functions as a restriction for individuals seeking to make sense of their identity. For this investigation, I focus on two novels *Sag Harbor* (2009) and *The White Boy Shuffle* (1996), as well as the play *Passing Strange* (2006).

Set in the 1980s in a sleepy all-Black beach town, *Sag Harbor* follows the novel's protagonist, Benji, a young African American teenager, while he tries to navigate his identity over the course of summer vacation. When not in Sag Harbor, Benji lives in Manhattan and

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[5] Touré. *Who's Afraid of Post-blackness?: What It Means to Be Black Now*. New York: Free, 2011. Print, 153.

attends a nearly lily-white prep school in the city. He considers himself awkward and a little nerdy, and reads comic books, plays Dungeons and Dragons, and watches sci-fi—activities that he feels somehow conflict with his identity as black. For the summer, he rolls with a mismatched crew of the other age-appropriate black boys in Sag Harbor—his brother, Nick, NP (Nigga Please), Marcus, and Clive. His friends, all of similar financial circumstances, share Benji's experience of leading one life in the city and another life in Sag Harbor, yet they each choose to deal with this reality differently. It is within this context that Benji must figure out who he is and where his blackness fits into his identity.

More experimental in content, but drawing on similar themes as *Sag Harbor*, *The White Boy Shuffle* follows Gunnar, the son of a black policeman affiliated with the LAPD. Gunnar, much like Benji, navigates his identity and how it comes into conversation with his blackness over the course of his middle school, high school and early college years. He comes of age first in Los Angeles, and later in Boston, and experiences relatively little overt discrimination from his white peers, given his position within the post-Civil Rights generation. He is well educated and an exceptional poet, gaining international fame for his work. Through his poetry, he is able to find acceptance both within white spaces as well as black ones, yet this doesn't make the unpacking of his identity any easier. His own mismatched crew—from the Jazz appreciating Scooby, to the criminally inclined Psycho Loco—aid Gunnar in his rise to fame. With his fame, Gunnar encourages the mass suicide of thousands of African Americans in a final commentary on race relations.

Finally, *Passing Strange* follows The Youth, the black son of a single mother, who becomes increasingly more disenchanted with the middle class black community in which he lives. In an act of compliance, he accompanies his mother to church in the opening scene, and it is here where he meets Mr. Franklin, the pastor's piano playing, closeted gay son. Through Mr. Franklin, and the early pursuits of a music career through his garage punk band, The Youth begins to form desires of expatriation, along the lines of James Baldwin, Josephine Baker, and Jimi Hendrix. He also develops a fervent desire for "the real," a desire most easily defined as the search for authenticity in life. Furthermore, he is criticized for not being "black enough." At one point, his high school crush tells him to "blacken up a bit" if he wants to some day marry her,[6] suggesting that despite the fact The Youth is in fact black, he is performing blackness incorrectly—skin color is not simply enough. Eventually, he travels to Europe, first Amsterdam, then Berlin, and tests,

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[6] Lee, Spike (dir). *Passing Strange*. US Narrative Feature Films, 2008.

explores, and examines the meaning of art, the real, "blackness," and his own identity. For The Youth, music and performance are outlets for his frustrations and self-reflections, but within the play as a whole, music, performance, and the more "meta" aspects of the play investigate and explore the idea of authenticity and "blackness" in a contemporary context.

Through these works, I pulled out several analytics to understanding the restrictions placed on blackness for members of the black middle class—socioeconomics, gender, and double consciousness. Each subheading of my paper refers to a specific theme that I explore through the works I analyzed. It should also be noted that I chose to focus on black men, and not black women, in part because of logistics— this is a short paper and exploring the sexualization of black female bodies demands its own rigorous inquiry—but also because the shifting concept of black masculinity emerges from a history that severely impacts personal and communal identity, a point I am interested in exploring. Through my analysis I argue that despite the many diversities of African Americans in the United States today, there remain particular restrictions on identity felt by the youth of a post-Civil rights generation. However, as some of these works reveal, these restrictions may also be transcended.

Measuring Blackness: The Black Middleclass, The White Private School, & The Problem with "Geekdom"

> In the end, we're just two brothers, passing… Only we're
> passing for Black folks. Good, lawn trimming black folks. –
> Mr. Franklin, *Passing Strange*

