McNair Scholars Research Journal

Volume 11 - Spring 2015

Featuring research of Boise State McNair Summer Research Fellows
The McNair Scholars Research Journal is the official annual publication of the McNair Scholars Program at Boise State University. The McNair Scholars Program is housed in the Center for Multicultural and Educational Opportunities within the College of Education. The program is funded by a $225,000 Ronald E. McNair Post-Baccalaureate Achievement Program grant from the US Department of Education.
MESSAGE FROM PRESIDENT BOB KUSTRA

It is with real pleasure that I write to introduce this eleventh volume of the McNair Scholars Research Journal. The papers contained in this volume represent a remarkable breadth of scholarship that encompasses some of the best of what Boise State University has to offer. The Scholars, their faculty mentors, the staff of the McNair Program, and all of us at Boise State are very proud of this work.

Congratulations to all of the 2015 McNair Scholars for your achievements over the past year. In particular, I want to acknowledge the hard work and accomplishments of the senior Scholars whose research is represented in the papers in this publication. McNair scholars work with faculty mentors who are committed to the rigors of scholarship—a working relationship that both students and faculty describe as unique and beneficial. I also want to recognize and thank all of the faculty mentors who have worked with our McNair Scholars. It is your patience, guidance, and encouragement that facilitates the transformation of these students into scholars.

The Ronald E. McNair Post-Baccalaureate Achievement Program honors the memory and achievement of the late Dr. Ronald E. McNair, a physicist and NASA astronaut. Its goal is to encourage undergraduates from underrepresented backgrounds to emulate the academic and professional accomplishments of Dr. McNair by facilitating their pursuit of doctoral degrees and academic careers in teaching and research. The McNair Scholars Research Journal is evidence that the McNair Program provides a valuable opportunity for participants to explore research on significant issues. By being provided access to conferences and graduate schools they are given multiple opportunities to present their research and meet doctoral faculty. This formula has proven very successful for a vast majority of those who have participated in McNair since it began on our campus twelve years ago.

The research presented in this journal signals the arrival of new and rising scholars who will carry their talents, enthusiasm, and hard work ahead into graduate programs here and across the country. I hope that you will continue to aspire, achieve, and pursue your dreams.

Again, congratulations and best wishes,

Bob Kustra
MESSAGE FROM THE DIRECTOR

I am happy to be publishing our eleventh volume of the Boise State McNair Scholars Research Journal. The papers presented here are the outcome of the McNair Scholars’ research projects conducted during their participation in the program and demonstrate the variety of excellent undergraduate research that can be produced when students are provided meaningful support through many collaborative efforts. This would not be possible without the tremendous support of faculty mentors who supervise and guide our scholars through their research endeavors.

This journal is the culmination of the research component of the McNair Scholars Program. By engaging in undergraduate research these scholars have developed important analytical and methodological skills, academic sophistication, and confidence that will aid in their success in graduate school. This journal also provides them an opportunity to have their research published and gain an early understanding of the importance of disseminating their work for others to utilize and of the role publishing may play in their future careers.

Maintaining a high standard of excellence throughout this process, these McNair Scholars have grown to become capable researchers and have clearly demonstrated their readiness to engage in the demands of research at the graduate school level. To each of them I would like to send a sincere thank you for making the choice to become a part of the McNair Scholars Program. Remember that you share a tremendous bond with all the McNair Scholars who have engaged in this process before you and I look forward to seeing your future engagement with those who will follow in your footsteps. It is fitting that your efforts culminate in your recognition through this journal.

I would like to also extend my deepest gratitude to all the faculty mentors who have guided and supported McNair Scholars throughout the life of our program. You have been instrumental in providing a solid research foundation giving them the ability to enter graduate school with confidence. And finally, a wholehearted thank you to Helen Barnes who has been working for our program since its earliest years. She has moved on to new work challenges but was a dedicated McNair Coordinator for 6 years and her hard work is reflected through the strength and success of our program and its participants.

Gregory Martinez
# Boise State University McNair Scholars Graduate Institutions

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<thead>
<tr>
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<tr>
<td>Chris Mathias</td>
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<td>Rosario Venegas</td>
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<td>Jason Arnold</td>
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<td>Shawn Davis</td>
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<td>Randi Walters</td>
<td>Geosciences</td>
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<td>Lori Henderson</td>
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<td>Levin Welch</td>
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<td>Eva Amouzougan</td>
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<td>Kenneth Winkleman</td>
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McNair Scholars Research Journal

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Physics

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Nevil A. Franco
Physics

Novel Magnetic and Optical Properties of Sn_{1-x}Zn_{x}O_2 Nanoparticles

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Renae Sullivan
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Sexual Violence in India: The History of Indian Women’s Resistance

Connie Townley
English

The Melville-Hawthorne Friendship and Its Impact on Moby-Dick
The Impact of Imperfect Information on Network Attack

A. Melchionna, J. Caloca, S. Squires, T. Antonsen, E. Ott, M. Girvan

Jesús Caloca: McNair Scholar
Dr. Charles Hanna: Mentor

Physics

Abstract

This paper explores the effectiveness of network attack when the attacker has imperfect information about the network. For Erdős-Rényi networks, we observe that dynamical importance and betweenness centrality-based attacks are surprisingly robust to the presence of a moderate amount of imperfect information and are more effective compared with simpler degree-based attacks even at moderate levels of network information error. In contrast, for scale-free networks the effectiveness of attack is much less degraded by a moderate level of information error. Furthermore, in the Erdős-Rényi case the effectiveness of network attack is much more degraded by missing links as compared with the same number of false links.

I. Introduction

Many complex dynamical processes are supported by networks of interconnections between a large number of individual elements (e.g., epidemics [1-4], cancer spread [5], electrical power distribution [6,7], etc.). Interventions that seek to degrade [8-13] or protect [13-16] network connectivity are thus of great interest. In particular, strategies for network attack by node or link removal have been intensively studied. Key issues have been the dependence of the attack effectiveness upon network topology and the strategy for selecting nodes or links for removal. We note, however, that, while such previous studies have predominantly presumed the attacker to have perfect knowledge of the network to be attacked, this is very often not the case. Specifically, networks inferred from measurements typically have false links and miss true links. One might suppose that these errors could very much lower the effectiveness of attack strategies. The purpose of this paper is to address this important issue for the case of node removal attacks of undirected networks (directed networks are treated in Appendix A).