In the play *Passing Strange*, the term "passing" takes on a new meaning and new context. Instead of being tied to the historical legacy of light-skinned black people who passed for white—therefore, blacks who allowed others to believe they were white due to their fair complexion— it describes phenotypically black people who are so close to whiteness in lifestyle, they are only *masquerading* as black. Mr. Franklin, the gay, closeted son of a black preacher, makes reference to this new concept of passing to The Youth, a teenager at this point in the narrative, who is struggling with his identity and his race. Mr. Franklin's commentary synthesizes other earlier scenes in the play, alluding to particular activities, traits, or interests that are simply considered not very black, including: one's place as part of the black middle class, linguistic choices, and fashion. The idea of "blackness" suggests that there is some

way to quantify race that goes beyond physical appearance. As suggested by *Passing Strange*, it is measured by the abstract—the choice to wear a particular hat, the way in which one drops the "g" from the ending of a word, or the neighborhood somebody occupies. As E. Patrick Johnson points out, "blackness" has no tangible essence, and thus, "'black authenticity' is overdetermined—contingent on the historical, social, and political terms of its production."[7] Furthermore, blackness in a post-Civil Rights context bears a different meaning than early 20th Century blackness. Many of the legal changes of the 1960s opened up new opportunities and spaces for African Americans, yet a definition of blackness remained static, contingent upon black life prior to the Civil Rights Era. Blackness, while arbitrary, is constructed and performed in a multitude of ways. The act of performance "becomes a vehicle in which the Other is seen and not seen… [and] according to Patricia Williams, 'depend[s] upon a dynamic of display that ricochets between hypervisibility and oblivion.'"[8] This means that black individuals are both aware and unaware of the ways in which they act that are influenced by race. They know that blackness caries with it particular meanings, and that their peers and their community too, have a sense of what it means to perform, or not perform, blackness. However, this performance that "ricochets between hypervisibility and oblivion," must be perfectly balanced—bold in its declaration, yet not forced, it becomes performed, but is meant to appear natural.

Johnson further describes the ways in which one's interests can contradict a performance of blackness:

> Blackness is one of the identities that comes with its own self-enforced expectation of expression. Why are you listening to chamber quartets? That's not Black. You're learning Greek? What kind of Negro learns Greek? Camping? Black people don't go camping...[9]

The examples Johnson gives however—chamber quartets, Greek, camping—serve as representations of what is not very black because they simultaneously serve as examples of whiteness. Furthermore, they do not represent all aspects of whiteness, but images of middleclass luxuries—you go camping because you have leisure time and leisure

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[7] Johnson, E. Patrick. *Appropriating Blackness: Performance and the Politics of Authenticity*. Durham, N.C.: Duke UP, 2003. Print, 3.

[8] Johnson, 8.

[9] Johnson, 14.

income. Johnson suggests that one of the biggest ways a black person can be perceived as not being very black is to be middle class. This section unpacks the consequences of the intersectionality of black and middle class, as well as the consequences of its products—a good education and the idea "geekdom."

Within *Sag Harbor*, Benji and his friends navigate the ways in which their status as middle class affects their notion of blackness. At one point, Afrika Bambaataa and Soulsonic's "Force's Planet Rock" fuels a disagreement over music sampling, which quickly topples into accusations over what is and what is not black. When Benji mentions that Afrika Bambaataa sampled the 'Da Dah Da' part of their song from the German band Kraftwerk, his friend Marcus immediately bristles and disagrees, "Yeah, right, I forgot you like that white music, you fuckin' Siouxsie and the Banshees-listenin' motherfucker…" Benji, aware that his interests are unique thinks to himself, "Let's just put this out there: I liked the Smiths." Then, Clive, the "coolest" member of their gang accuses Marcus of enjoying a Tears for Fears song just the night before, an accusation that forces Marcus to wince and defend his appreciation of the video, but not the song. What follows is Benji's rumination on identity and blackness:

> With that, the argument ended, the last meaningless border skirmish in the long war over what white culture was acceptable and what was not. We redrew the maps feverishly, throwing out our agreements and concessions. This week surf wear was in, and we claimed Ocean Pacific T-shirts and Maui shorts as our own. Next year, Lacoste was out in enemy territory again, reclaimed by the diligent forces of segregation. There was one rule, though: Clive trumped everything. If Clive gave his blessing, it was okay, whether it was Donny and Marie or Twisted Sister. Golf, whatever. But for the rest of us, the rules changed daily. It kept you on your toes.[10]

Through Benji and his friends' exchange, the perceived lines for what is acceptable as black, and what is not, can be understood.

Benji emphasizes that the lines are constantly being redrawn around what aspects of whiteness are acceptable within blackness. Yet white culture can only be appropriated, not accepted, and not embraced. Benji is criticized by his peers for listening to Siouxsie and the Banshees, an English rock band, yet other aspects of white culture, Lacoste or Maui

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[10] Whitehead, Colson. *Sag Harbor: A Novel*. New York: Doubleday, 2009. Print, 63.

shorts, for example, are momentarily acceptable. And if whiteness can be defined, so too can blackness. Somehow, Benji is made to feel guilty about his interests, and in the criticism of his peers, those interests are suggested to be inauthentic, to make Benji less black. It is an admission of guilt, the exposure of a dirty secret, when he says "Let's just put this out there, I liked the Smiths." Benji knows that this is unacceptable behavior and that the Smiths make him less black in the eyes of his friends. Blackness depends upon consumption and taste. Here, blackness is an amalgamation of the right musical interests, and a rejection of certain white acts. Furthermore, in Benji's clarification that Afrika Bambataa sampled Kraftwerk not only does he devalue his own blackness to his peers, but his peers become defensive because the suggestion that a black group borrowed from a white group suggest a devaluization of Afrika Bambataa's blackness as well. In this moment, we see several intersectionalities of Benji's identity conflict, but what seems to fault him is his proximity to whiteness and interest in white musical artists—a product of his mostly white education and upbringing.

For Benji, summer was a chance for him to catch up on his blackness, "Hanging out with NP was to start catching up on nine months of black slang and other sundry soulful artifacts I'd missed out on in my 'predominantly white' private school. Most of the year it was like I'd been blindfolded and thrown down a well, frankly…"[11] Due to his existence within a predominantly white sphere and his attendance at a predominantly white private school, Benji feels he is less authentically black. Consequently, his two months with black peers in Sag Harbor offer him a chance to feel more black, especially once he is educated by his friend NP, who has a single mother, a more questionable economic upbringing, and therefore a closer proximity to blackness. Additionally, another major cause for Benji's feelings of inferior blackness is his participation in "geekdom," which is associated with a white environment. Benji spends time playing Dungeons and Dragons and watching Star Wars marathons with his friends. He hunts down new comic books, and identifies with characters in Sci-Fi movies. His feelings of inferiority over these activities cause him to feel socially inept and romantically bereft. While the next section, focused on gender and sexuality, will unpack the consequences of this inferiority for Benji, it is important to note the connection between these activities, whiteness, socioeconomics, and thus, one's proximity to blackness. Through participating in "geekdom" Benji ascribes more closely to white culture and is seen as less authentically black.

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[11] Whitehead, 29.

Gunnar, in *White Boy Shuffle*, finds himself exposed to "geekdom" after being transferred from his original school in Santa Monica, to a new school in the inner-city, where he finds it hard to make friends. Gunnar initially aligns with geek culture not because he has a genuine interest in Dungeons and Dragons or Star Wars, but because his previous education—Shakespeare, philosophy, etc—rob him of the authenticity needed to immediately fit in with the majority of his black peers who have experienced radically different economic and cultural conditions more closely associated with images of the urban plight. In describing the experience of making new friends, Gunnar states:

> I started to make friends, mostly with the nerdier students…The computer was the only place where we had true freedom of assembly. Electronic mail allowed us shut-in sissies to talk our dorkian language uncensored by bullies…I tried to appreciate Spock's draconian logic…and the metaphysical excitement of fighting undead ghouls and hobgoblins in Dungeons and Dragons…[but] I was cooler than this, I had to be – I just didn't know how to show my latent hipness to the world.[12]

Gunnar's commentary reveals an entire underground network of black misfits who are forced to retreat to spaces that provide more anonymity, such as the Internet, in order to feel comfortable expressing their sincere interests. Yet Gunnar finds this unsatisfying. Unlike Benji, who feels shame for his genuine interest in "geekdom," Gunnar succumbs to "geekdom" only because it is the only space he can find himself accepted while still maintaining his other intellectual interests. Initially, these intellectual interests isolate him, though later in the novel, they become tools of resistance once Gunnar is able to justify his identity through other mediums.

Black Manhood and Wielding One's Sexuality

> To be a black man required a code of silence. You didn't express your feelings. You couldn't acknowledge hurt, pain, and rage and anger. – Marlon Riggs, *Black Is… Black Ain't*

In his documentary, *Black is… Black Ain't*, black gay poet and filmmaker Marlon Riggs investigates black identity and authenticity, demonstrating how skin color alone is not the only restriction placed on

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[12] Beatty, Paul. *The White Boy Shuffle*. Boston: Houghton Mifflin, 1996. Print, 65.

blackness. Through documenting his own struggles with HIV/AIDS, the navigation of his identity, and interviewing key black figures regarding how they understood black identity and how they felt forced to perform blackness in particular way, Riggs argues that certain hierarchies of privilege exist within blackness that need to be dismantled, that blackness is not only about skin color but also deals with issues of class, gender, and sexuality, and that blackness is not a monolithic experience. A key thread in his work is gender and sexuality; he focuses both on the performance of black masculinity, as well as the difficulty of expressing black homosexuality. As Riggs notes, masculinity and sexuality are major restrictions placed on blackness, requiring certain aspects of performance from black individuals in order to be considered authentically black.