One example of a network attack problem is an attempt to stop the spread of a disease with a limited number of vaccinations: the people who receive the vaccinations are chosen on the basis of their position in the social network [8-13]. Another example is that of deriving gene therapies for cancer. Here the goal is to select those genes whose disabling would most inhibit cancer cell survival and proliferation [5,17]. Yet another example is the study of the resilience of the Internet to intentional attack [8,12]. The typical attack strategy is to calculate some centrality measure of each node, and to then attack (disable, vaccinate, or remove) those nodes with the highest values of this measure. However, an attacker with imperfect network information will determine values of these centrality measures with some error, and using these would be expected to degrade the effectiveness of his attack. Imperfect network information is ubiquitous in applications and can arise in various ways. Examples of link errors can be found in online social networks, where a friendship may be indicated despite the two subjects having never personally met, or inversely, if no online friendship exists between two face-to-face friends. In the previously cited example of cancer gene therapy, genes are selected for disabling based upon an estimated gene interaction network inferred from noisy measurements (e.g., measurements of gene expression [18,19]). Recently, Platig et al. studied the effects of link errors on the correlation between network centrality measures inferred from true and erroneous network information [20].

One conclusion of past work for the case where the network is exactly known is that a strategy based on the globally dependent node centrality measure of betweenness (defined subsequently) is particularly effective [9]. On the other hand, one might suspect that more effective globally-based strategies are also less robust to error in network knowledge. Our main conclusions are as follows:
(i) For Erdös-Rényi networks, strategies based on global information are surprisingly robust and maintain a clear advantage over the simple node degree-based attack up to moderate amounts of network error.

(ii) Scale-free networks display much less dependence on the attack strategy (for strategies based on sensibly chosen centrality measures) and much less degradation of attacks by network information error.

(iii) For Erdös-Rényi networks attack effectiveness is degraded much more by missing links as compared with the same number of false links.

(iv) Comparing the two global strategies that we test, namely betweenness [21,22] and dynamical importance [23], betweenness is often slightly more effective at low network error (at the expense of substantially greater computational cost), but the two tend to perform more equally at moderate network error or a relatively small number of attacked nodes.

(v) As shown in the Appendix, results (i)-(iv) demonstrated in this paper for undirected networks also apply to directed networks.

We next describe the numerical experiments that yield results (i)-(iv).

**II. Model**

For our “true” networks, we consider two types of random networks: Erdös-Rényi, in which the degree (number of links to a node) has a binomial distribution, and scale-free [24], in which the degree distribution obeys a power law:

\[ P_k = \frac{k^{-\gamma}}{\sum_{i=1}^{k_{\text{max}}} i^{-\gamma}} \]

where \( P_k \) is the probability that a randomly chosen node has degree \( k \). The three node centrality measures upon which we base attack strategies are as follows:

(i) The *degree centrality*, which is simply the degree of a node.

(ii) The *betweenness centrality* of a node is the fraction of shortest paths between all node pairs that pass through that particular node. Let \( \sigma(s,t) \) be the number of shortest paths between nodes \( s \) and \( t \), and \( \sigma_i(s,t) \) to be the number of shortest paths between \( s \) and \( t \) that pass through node \( i \). The betweenness of node \( i \) is

\[ b_i = \sum_{s,t,s \neq s \neq t} \frac{\sigma_i(s,t)}{\sigma(s,t)} \]

(iii) The *dynamical importance* of a node is a measure of the change in the largest eigenvalue of the adjacency matrix (which is typically real and positive) upon removal of that node. For an undirected network, elements of the adjacency matrix \( A \) are \( A_{ij} = A_{ji} = 1 \) if there is a link between nodes \( j \) and \( i \), and \( A_{ij} = A_{ji} = 0 \) otherwise. Let \( \lambda \) denote the largest eigenvalue of \( A \), so that \( Av = \lambda v \) for the corresponding eigenvector \( v \). Upon removing a node \( s \) from the network, and consequently deleting all links attached to it, the matrix \( A \) is changed by setting all the matrix elements in row \( s \) and column \( s \) to zero (\( A_{st} = A_{ts} = 0 \) for all \( t \)). We use \( \Delta \lambda_s \) to denote the resultant change in \( \lambda \). The dynamical importance of the node \( s \) is defined as

\[ d_s = -\frac{\Delta \lambda_s}{\lambda} \]

with \( \lambda \) being the eigenvalue of the matrix before removal of node \( s \).

We generate “noisy” networks from the true networks by adding false links to the system and removing true links. (We refer to true links which have been removed as “missing” links.) Our method for generating noisy
networks is as follows [20]: $m \delta$ links are omitted randomly, where $m_i$ is the number of links in the true network and $0 \leq \delta \leq 1$. Links are only eligible for omission if they are part of the true network; false links added in the adding process will not be omitted. While each link has an equal probability of being deleted, higher-degree nodes have a higher probability of losing a link, as they have more links. In addition, $m \alpha$ false links are added to the network. False links are placed between random pairs of nodes, provided that a link does not already exist between them in the true network. Overall our false network model is characterized by the two parameters $\delta$ and $\alpha$, respectively representing the error levels associated with missing and false links.

III. Results

The networks are of size $N = 2500$, with the maximum possible degree of a node set at $k_{\text{max}} = N/2 = 1250$. The Erdös-Rényi networks have an average degree $z_{\text{er}} = 4$, and the scale-free-degree networks have $\gamma \approx 2.06$ and average degree $z_{\text{sf}} = 4$. In the scale-free networks, we require that the degree of each node is at least 1. The networks are constructed according to the configuration model [25]. Next, a noisy network is constructed based on the parameters $\alpha$ and $\delta$. The centrality measure is calculated from the existing noisy network, and the highest-centrality node is removed from both the true and noisy networks. If there is more than one node having the same highest value centrality measure, one of those is chosen randomly for removal. Then, we calculate the size of the Giant Component (GC) in the true network (The GC is the largest collection of nodes such that any pair of nodes in the GC is connected by a path along links.). To reiterate, the idea here is that network attacks are based on the information in the noisy network, but the effects of these attacks are actually felt on the true network. After each removal, we recalculate the centrality measure based on the new noisy network (with the previously attacked node deleted), and remove the highest centrality node from both networks again, and recalculate the GCC size. This process is continued until all nodes are deleted.

Here, we present the results of numerical simulations exploring the effects of network information errors on attack. Results are averaged over 50 different network realizations. Figure 1 presents the size of the giant connected component of undirected true networks plotted against the number of nodes removed in attack (both normalized by $N$) for Erdös-Rényi and scale-free networks, both for attacks with perfect information (Figs. 1(a) and 1(c)) and for attacks with imperfect information ($\alpha = \delta = 0.25$) (Figs. 1(b) and 1(d)). We plot results for attacks based on our three centrality measures (betweenness, dynamical importance, and degree) and, as a baseline, also include results for the case where nodes are successively removed at random. We see that in the case of the Erdös-Rényi networks (Figs. 1(a) and 1(b)), the betweenness and dynamical importance strategies are significantly better than the degree and random strategies, even with an additional 25% false links added, and 25% of true links deleted.