For the characters in *Sag Harbor*, *The White Boy Shuffle*, and *Passing Strange*, gender is another one of the identities that each male protagonist must perform. Benji is ashamed of his lack of sexual experience, and faults his interest in aspects of geek culture as the culprit. Gunnar, while rising to more popularity than Benji can possibly conceive, is equally inexperienced with women, and in both of his major sexual/romantic experiences, he is not the aggressor. Lastly, The Youth in *Passing Strange* struggles to attract women until he goes to Europe, where his sexual experiences with white women help to free him from some of the restrictions, which he feels, are forced upon his identity. Yet, the ways in which these young men perform gender is only one aspect of defining blackness in regards to sex. In a unique and colorful cross-dressing scene within *The White Boy Shuffle,* the lines of sexuality, and specifically homosexuality, are blurred. Thus, gender and sexuality, though restrictions on one's blackness, can sometimes be transcended.

In *Sag Harbor*, Benji's experiences with the opposite sex are severely limited. At the roller-rink disco party of a classmate in the eighth grade, Benji is approached by Emily Dorfman, a tall white girl with a "certain bow-legged elegance, a gangly grace."[13] Emily inquires if Benji would like to skate with her and, after hesitating, Benji agrees. Though their skate is initially platonic, Emily eventually grabs Benji's hand, an action he quickly grows comfortable with, "I turned to her, she looked at me and I smiled…I squeezed her hand twice in some kind of weird code and she squeezed back…We were out there forever. How does one measure infinity in a roller rink?"[14] To Benji, this interaction signified that he was becoming a man and he was going to be cool.

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[13] Whitehead, 9.
[14] Whitehead, 10 – 11.

Unfortunately, this moment turns out to be his peak. What follows in the next few years are awkward interactions with girls at best, and isolation from girls, at worst.

Throughout Benji's summer at Sag Harbor, he admires girls from afar—at least until the girlfriend of his friend Nick approaches him. After reminding Benji of a kiss they shared as kids, calling him, and accompanying him to his abandoned childhood home, Melanie presents herself to Benji, eyes closed and kiss ready, on his childhood bed. Melanie, the first girl to express interest in Benji since Emily, is black, curvy, and beautiful, clad in cherry red hot pants. The interest of a black girl, instead of a white one, suggests a shift in Benji's relation to blackness. However, shocked by her forwardness, Benji spirals into thoughts of insecurity, "I wasn't the person you made out with to make someone jealous. I was the person you made out with to make someone pity you, like, look how far I've fallen since you left me."[15] Benji's sense of inferiority and the anxiety he feels about not being cool enough or black enough, overwhelms his first big romantic experience. Here is his chance to "man up," and not only does he surrender control to Melanie, but he can't even seem to enjoy himself. "The girls had to reach out to me. I was too involuted. They had to pull me out of myself. Pull me where?... If people looked inside, surely they'd quickly discover there wasn't much to see."[16] Benji's self-identity is impacted by his inferiority over feeling he lacks black authenticity—he is not cool because he likes geek culture, because of the music he listens too, because of his upbringing. In a moment that might redefine his masculinity, he is too bombarded by insecurity to pursue its possibilities. Benji is aware of how sexuality can make him cool and help him reclaim part of his blackness, but he cannot act. Sexuality, however, is not the only way that Benji and his friends display their masculinity and perform blackness.

At other points in the novel, Benji explains the many ways that gender, race, and socio-economics intersect, but for the boys of Sag Harbor who are coming of age, it is a performance of masculinity that seems to most easily grant them "authentic" black status:

> You were hard or else you were soft, in the slang drawn from the territory of manhood, the state of your erected self. Word on the Street was that we were soft, with our private-school uniforms, in our cozy beach communities, so we learned to walk like hard rocks, like B-boys, the unimpeachably down.

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[15] Whitehead, 250.
[16] Whitehead, 250.

> Even if we knew better. We heard the voices of the constant
> damning chorus that told us we were false, and we decided to
> be otherwise. We talked one way in school, one way in our
> homes, and another way to each other. We got guns. We got
> guns for a few days one summer and then got rid of them.
> Later some of us got real guns.[17]

Here, Benji defines blackness both by what it is not and by what it is. It is not a good education at a private school; it is not a comfortable middle class lifestyle with summer homes. Instead, it is coded in terms of masculinity and class: B-Boys, the street, guns. Blackness is the antithesis of whiteness, and to participate in these perceived indexicalities of whiteness is to be inauthentically black. Conversely, blackness is coded through expectations of violence, hardness, and masculinity. For the summer, Benji and his peers are able to play pretend, they are able to act and feel black in front of each other through their language and through the acquisition of BB guns, a symbol of their masculinity. But Benji's description also suggests that the pressure to act black in front of one's peers isn't just a condition of the summer. For some of his friends, this pressure followed them past the summer into adulthood; some of his friends got real guns.