Furthermore, we see that the betweenness strategy is slightly more efficient than the dynamical importance strategy in the case of no error, and they become approximately equal when error is present. In the case of the undirected scale-free networks (Figs. 1(c) and 1(d)), we find that the degree attack is relatively insensitive to this moderate amount of error. Restricting attention to reductions of the GC to as low as 10% of its original size, in contrast with the Erdös-Rényi case, we see that for the scale-free case there is relatively little difference between the different strategies and relatively a much less dramatic effect of moderate network error.
Figure 1. The size of the GC normalized by the number of nodes $N$ versus the normalized number of nodes removed $N_r/N$, for betweenness, dynamical importance, degree, and random strategies for undirected Erdős-Rényi and scale-free networks, both shown with no error, and with $\alpha = \delta = 0.25$.

Figure 2 shows GC attack curves for undirected networks subjected to betweenness and dynamical importance attacks, with different types of error. Figure 2(a) for Erdős-Rényi networks shows that at moderate levels of error, $(\alpha, \delta) = (0.25, 0), (0, 0.25)$ and $(0.25, 0.25)$, attacks are more robust to the addition of false links as compared with the omission of the same number of true links. Again, while for $(\alpha, \delta) = (0, 0)$ betweenness based attack is somewhat more effective than dynamical importance based attack, this difference essentially disappears when either of the moderate error types shown are present.

Figure 2. The normalized GC size versus the normalized number of removed nodes for betweenness and dynamical importance strategies for undirected (a) Erdős-Rényi and (b) Scale-free networks.

Since Figs. 1(c,d) showed quite weak effects of moderate network error $(\alpha, \delta) = (0.25, 0.25)$ for scale-free networks, we are lead to consider substantially higher levels of network error for the scale-free case. Consequently, in Fig. 2(b) we show results for scale-free networks with $(\alpha, \delta) = (0, 0),(0, 0.75),(1, 0),(1, 0.75)$ (note that $\alpha = 1$ means
that the number of added false links is the same as the number of true links). Even at these high network error values, we find little effect of network error for reductions of the GC size by up to 0.5. For greater reductions of the GC size network error becomes significant, but very great GC reductions are still achieved at relatively small $N_r/N$.

(Compared with the Erdős-Rényi case). The effective absence of network error impact for scale-free networks and $|GC|/N \geq 0.5$ can be understood on the basis that reductions of GC size in this range are achieved by removal of a relatively small number of nodes that have extraordinarily high betweenness and importance centrality measures. Random addition of false links, even if it doubles the number of perceived links is unlikely to produce any nodes with centrality measures as high as the true hubs, which will hence still be highly ranked for attack. On the other hand, random deletions with $\delta = 0.75$, on average reduces the degrees of all nodes, roughly proportionally, and assuming connectivity is still maintained between the true hubs, they will still by highly ranked for removal.

IV. Discussion

We have investigated the impact of imperfect network information on the effectiveness of nodal attack based on different centrality measures (degree, betweenness, and importance). Our results indicate strong dependence on the network degree distribution and on whether the network error is through false links or through missing true links. One implication of the latter finding is that, in the absence of hubs, network inference from noisy data (as in the cancer gene therapy application referred to at the beginning of the paper) should employ a somewhat weaker threshold for link inference (in order to favor inclusion of true links at the possible expense of the addition of false links in the inferred network). There are many possible future extensions of this general line of study, such as investigation of link attacks, the impacts of other network topological characteristics beyond degree distribution (e.g., assortativity by degree [26], community structure [27], small worldness [28], motifs [29], network hierarchical topology [30], and multilayer structure [31]), considerations of network error in formulating attacks tailored to disruption of specific dynamical processes (e.g., epidemic spread), etc.

Acknowledgements

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Jesus wishes to express his appreciation to his partner in the TREND2014 program, Andrew, and to Dr. Squires for being so generous with his time and patient with our learning complex networks. Thanks to Drs. Michelle Girvan, Ed Ott, and Tom Antonsen for offering the opportunity to contribute to research at UMD.
Appendix A: Directed Networks

The results and discussion in the main text are restricted to the case of undirected networks. Here in Figs. A1 and A2 we give results for directed networks analogous to Figs. 1 and 2. To accommodate directedness, Figs. A1 and A2 have two new aspects not present in Figs. 1 and 2: (i) the curves for attack based on degree centrality in Figs. 1 and 2 are now each replaced by two curves, one for in-degree-based attack, and one for out-degree-based attack; and (ii) the vertical axes in Figs. A1 and A2 are the normalized size of the Giant Strongly Connected Component (GSCC) rather than the GC of Figs. 1 and 2 (the GSCC is the largest collection of nodes such that for each pair \((i, j)\) of nodes in the GSCC there is a directed path along links both from \(i\) to \(j\) and from \(j\) to \(i\)). The parameters and degree distributions used for Figs. A1 and A2 are similar to those for Figs. 1 and 2: \(N = 2500\), \(k_{\text{in}}^{\text{max}} = k_{\text{out}}^{\text{max}} = N/2 = 1250\) (where \(k_{\text{in}}^{\text{max}}\) and \(k_{\text{out}}^{\text{max}}\) denote in-degree and out-degree), the average in-degree and out-degrees for all networks are 4, and, for scale-free networks the in-degree and out-degree distributions are the same with power-law exponent \(\gamma \approx 2\) for both.

![Figure A1](image1.png)

Figure A1. The size of the GSCC normalized by the number of nodes \(N\) versus the normalized number of nodes removed \(N_r/N\), for betweenness, dynamical importance, degree, and random strategies for directed Erdős-Rényi and scale-free networks, both shown with no error, and with \(\alpha = \delta = 0.25\). A general source on this topic is the journal, *Cancer Gene Therapy*. 
Examination of Figs. A1 and A2 shows that the in-degree and out-degree strategies yield similar results. Furthermore, and most importantly, all of our main general results for undirected networks (points (i)-(iv) at the end of Sec. I) are seen to apply to directed networks.
References

[17] A general source on this topic is the journal, Cancer Gene Therapy.
Novel Magnetic and Optical Properties of Sn$_{1-x}$Zn$_x$O$_2$ Nanoparticles

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Abstract

In this work, we report on the effects of doping SnO$_2$ nanoparticles with Zn$^{2+}$ ions. A series of ~2-3nm sized Sn$_{1-x}$Zn$_x$O$_2$ crystallite samples with 0 ≤ x ≤ 0.18 were synthesized using a forced hydrolysis method. Increasing dopant concentration caused systematic changes in the crystallite size, oxidation state of Sn, visible emission and band gap of SnO$_2$ nanoparticles. X-ray Diffraction (XRD) studies confirmed the SnO$_2$ phase purity and the absence of any impurity phases. Magnetic measurements at room temperature showed a weak ferromagnetic behavior characterized by an open hysteresis loop. Their saturation magnetization $M_s$ increases initially with increasing Zn concentrations, however for x > 0.06, $M_s$ decreases. Samples with the highest $M_s$ values (x = 0.06) were analyzed using an Inductively Coupled Plasma Mass Spectrometer (ICP-MS), looking for traces of any magnetic elements in the samples. Concentrations of all transition metals (Fe, Co, Mn, Cr, Ni) in these samples were below ppb level, suggesting the observed magnetism is not due to random inclusions of any spurious magnetic impurities and it cannot be explained by the existing models of magnetic exchange. A new visible emission near 490nm appeared in the Zn doped SnO$_2$ samples in the photoluminescence (PL) spectra which strengthened as x increased, suggesting the formation of defects such as oxygen vacancies. X-ray Photoelectron Spectroscopy (XPS) confirmed the nominal Zn dopant concentrations and the 2+ oxidation state of Zn in the Sn$_{1-x}$Zn$_x$O$_2$ samples. Interestingly, the XPS data indicated the presence of a small fraction of Sn$^{2+}$ ions in Sn$_{1-x}$Zn$_x$O$_2$ samples in addition to the expected Sn$^{4+}$, and the Sn$^{2+}$ concentration increased with increasing x. The presence of multi-valent metal ions and oxygen defects in high surface area oxide nanoparticles have been proposed as a potential recipe for weak ferromagnetism.$^1$

Introduction

SnO$_2$ is an interesting metal oxide that has been extensively studied for its magnetic, optical, and electrical properties.$^{2,3}$ It has been reported that some of these intrinsic properties have been induced by doping with transition metals.$^{4,5}$ (e.g., Fe, Co, Mn, etc.). The one tailored physical property that falls into controversy is the induced magnetism that arises when doped with magnetic ions. The origin of room-temperature ferromagnetism (RTFM) has been debated to arise from either unintentional impurity inclusion, clusters$^6$ formed by the doped transition metals or defects in the metal oxides$^7$ such as oxygen vacancies. There have also been reports that RTFM has been observed in metal oxides that are either undoped$^{8,9}$ or doped with non-magnetic elements$^{10}$. In this work, we make multiple sets of Sn$_{1-x}$Zn$_x$O$_2$ (with x increasing systematically from x = 0 to 0.18,) samples to confirm the reproducibility and repeatability of the novel properties induced by doping SnO$_2$ nanoparticles with Zn.

Experimental Methods & Results

Sn$_{1-x}$Zn$_x$O$_2$ nanoparticles were made in a powered form by reacting appropriate amounts of high quality tin (IV) acetate, anhydrous zinc acetate, urea, and nano-pure H$_2$O. The measured out precursors were put into a 250 mL round-bottom flask with a stir bar. The flask was set in a silicon oil bath for an hour and a half, while stirring. Bringing the flask down to room temperature, appropriate amounts of the solution were put into centrifuge tubes and spun at 10 to 20k rpm, subsequently washed with nano pure H$_2$O and ethanol in between. The dopant concentrations employed were calculated using a molar ratio ([Zn]/[Zn]+[Sn]).

XRD patterns (Fig. 1) showed the single-phase cassiterite structure of SnO$_2$ with no secondary phases up to x = 0.18. The lattice parameters and average crystallite sizes were determined by Rietveld refinement methods$^{11}$. It showed that as x increases, the crystallite size steadily reduced from 3.2 ± 0.3 nm to 2.2 ± 0.2nm, in agreement with
similar results observed by other groups also. There seems to be a nucleation that occurs on the surface due to the introduction of zinc, causing interstitial defects which leads to the formation of tiny crystals. The lattice parameters obtained by these refinement methods also showed weak changes with the lattice volume increasing from 72.44 Å³ to 72.58 Å³ as Zn doping increased from 1% to 18%. Such weak changes in the lattice parameters is not unexpected when Zn²⁺ ions (0.72 Å) take on the tetrahedral sites of Sn⁴⁺ (0.69 Å) along with formation of additional oxygen vacancies necessary for charge compensation.

Figure 1. XRD patterns of Sn₁₋ₓZnₓO₂ samples with different Zn dopant concentration x, as indicated. The characteristic peaks broaden as x increases suggesting that crystallite size reduces.

Magnetic measurements were carried out at room temperature with a Vibrating Sample Magnetometer. A weak room-temperature ferromagnetic (RTFM) signal appears in the samples at low values of x, which increases and reaches a maximum saturation magnetization Mₛ ~1.5 memu/g for x = 0.06, as shown here in Fig. 2. This shows that the induced magnetism is directly dependent on the increasing introduction of zinc into the structure. Great care and consideration was taken when making these samples as to avoid any type of contamination. Since it is common to speculate that presence of magnetic impurities and/or transition metal ions act as the source of magnetism in these otherwise non-magnetic materials like SnO₂, several samples that showed relatively high Mₛ values were run through an ICP-MS and the data ruled out any such impurity contributions since the measured concentrations of transition metals in these samples were well below parts per billion level (see Table 1). It may be noted that there have been reports of ferromagnetic behavior in Sn₁₋ₓZnₓO₂ based on both experimental and computational studies.

Figure 2. Hysteresis loops of Sn₁₋ₓZnₓO₂ nanoparticles displaying characteristic ferromagnetic behavior. Inset shows the low-field range to highlight the open hysteresis loops and coercivity.
Table 1. Concentrations of selected transition metals measured using ICP-MS from three independent sets of Sn$_{0.94}$Zn$_{0.06}$O$_2$ samples, confirming that any magnetic impurity presence is below ppb levels.