While Benji grapples with performing his masculinity both through his interactions with his peers as well as his romantic experiences, The Youth in *Passing Strange* unpacks his identity and race through sexual experiences with white women in Europe. When The Youth travels to Europe he encounters a world free from many of the restrictions he encountered in Los Angeles; one of the ways in which he is newly free is in his sexuality. Surrounded by beautiful and friendly white European women in Amsterdam, he is elevated from awkward and inexperienced to foreign and desirable. These women, played by black actresses, blur the lines of race and suggest that while blackness can be performed, so too can whiteness. Marianna, one of the women The Youth meets, is the catalyst for his transformation into cool and his advancement towards authenticity. Through Marianna, The Youth "can experience his heterosexuality outside the distorting mirror of the white racist gaze."[18] After these sexual experiences the Youth writes in an

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[17] Whitehead, 146.
[18] Wald, Gayle. "Passing Strange and Post-civil Rights Blackness." Humanities Research Vol XVI.1 (2010): n. pag. Australian National University. Web.

excited letter back home to Mr. Franklin, "Did I say that today in Amsterdam they taught me how to wear my body?"[19] Contrasting with such a romanticized idea, that The Youth has been freed, is the reality that freedom was achieved only through sex, and more importantly, sex with a white woman. Somehow, he can escape the restrictions placed on his blackness by his acquisition of white sexuality. His flowery language clashes with the scene's "celebration of access to white women's bodies as a kind of initiation, both into carnal pleasure itself and into a transgressive sexuality."[20] It is the act of heterosexual sex, of bedding a woman, which provides The Youth with a better understanding of his identity. Affirmed, in a traditional sense, in his masculinity, The Youth feels he is one step closer to finding himself.

Yet, masculinity is more than just sexual experience—as Gunnar highlights, it has particular aspects of performance. Within *The White Boy Shuffle*, masculinity manifests itself as a detachment from one's peers, a particular emotional isolation and a disregard for authority:

> Summer before my first year of high school was the summer niggers stopped sitting next to each other in the movies. We jaywalked, spit on the sidewalk, broke curfew, but strictly abided by the unwritten law prohibiting black boys over fifteen from sitting next to each other in the dark. One yawning unoccupied chair always belied our closeness, separating us like a velvet moat filled with homophobic alligators and popcorn as we solved cinematic mysteries with deductive street-smart reasoning.[21]

The insistence upon at least one empty chair separating male friends in a dark movie theater signals a coming of age, and induction into masculinity. It suggests the mere hint at homosexual behavior, two men enjoying a film together, side-by-side, is a dislocation from manhood, and, since manhood here is closely tied to race, a dislocation from blackness. Also coded in Gunnar's assessment is a general disregard for authority. By jaywalking, spitting on sidewalks, and breaking curfew Gunnar and his friends emphasize that they answer to no one but themselves. They are hard, they are tough, and they stare the potential

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<http://epress.anu.edu.au/apps/bookworm/view/Humanities+Research+Vol+XVI.+No.+1.+2010/4561/ch01.xhtml>.

[19] Lee, Spike (dir). *Passing Strange*. US Narrative Feature Films, 2008.

[20] Wald.

[21] Beatty, 95.

consequences of their actions in they eye without fear. Once they turn fifteen, they are no longer children but men, and their actions must follow suit.

This performance of masculinity is further complicated by the blurring of sexuality when Gunnar's friends cross-dress in order to exact revenge upon a rival gang. Gunnar's gang "Hooliganed down," dosing themselves in expensive perfume, fighting over who would have the largest breasts (of padded toilet paper), and donning skirts, heels, and handbags in addition to their .25 pistols.[22] The juxtaposition is jarring, the hypermasculine images of Gunnar's gangbanging friends, stuffing their metallic masculinity in the form of a firearm into women's handbags. The boys jokingly harass one another for acting too gay—one jokes that another is actually aroused—but these moments are exchanges between friends. The boys' motivation to exact revenge, and the violent carrying out of their plans expresses their hypermasculinity, despite not only the femininity of their behavior, but their participation in an activity and subculture that is generally considered to be homosexual. Beatty demonstrates the homosociality coded within such a hyper-masculine act—the contradiction of gang violence in drag. The jokes exchanged between boys function as genuine affection between friends that cannot be expressed plainly and sincerely in a more direct context. Opera serves as the soundtrack to highlight this tragedy, yet ironically, through their shared participation in drag and gang violence, the boys are able to bond and share a closeness they cannot otherwise express in a more public forum.

The Double Consciousness of Post-Civil Rights Blackness

> It is a peculiar sensation, this double consciousness, this sense of always looking at one's self through the eyes of others, of measuring one's soul by the tape of a world that looks on in amused contempt or pity. One ever feels his two-ness,—an American, a Negro: two souls, two thoughts, two unreconciled strivings; two warning ideals in one dark body…—this longing to attain self-consciousness manhood, to merge his double self into a better and truer self. – W.E.B. Du Bois, *The Souls of Black Folk*

In *The Souls of Black Folk*, W.E.B. Du Bois describes the black experience in America as one of leading two lives: you perceive yourself,

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[22] Beatty, 106.