<table>
<thead>
<tr>
<th>Transition Metals Tested</th>
<th>Chromium</th>
<th>Manganese</th>
<th>Iron</th>
<th>Cobalt</th>
<th>Nickle</th>
<th>Zinc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units (Parts per billion)</td>
<td>ppb</td>
<td>ppb</td>
<td>ppb</td>
<td>ppb</td>
<td>ppb</td>
<td>ppb</td>
</tr>
<tr>
<td>First Set</td>
<td>0.254</td>
<td>0.138</td>
<td>0.835</td>
<td>0.256</td>
<td>0.799</td>
<td>1327</td>
</tr>
<tr>
<td>Second Set</td>
<td>0.007</td>
<td>0</td>
<td>0</td>
<td>0.234</td>
<td>0.619</td>
<td>1277</td>
</tr>
<tr>
<td>Third Set</td>
<td>0.166</td>
<td>0.047</td>
<td>0</td>
<td>0.264</td>
<td>0.355</td>
<td>1538</td>
</tr>
</tbody>
</table>

The PL and band gap energy of the samples were measured at 10 K using a 325 nm line of a He-Cd laser for excitation and the spectra are shown in Fig. 3. Sharp peaks observed at ~3.75 eV are due to Raman scattering due to the band gap approaching the excitation laser line. Bulk SnO$_2$ has a band gap of 3.6 eV, but it is not photoluminescent. When impurities like Zn$^{2+}$ ions are incorporated into the structure of SnO$_2$ nanocrystals, the resulting structural and chemical changes might modify non-radiative centers to become active. High density of oxygen vacancies formed by the introduction of Zn leads to interaction with interfacial Sn that might lead to the formation of a considerable amount of trapped states within the band gap of SnO$_2$, giving rise to high PL mixed peaks (~3.35 eV) observed in the samples with x ≥ 0.12. In a similar experiment with Zn doped SnO$_2$ nanoparticles, room-temperature PL measurements have shown similar peaks, shifted to lower energies. As x increases, another important change observed is the emergence and gradual strengthening of the green band (~2.5 eV), which is commonly attributed to oxygen vacancies, most likely occurring on the surface of the nanocrystals. In samples with x = 0.18, we see a slight blue shift of this green band. This green band has appeared in related works that studied the optical properties of SnO$_2$ strictly relating it to oxygen vacancies. It is likely that the changes seen in both the UV and green emissions may be related to the extensive structural and chemical changes effected by the increasing Zn incorporation and the ferromagnetic signal induced in the samples also may be related to these chemical and structural changes.

![Figure 3. PL spectra of Sn$_{1-x}$Zn$_x$O$_2$ samples, showing both the UV band edge transition and the green emission. The sharp peaks just below 350 nm are due to Raman scattering.](image-url)

The chemical states of tin and zinc ions and their binding energies (BE) are shown in the high resolution XPS spectra (Fig. 4). The BE of Zn 2p$_{3/2}$ peak is around 1021.3 eV; the slight change in the BE to that of bulk ZnO (1021.8 eV) may be due to the presence of additional defects in these nanoscale samples. The Zn 2p$_{3/2}$ peak becomes more intense as x goes up, giving evidence for the increasing incorporation of Zn$^{2+}$ into the crystal structure of SnO$_2$. The Sn$^{4+}$ 3d$_{5/2}$ and 3d$_{3/2}$ states at BE ~486 eV and ~495 eV respectively, have a separation of 9.3 eV as seen in SnO$_2$ and are present in all samples. However, in samples with higher x values, an Sn$^{2+}$ shoulder begins to
emerge and gradually intensifies, showing that in the Sn$_{1-x}$Zn$_x$O$_2$ nanocrystals, Zn$^{2+}$ ions are creating new defects such as Sn$^{3+}$, most likely on their surface region. With this mix of states, it is difficult to distinguish the BE of the Sn 3d states although it has been reported$^{21}$ that the BE of Sn$^{3+}$ (~485.9 eV) is a little lower than the BE of Sn$^{4+}$ (~486.6 eV). This supports the increasing formation of Sn$^{3+}$ states in the high Zn doped SnO$_2$ samples.

Figure 4. High resolution XPS spectra of Sn$_{1-x}$Zn$_x$O$_2$ nanocrystals, highlighting the Sn 3d and Zn 2p regions.

**Conclusion**

In conclusion, we have synthesized and investigated these powdered nanocrystalline samples of SnO$_2$ successfully doped with zinc (0 ≤ x ≤ 0.18). Zn doping causes significant changes in the SnO$_2$ crystal structure and oxidation state of Sn, and it introduces large number of defects. The incorporation of Zn produces many new properties in SnO$_2$, including weak RTFM characterized by open hysteresis loops, and new and enhanced luminescent emissions. Zn$^{2+}$ doping seems to introduce new Sn$^{3+}$ states and presumably more oxygen vacancies, which are likely at work in the observed new magnetic and optical properties. Lack of any measurable concentration of magnetic ions in these Sn$_{1-x}$Zn$_x$O$_2$ nanocrystals makes it difficult to justify the observed RTFM by any of the known exchange mechanisms. The emergence of these observed properties may be related to changes in the electronic structure of SnO$_2$ due to the incorporation of Zn dopants, defects and the nanoscale size of the particles. The XPS spectrum indicates the existence of Sn in both Sn$^{3+}$ and Sn$^{4+}$ states in our samples. Doping Sn$^{4+}$ states with Zn$^{2+}$ ions and conversion of some Sn$^{4+}$ ions into Sn$^{3+}$ states are likely to introduce defect states such as oxygen vacancies. However, more detailed studies are necessary to confirm these possibilities and this will be pursued in future studies.

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Politics, Painting and Presentation: Velázquez’s Equestrian Portraits for the Hall of Realms

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Introduction

During the years that Diego Velázquez occupied the post as pintor principal (court painter) to King Philip IV of Spain, the images he created of his sovereign were exhibited so that members at court as well as visiting sovereigns and dignitaries could view these representations of strength as a reflection of the Spanish kingdom. The clarity of the presentation of power of King Philip IV and his family was vital in continuing with the tradition of demonstrating the royal family’s strength as rulers through the medium of art. Similarly, the duty of the Count Duke Olivares as favorite to the king made him equally responsible in ensuring that Philip and the Spanish monarchy remained in a flattering light.

In the fifteenth century, during the reign of the Catholic monarchs, Isabella and Ferdinand, Spain saw great success with the discovery of the Americas. The newfound land and labor Spain had acquired made the country a power to be reckoned with in Europe. During the reign of the Catholic monarchs, Spain became well accustomed to receiving large shipments of silver and other goods from the Americas which formed the foundation of much of the country’s prosperity. Isabella and Ferdinand built the infrastructure for Spain to continue its success and for future monarchs to take on the reign of the country with ease. This was certainly not the case when Philip IV ascended to the Spanish throne in 1621. Although still a notable European power, the Spanish empire was undergoing somewhat of a disconnect from the prestige it had experienced in its former years. Perhaps the most significant reason for this decline was the number of silver shipments the country received previously now arrived in smaller amounts and with less frequency. Philip IV was used to excessive spending, but his means were less than what the monarchs, such as Isabella and Ferdinand, before him had. As monarch, Philip was not only spending more than the country was in the habit of receiving, but he was also continuing to fund perpetual wars, military campaigns, and fulfill his penchant for the finer things in life.

In 1621, Philip IV came to power after the death of his father Philip III. In the early days of his reign he sought to remove his father’s old advisors and seek out new men to fill their posts. The Count of Olivares fell into favor with Philip IV while Philip was still heir to the throne. Perhaps, for this reason it was an easy choice for Philip to appoint Olivares as prime minister to replace Don Baltasar de Zuñiga after Zuñiga’s untimely death. The fact that Olivares had a connection to Zuñiga, who was his uncle, may have also played into the decision-making process. Velázquez came to court shortly after Olivares’ appointment and it is suspected that with his help, he succeeded in captivating the king’s eye with his painting. The Spain in which these three men lived was low in terms of government and economic stability. However, in terms of art, this time period thrived and now Philip IV’s reign is reflected upon by art historians as “The Spanish Golden Age.”

3 See source 2 pg. 15-16
Olivares as Prime Minister

As Prime Minister, Olivares assumed the responsibility of carrying out major decisions such as creating laws, initiating military campaigns and allocating the country’s funds. The majority of the aforementioned duties were fronted by the king and then effectuated by Olivares. Olivares took charge of these ‘kingly’ duties largely due to Philip’s preference to hunt rather than perform his responsibilities at court. Many accounts of Olivares’ time as prime minister allude to a career filled with few triumphs and many failures. Upon his appointment as prime minister, Olivares made it clear that he intended to re-establish the prestige that Spain had experienced in the past. This, however, was not the case as time moved on and Olivares had yet to encounter the success he had hoped for. One noted failure from the early years of his program for change was his attempt to turn the Spanish people from an agricultural class to that of a merchant class. Olivares observed how the Dutch were successful with their new merchant class and sought to implement such changes for the people of Spain. Although Olivares was well intentioned such a drastic change for the Spanish people was one they did not take well. At this same moment, Olivares’ longtime aspirations for peace with the Dutch were proving to be an unfruitful endeavor.

Olivares’ role as royal favorite carried much responsibility, prominence and criticism. Historian John H. Elliott writes that “[Olivares] had to operate in a political climate which was increasingly hostile to the existence of a royal favourite, and yet had to win and keep the royal favour.” Olivares needed to be cautious about his every move at court because his many attempts to repair Spain to the stability of its past were falling through. However, even with little positive change during the next few years, Olivares still remained in the strong favor of the king. The favor and the influence that Olivares was able to maintain with Philip can be demonstrated in the decision to build Buen Retiro.

Shortly after the summer of 1629, Philip found himself exhausted by the duties that plagued him in Madrid. Although military defeats and reform failures were not a rare occurrence during his reign, that summer proved to be particularly challenging for the king. The Count-Duke encouraged Philip to build royal apartments outside of Madrid to free the king from the many obligations that came with his presence in the city. Only a few months later, ground was broken on the new construction and what had started as a modest proposal soon turned into a grand palace, the Spanish royal residence later named Buen Retiro.

Buen Retiro and the Representation of Power throughout Europe

Buen Retiro was built to serve as a retreat for Philip, a palace to celebrate the arts that he enjoyed so much. However, the grandeur of the palace was not reflective of the rest of Spain. The palace’s construction began in 1630, at a time when Spain was plunged into an economic depression. The country was receiving less silver from the Americas and was also tied up in various military campaigns in addition to undergoing an agricultural crisis. The erection of a grand palace was not executed at an opportune moment considering the poor circumstances the rest of Spain was experiencing. Even so, this did not alter the extravagance of the palace.

At the time Buen Retiro was built, palaces were expected to visually present a family’s power and lineage either on the façade, in the interior, or both. Artwork presented in the manner of the Hall of Realms, also referred to as the Hall of Princely Virtues, followed the conventions of allegorical portraiture set forth by the Italians. One of the earliest examples of a hall gilded with these ideals can be seen during the High Renaissance with Raphael’s decoration of the papal apartments in the Vatican. This grand hall contained art depicting allegories, personifications, and pictorial proof of the strength in the pope’s family line. Another example of strength in the family line depicted in representational form could be found at the Duke of Ceri’s Palace in Rome. On the façade of his palace he placed, in false niches, the portraits of four Habsburg emperors (Charles V, Maximilian I, Robert, and

5 See source 1 pg. 102-115
7 See source 6 pg. 123-124
8 See source 6 pg. 128
9 See source 1 pg. 409
10 See source 1 pg. 411
Matthew) and placed near the four emperors were paintings of their military victories. The Duke of Ceri’s palace façade served as a form of allegiance to the powerful Spanish crown through the representation of the Habsburgs and their victories. However, in the Spanish palace of Buen Retiro the idea of allegiance was not as necessary as was the presentation of power.

It was fitting that Buen Retiro would house its own grand room to fit the criteria of presenting the strength of the Habsburgs and of Spain through portraiture. The Hall of Realms functioned as the throne room for Buen Retiro. The Hall of Realms was the area in the palace reserved for the king and his family to view entertainment and hold official ceremonies. Because of the function of the room many powerful and influential people would get to see the interior. Consequently, in hopes of conveying the stability of the monarchy and the realms it governed, those in power used the art within this room to their advantage. The Hall of Realms was decorated from 1634 well into the early months of 1635. Jonathan Brown and J.H. Elliott, the two leading scholars on the Buen Retiro palace and the Hall of Realms, agree that Olivares was integral in putting the “program” for the Hall of Realms together. This program included ten herculean narrative paintings, twelve historical paintings, and five equestrian portraits, all of which were created and placed in the Hall in a manner that was intended to amplify the prestige of the crown.

Velázquez was charged with painting the equestrian portraits, which were placed on the east and west walls of the Hall of Realms, and in between them was a large rectangular hall that spanned 34.6 meters long by 10 meters wide. The north and south walls held the ten narrative paintings that showed ten labors of Hercules (completed by another Spanish painter, Zurbarán). The individual paintings in this narrative series were placed above the ten windows in the hall. Placed in between the narrative paintings hung twelve large historical paintings depicting Spanish military victories. Six different artists, including Zurbarán and Velázquez, completed these historical paintings.

Each of the paintings within the room adhered to the tradition of incorporating personifications, allegory, and familial strength into the artwork found in grand palaces. The Spanish Habsburgs, Philip’s family, claimed to be descendants of the powerful Hercules. The herculean narrative paintings were created and placed within the room to show the Habsburgs and Hercules as relatives. As for the historical paintings, they emphasized military victories that occurred under Philip’s reign and demonstrated the country’s strength. The herculean narrative series and the historical paintings, although representative of the Spanish monarchy’s strength and lineage, never show the monarchs. It is only in the equestrian portraits where the kings of Spain and their consorts were shown. The portraits were placed alongside the many images of glory and greatness that were depicted in the historical paintings and the herculean narrative series. The historical paintings tie together Spain as victorious and prosperous while the herculean narrative paintings give legitimization to the Habsburg’s right to rule. The Hall of Realms is a standout from the Roman depictions of power in that it tries to encompass all elements that would legitimize Philip IV’s rule. Drenched in iconography, drama, and entirely made by the hands of Spain’s most skilled painters, this room served as a testament to not only the power of Spain’s ruling family, but to the Spanish empire.