in part, as white America sees you. While Black Americans possess a particular understanding of their own identity, they simultaneously are aware of the white gaze, which forces certain expectations onto the Black individual solely on the basis of race. Du Bois suggests the Black individual knows the white perception of him is clouded in hatred or pity, and his genuine self, who he seems himself as, can never be known to whites because of this. Thus, he operates in two spaces, constantly aware of his "two-ness." However, we might understand there to be a third consciousness for many African Americans of the Post-civil rights generation that includes a consciousness of how one's own community sees them. My prior investigation reveals a hierarchy of blackness dependent upon particular constructs of class, gender and sexuality. This hierarchy finds its creation and its perpetuation within groups or individuals that have the power to define blackness; sometimes this is white America, sometimes this is Black America. This final section explores the multiple manifestations of double consciousness, and how this impacts conceptions of authenticity, blackness, and one's sense of self.

Within *Sag Harbor*, Whitehead constructs this double consciousness through an exploration of the various ways Benji interacts with his family, his friends, and the world at large. At one point, Benji observes a firefly, and ruminates on its name:

> A firefly blinked into existence, drew half a word in the air. Then gone. A black bug secret in the night. Such a strange little guy. It materialized, visible to human eyes for brief moments, and then it disappeared. But it got its name from its fake time, people time, when in fact most of its business went on when people couldn't see it. Its true life was invisible to us but we called it firefly after its fractions. Knowable and fixed for a few seconds, sharing a short segment of its message before it continued on its real mission, unknowable in its true self and source, outside of reach. It was a bad name because it was incomplete—both parts were true, the bright and the dark, the one we could see and the other we couldn't. It was both.[23]

The firefly can be seen as a foil for Benji. The firefly is forced to exist under a label that only reflects a segment of its existence—its light existence—while it spends the other fifty percent of its time dark. Benji identifies with the firefly because he too, feels his entire identity classified by only half of how he operates within the world. Because

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[23] Whitehead, 153.

Benji is black, he is forced to adhere to certain expectations, yet, as explored in previous sections, blackness is not the entirety of how Benji would like to construct his identity. While blackness obfuscates how the world looks upon Benji, Benji is also a member of the middle class, a comic book lover, and a punk rock fan. Yet these aspects of who Benji is are his "black bug secret," the parts which are invisible to his peers and to the world around him. Benji does not disown his blackness, just as a firefly should not be disassociated from his light side just because he is only light half of the time, but Benji does pine for a more holistic conception of identity that marries his blackness with the other aspects of who he is, just as he wishes a more accurate name for a firefly. Through the image of the firefly, Benji gestures to Du Bois theory of double consciousness, yet instead of implicating himself within the dominant white gaze, he positions himself within the black gaze of his community, who see blackness as fixed.

For Gunnar in *The White Boy Shuffle*, double consciousness means different things depending on where he lives. Originally, he attends an all white school where he thinks little of race. Then, his mother moves the family to a predominantly black neighborhood, where he attends an inner-city school. When he moves to the new neighborhood, the local police department pay him a visit, assuming because of his race he must be gang affiliated—they question him before suggesting he'll soon be in jail. A few days later, Gunnar embarks on his first day at a new school and remarks on the ironies of the police visit and how it contradicts the ways in which he is seen by the school's administration:

> Handing me my schedule, he [guidance counselor] grabbed my wrist and, in a sympathetic voice adults use to raise money for handicapped and troubled kids on late-night television, said, 'Boy, you know if you find yourself having trouble getting to and from class, the school provides an escort service and you can be placed in protective custody.[24]

While his counselor was concerned for his well being at his new school, the police were concerned about Gunnar as a potential threat to their neighborhood. Both assumptions about Gunnar pivot on his blackness. The counselor sees Gunnar as less black than his peers, and therefore, a target for bullying. This blackness, or the perception of his lacking the blackness required to fit in with his new classmates, is based on his

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[24] Beatty, 61.

previous experiences at a predominantly white school and the ways in which he now carries himself because of it. Meanwhile, the police see Gunnar's blackness as connected to gang affiliation, violence, and crime. In both spaces it is Gunnar's identification as black that inform how he is perceived. Blackness functions in a multitude of ways, depending upon who controls the gaze.

Eventually, Gunnar returns to a predominantly white school, an experience that requires a return to his previous consciousness. Acutely aware of how blackness is perceived by his white peers, Gunnar and the other black students at his high school perform what they perceive to be whiteness:

> It was sad to watch us troll trough the halls, a conga line of burlesque self-parody, all of us affecting our white-society persona of the day. Most days we morphed into waxen African-Americans. Perpetually smiling scholastic lawn jockeys, repeating verbatim the prosaic commandments of domesticity.[25]

The imagery of a conga line suggests that Gunnar's actions are not an exception but the norm, that there are other black students at his predominantly white school who feel forced to perform whiteness as they interact with their white peers. The word "persona" defines this performance as not genuine but instead a mask that can be put on or taken off depending on the audience. Gunnar and his other black peers, acutely aware of the white gaze of their classmates, temporarily disassociate from a more authentic version of themselves, divorcing blackness from any aspect of their identity. Later, while leaving to hang out with his white peers, Scoby calls out, "Stay black, nigger." When Gunnar asks what he means, he responds, "It means be yourself, what else could it possibly mean?"[26] Scoby understands that while Gunnar is genuine in his blackness, there are different expectations for him with white peers. To Scoby, to be black is to simply be yourself, but he also understands the complexities for blackness in other spaces.

Double consciousness is also a crucial theme within *Passing Strange*. Once again, the idea of "passing" in the play suggests that blackness is "performative rather than natural."[27] The play's characters, aware of the black gaze of their peers, feel the need to perform race in

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[25] Beaty, 154.
[26] Beatty, 154.
[27] Wald.

particular ways in order to satisfy the expectations tied to their race. The Youth's mother engages with language to craft her persona. When trying to wake her son for church, the play's narrator tells the audience to "note the return of Negro dialect."[28] Aware of how language, class, and fashion influence her proximity to blackness, The Youth's mother turns up her "negro dialect" in order to affirm her blackness. She employs this dialect heaviest within the play's church scene, surrounded by her black peers. Yet, while she seeks to perform an "authentic" portrayal of blackness that is tied to folksy rhetoric generally associated with the lower classes in order to find acceptance in her community, the black community that The Youth operates in is riddled in contradictions as they shift their personas for the various gazes they must respond to. To elaborate, they participate in folksy dialect to affirm their blackness while simultaneously chasing after "real-estate, college funds, jobs with benefits… [with] not one head nappy." *Passing Strange* suggests that while black individuals feel pressure to perform blackness to their community, they still are not free from a white gaze, that insists upon relaxed and not nappy hair, and that they pursue a very classic image of the American dream. The Youth quits choir and then moves to Europe in an attempt to escape "this double life shit," which he feels forces him to act one way at church and a different way with his peers. Yet, as he expresses in a musical number entitled "The Black One," whether in Europe or America, blackness carries with it particular expectations.

Conclusion: The Future of "Blackness"

> Yeah, they say they want the realness, rap about my real life,
> Told me I should just quit: "first of all, you talk white!"
> – Childish Gambino, *Bonfire*

When Donald Glover, also know by his rap handle "Childish Gambino" decided to add rapper to his resume in 2008, many critics argued there was nothing exceptional about his music. Glover's independent debut, entitled *Sick Boi*, was disjointed and under-produced. His verses lacked poetic flow and his metaphors and similes were elementary at best and non-sequitor at worst. However, what Glover lacked in musical ability, he made up for in content.

While Glover grew up lower middle-class, his parents both worked multiple jobs in order to put him through mostly white private schools. After his high school graduation he attended New York

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[28] Lee, Spike (dir). *Passing Strange*. US Narrative Feature Films, 2008.

University, where he received a degree in Dramatic Writing from the Tisch School of the Arts. Therefore, Glover operated in both black and white spaces—his predominantly black community, as well as the predominantly white academy. Glover's experiences in navigating his identity in these contradictory spaces fuel his music. Riddled with contradictions, in one verse he seeks to prove how hard he is—suggesting the numerous women he sleeps with—yet in the next verse he expresses insecurity and inferiority. He raps about everything from Lasik eye surgery, to argyle, to literary references from E.E. Cummings or Achebe's *Things Fall Apart*.

However, what is most potent in Glover's music is his honest portrayal of his own struggle to confront his blackness, prove his authenticity to his peers, and find comfort in his own skin. In his song "What the Fuck are you?" Glover states:

> Cause I never felt that good in my own skin
> It's probably cause I'm the only black kid in my school
> And when I meet another black kid they tell me I'm a fool
> Cause I wear these tight clothes, tight jeans, tight shirt
> Yeah I stay tight like these girls that make my dick hurt
> Yeah, I'm self conscious
> Go ahead - laugh it up
> 'Cause I dig deep and pull something out to back it up
> They told my ass ain't black enough
> What the fuck are you?[29]

Glover suggests that his day-to-day interactions with white peers render him less black in the eyes of his black peers. Even his attire is not quite black, his clothes are too tight, functioning in opposition to the image of baggy pants and tall tees found frequently in hip hop. Blackness for Glover, and the black peers he references in his music, seems most easily defined, in fact, by hip hop images; once more, blackness can be understood by what it is and by what it is not. Blackness *is not* tight clothes because blackness *is* the baggy pants of a more urban aesthetic. Furthermore, while Glover seeks to justify himself in his declaration of sexual exploits he immediately admits to his own insecurity over identity. In this one verse, Glover encapsulates the multiple intersectionalities and components of identity this paper explores—

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[29] Glover, Donald. "What the fuck are you?" I Am Just A Rapper 2. MP3. Independent. 2010.http://www.azlyrics.com/lyrics/childishgambino/whatthefuckareyoucolouringofpigeons.html.

socioeconomics, gender, double consciousness—and the impact they have on every day lived experiences and conceptions of race, specifically blackness.