The Equestrian Portraits

Velázquez’s equestrian portraits showcase the constancy of the Habsburg’s succession line accordingly, representing the Spain’s past rulers, Philip III and Margaret, Spain’s present rulers, Philip IV and Isabella, and

16See source 13 pg. 150
Spain’s future ruler, Prince Baltasar Carlos. The equestrian portraits of the royal family are a clear representation of Spanish strength and dynastic continuity.\(^\text{17}\) The theme of dynastic continuity is distinctively illustrated through the sequence of the paintings: the past, present, and future of Spain are all presented to the viewer in close proximity. This is done through the placement of the most recent Habsburg line of succession. These paintings begin with the former king, Philip III of Spain (Fig. 1) whose portrait was placed next to his wife’s, Margaret of Austria (Fig. 2). Opposite the paintings of the former rulers of Spain was the reigning king, Philip IV of Spain (Fig. 3) and his wife Isabella of Bourbon (Fig. 4). Lastly, hung between his mother and father above the exit door was the portrait of Prince Baltasar Carlos (Fig. 5), the future king of Spain. These portraits show stability simply by their arrangement within the room. With these portraits the message is apparent that the Habsburg lineage has been and will continue to be a dominant and capable power in Spain.

Both Philip III and the Prince Baltasar Carlos are shown wearing full royal attire, grasping their commanders’ batons, and most importantly engaging with the viewer. The former king is presented to us as the confident ruler he was, staring directly at the onlooker with his body positioned slightly toward them. The portrait of his grandson is perhaps even bolder. Prince Baltasar Carlos is depicted full of confidence as if ready to rule in this moment. He too, is staring directly at the viewer with his body positioned nearly in full view of the onlooker. His horse mirrors the same youthful, spritely qualities as the young prince. Given the shared characteristics of the portraits of Philip III and Prince Baltasar Carlos, it is peculiar that we do not get the same lively features with Philip IV. Although the current king of Spain is in the same stance and dressed similarly to the attire worn by his father and son, it is quite distinct that he is the only subject of all of the portraits to not engage with the viewer. Furthermore, his horse does not possess the same energetic qualities as the rest of the Habsburg males’ mount. Regardless of these restrained details, Philip IV still maintains the stance of the horse and carries many of the same features painted in the portraits of the other Habsburg men. His depiction is slightly more muted, which was not uncommon in Velázquez’s portraiture of Philip IV.

During Velázquez’s time as court painter for Philip IV, he exercised a restraint in the portraits of his monarch and employer. In Velázquez’s portrayals of Philip, the king is rarely shown in grand costume, of powerful stature, or with elaborate decoration. Moreover, Philip is certainly never shown as bold by Velázquez’s hand as he is represented in the equestrian portrait of 1634. In Velázquez’s equestrian portrait of Philip, the usual restrained representation of the king has subsided greatly. It is strange to see Philip in such lavish costume and with such confident stature as in the instance of Velázquez’s equestrian portrait. The equestrian portrait appears to defy all the elements that Velázquez had adhered to so faithfully throughout his career. Velázquez however, was not the only famous artist to take on an equestrian portrait of Philip IV. It is fair to acknowledge that other well-known artists of the Baroque era made equestrian portraits of Philip IV, too. The great Baroque painter Peter Paul Rubens made an elaborate equestrian painting of Philip IV (Fig. 6) during his visit to Madrid in 1628.\(^\text{18}\) He painted Philip as a confident, tenacious ruler, and it is said that Olivares praised Ruben’s portrayal of this king.\(^\text{19}\) Rubens’s painting fits well with Olivares’ hopes to convey the strength of the crown and in turn the value of his decisions for the crown. Velázquez’s portrayal of the king is not then a curious instance with this in mind. Velázquez is said to have secured his role as court painter with the help of Olivares, and it is not unimaginable to think that Velázquez may have felt indebted to Olivares. At the same time, Velázquez may not have felt the need to make Philip IV’s portrayal as elaborate as Rubens. Portraying Philip IV on a horse may have been enough to convey the idea of power.

Equestrian portraiture has its roots in antiquity and can be traced back to the equestrian statue of Marcus Aurelius. A portrait of a ruler mounted on a horse emanates strong ideals of power that are undeniable to the eye. Olivares surely had power in representational form in mind when envisioning the equestrian portraits of the royal family. Not only was the equestrian type taken into consideration, but other forms of iconography were placed in the portraits to assure the viewers they were witnessing the wealth of the power Spain possessed. The most noticeable feature in this equestrian series is the stance of the horse, better known as the lavade. This particular position of the horse is important in conveying the strength of the rider.\(^\text{20}\) It is a stance that is hard to maintain and takes skill to master and all the male sitters manage to hold it with ease. Through this specific position of the horse, the

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\(^{17}\) For further explanation on dynastic continuity see Brown, Jonathan and Elliott, J.H. *A Palace for a King*. New Haven & London: Yale University Press, 2003


\(^{20}\) See source 19 pg. 529-537.
association is made between the Habsburg men’s capability to rule and their ability to control a powerful horse. Similarly, the baton and the red sash that the male riders possess also infer their ability to rule and their military strength. The baton and sash were two objects that would have belonged to high-ranking officials in the military and although none of these men fought in a war, they are presented this way to connect them to the historical paintings. Another interesting article worn by all of the men is the insignia of the Golden Fleece. The Golden Fleece was a knightly order that devoted itself to the Christian cause. The presence of this insignia confirmed the Spanish ruler’s role as fervent defender of the Catholic faith. Philip and his family, as the current monarchs of Spain, were in turn also the current defenders of the Catholic faith. All of these symbols in the equestrian portraits in the Hall of Realms tied together Olivares’ hope to portray a strong Spain.

It was of utmost importance to the Count-Duke Olivares that Philip IV, along with his family, be placed in a flattering light. As the favorite to the king, the policies and major decisions that the king fronted were typically designed by Olivares. And as a result of this, a carefully constructed portrayal of the royal family was beneficial to both Olivares and Philip IV. It appears Olivares used the equestrian portraits in the Hall of Realms as one of his many efforts to elevate the image of the crown in an effort to legitimize his own success. The Hall of Realms in Buen Retiro, the project that Olivares had spent years laboring over had finally come to fruition. The collaboration between painting and politics in Spain during the reign of Philip IV is epitomized in the equestrian portraits in the Hall of Realms.