Glover's music, and the critique this paper offers, are not simply relevant but crucial undertakings at a time when the rhetoric of a "post-racial" America runs rampant. As Johnson suggests, "the multiple ways in which we construct blackness within and outside black American culture is contingent on the historical moment in which we live and our ever shifting subject positions."[30] Blackness has been examined and re-examined by various scholars through various methodological lenses, yet the question remains relevant because its definition and implications are constantly in flux. While this paper predominantly focuses on literature, blackness has real life implications, as Glover highlights in his work. Gunnar, Benji and The Youth, while fictitious characters, can easily be seen as stand-ins for many members of the post-Civil Rights generation within Black America, struggling under the pressure of their race not simply in the eyes of the white American gaze, but their own communities.

All of these protagonists struggle to be recognized as black, a pursuit of identity made all the more charged due to their middle-class backgrounds and their angst-ridden negotiations of gender and sexuality. This struggle is only made more complicated by the various contexts and consciousnesses they find themselves operating within. At the end of the day, their goal and the message remains the same: blackness shouldn't be limiting in the construction of one's identity, and yet, even today, it is. Amid the L.A. riots in response to the Rodney King case, a teenaged Gunnar watches his working class, urban, black neighborhood break out into chaos. Despite the destruction, or perhaps because of the race-based motivations lurking behind the destruction, race and blackness lay heavy on his mind:

> I looked out the window and saw a store owner spray-paint BLACK OWNED across her boarded-up beauty salon. I wanted to dig out my heart and have her do the same to it, certifying my identity in big block letters across both ventricles. I suddenly understood why my father wore his badge so proudly. The badge protected him; in uniform he was safe.[31]

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[30] Johnson, 3.

[31] Beaty, 131.

Gunnar compares blackness to his father's police badge, something that can protect him, something that immediately gives him authority. And yet, the need he feels to declare his blackness explicitly; in "big block letters" suggests insecurity. Without his blackness defined in such a bold declaration, it may go unnoticed. Gunnar both demands access to blackness while simultaneously suggesting it may be nothing more than a shield to hide behind. For the individuals who stand on the fringe of "blackness," who struggle to meet the expectations of their community, blackness is a conundrum. They want access to its collective meanings while hoping to simultaneously redefine it. They do not want to be any less black, they simply want to feel both black and genuinely themselves.

Returning to Glover, despite the anger and pain that he expresses in his music, his critique comes with a solution that offers a promising future for the idea of blackness. While Glover feels isolated by his own community for being "inauthentically black," Glover suggests he is not the lone case. In his song "Firefly," Glover states:

> Yeah so, whatcha gonna do man?
> You won't speak to the hood, man
> If I was given one chance I think I could, man
> These black kids want somethin' new, I swear it
> Somethin' they wanna say but couldn't cause they embarrassed[32]

Once again, Glover suggests that blackness is connected to particular indexicalities, such as hip hop as well as a notion of the hood. However, in stating that "these black kids" want something new, he suggests that there are others like him, who live outside of the expectations of blackness. Glover paints himself as a potential liberator, a young black man who does not fit the stereotypical expectations of blackness—he is not from the hood, but he claims that this does not make him any less black. Perhaps, he can guide others who are too embarrassed to express their own insecurity over the pressure they feel tied to blackness, and perhaps this can bring about a more expansive definition of blackness. What is so powerful about Glover's commentary is that instead of whining about his isolated problems, he suggests this problem extends to a broader community. He calls attention to the difficulty and complexity of blackness and racial authenticity, not just for himself, but also for others. Glover, Simien, and the authors of *Sag Harbor, Passing Strange,* and *The White Boy Shuffle*, offer up new narratives of Black America's

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[32] Glover, Donald. "Fire Fly" Camp. MP3. Independent. 2011. http://www.azlyrics.com/lyrics/childishgambino/firefly.html.

post-Civil Rights generation. Consequently, through their work, they open up new dialogues in hip hop music, literature, and perhaps their own communities more broadly, regarding what it means to be black. The answer they suggest is that maybe to be black is not simply to be within close proximity to the ghetto (although it can be), but instead, to be black is to be whatever one wants to be. As Lionel suggested in "Dear White People", to be black is to be bigger than the word and the false expectations it carries. Black in the 21st Century has the potential, through the work of new artists and writers, to mean something entirely new.

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Janelle White
American Ethnic Studies, Sonnet Retman
janellelena09@gmail.com

Janelle White is interested in the ways in which race and socio-
economics have impacted and continue to impact racial minorities in the
formation of their identities. She is taking a break from the academy this
fall, but hopes to pursue a Ph.D. in History or African American Studies
in the future.