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Figure 2: Diego Velázquez and others, *Queen Margaret of Austria*, ca. 1635, oil on canvas, 116 in. x 83.4 in. Museo Nacional del Prado, Madrid, Spain. <https://www.museodelprado.es/en/the-collection/online-gallery/on-line-gallery/obra/queen-margarita-de-austria-wife-of-felipe-iii/>

Figure 5: Diego Velázquez and others, *Prince Baltasar Carlos on Horseback*, ca. 1635, oil on canvas, 83.2 in. x 70 in. Museo Nacional del Prado, Madrid, Spain. <https://www.museodelprado.es/en/the-collection/online-gallery/on-line-gallery/obra/prince-baltasar-carlos-on-horseback/>

Figure 6: After Peter Paul Rubens, *Philip IV of Spain on Horseback*, ca. 1628, oil on canvas, 132.6 in. x 103.5 in. Uffizi Gallery, Florence, Italy. <http://www.virtualuffizi.com/philip-iv-of-spain-on-horseback.html>
America’s TV Pastime: An Analysis of Why Professional Sports Fans Prefer Watching the National Football League Over Major League Baseball on Television

Ty Hawkins: McNair Scholar

Dr. Rick Moore: Mentor

Mass Communication and Journalism

More out of habit than anything else, we still refer to baseball as the national pastime (McAdam, 2004). However, football began making inroads as the most viewed sport as far back as the 1970s. Two decades later, it isn’t much of a contest anymore in terms of viewing popularity (McAdam, 2004). In 2014, 35% of fans called the National Football League (NFL) their favorite sport, followed by Major League Baseball (MLB) (14%), college football (11%), auto racing (7%), the National Basketball Association (NBA) (6%), the National Hockey League (NHL) (5%), and college basketball (Rovell, 2014). Although a wide variety of factors impact the popularity ratings, I am specifically interested in the reasons people may prefer watching the NFL over MLB on television.

In order to better understand, I conducted a short study that asked 36 male and female fans of MLB, the NFL, or both, and all above the age of 18, to complete a 21-question survey about their sports viewing preferences. Six percent of respondents were between the ages of 18-25; 72% were 26-33; 14% were 34-42; and 8% were older than 42. Participants ranged from stay-at-home mothers to working professionals in the sports media, which helped create a diverse background of respondents.

After viewing the results of my survey, I noticed three trends. First, my participants preferred both the length of NFL games over MLB games and the action that happens continuously in the NFL. Second, the participants also preferred the length of the 17-game NFL season versus the 162-game MLB season. Lastly, certain off-field issues have affected why the participants of this analysis watch the NFL over MLB on television. The results showed that 89% of participants prefer watching the NFL over MLB, while 6% would rather watch MLB, and 6% indicated they had no preference. Personally, I enjoy watching the NFL on television, regardless of which point of the season they are in, pre-season, regular season, playoffs, or the Super Bowl. Yet, I generally only start really watching MLB on television during the post-season and during the World Series. Out of curiosity, I decided to ask my respondents to also address their NFL and MLB television viewing habits during these times of the respective seasons.

During a MLB game, there are pauses between each pitch thrown to the batter, a pause when a new batter comes up to the plate, and long pauses between innings while the teams transition from offense to defense and from defense to offense. Rule 8.04 in Major League Baseball’s rulebook says, “When the bases are unoccupied, the pitcher shall deliver the ball to the batter within 12 seconds after he receives the ball. Each time the pitcher delays the game by violating this rule, the umpire shall call Ball” (Berg, 2014). In 2010, games lasted on average about two hours and 55 minutes, according to Baseball Prospectus. The average game has increased steadily in length every season since, and contests in 2014 averaged about three hours and eight minutes (Berg, 2014). This can make for a very long time spent sitting in front of a television, and if the MLB game is slow, or potentially goes to extra innings, that time can seem like an eternity to some fans. Forty-seven percent of participants said they enjoy watching MLB on television somewhat, 33% said they don’t like watching MLB on television, and only 19% said they like to watch MLB on television. One participant said, “[I] don’t find the MLB boring entirely, but the pace of the game is slow and it’s lost much of its tradition and luster. It’s definitely more exciting during the playoffs from a television spectator standpoint.” While another participant added “the MLB games have too much down time.”

The NFL has more action in shorter periods of time than drawn out MLB games, and the breaks in play seem shorter, even with the delays that are a part of the game. In the NFL, a game progresses at a faster rate than a MLB game. The speed of the game could be a reason why some fans prefer to watch the NFL over MLB. In the NFL, there is a 40 second play clock, which is an allotted amount of time for the offense to run a play, and the in-game time clock continuously runs, yet can be stopped if there is a penalty, for the review of a play, or after an incomplete pass. Time between plays will be 40 seconds from the end of a given play until the snap of the ball for the next play, or a 25-second interval after certain administrative stoppages and game delays (NFL.com, 2015).
Regardless of the outcome of each play, the 40 second play clock is reset each time a new play begins. Although there are breaks and stoppage in play in the NFL, the game moves along quicker than that of MLB. The fact that there are more chances for train-wreck like collisions, exciting run and pass plays provide more room for the fans to enjoy the events that have taken place, and the defense has the opportunity to make big plays as they try to stop the offense from scoring, which has an appeal to a fan. In MLB, the chances for a homerun or a big catch happen less often, compared to a touchdown or turnover in the NFL. “Football is charitably called a contact sport. In actuality, it's a collision sport. You can watch a nine-inning baseball game and never see two players come in physical contact with one another. Not so with football, which guarantees high-speed crashes between players of ever-increasing size and strength on every play (McAdam, 2004).

The 162-game regular season schedule is also a reason why people have lost interest in watching MLB on television. Although games are played every day, with few days off for a long period of time, those are a lot of games to follow and stay updated on if you have a life outside of following MLB, and in reality most people don’t have the time to watch a MLB game daily. Sixty-one percent of the participants answered that they would like to see the MLB’s 162-game regular season shortened, while 31% like the length of the season, and 8% had no answer. The fact that football is generally played one day a week—while every baseball team plays every day for six months—is another point in the NFL’s favor (McAdam, 2004).

Off the field factors have also affected my participants’ decisions to watch MLB on television. Four of the participants indicated that performance enhancing drugs have skewed their views of the game, while the other four participants were bothered by the fact that MLB doesn’t have a salary cap. One participant said, “the salary cap makes the list of who actually have a chance to win the World Series extremely small, which really hurts the game and the league.” Additionally, two people had a tough time supporting the international superstars who have become prominent in the game today.

Like MLB, there are off the field factors that have been perceived negatively by the participants that are fans of watching the NFL on television. Fifty-seven percent of the people are bothered by the off the field issues that involve the NFL, 14% are bothered by contract disputes, and 14% had no answer. Twenty-nine percent of the participants had other comments and opinions that affected why they watch the NFL on television. One respondent stated, “[I] don’t support woman or animal beaters,” while another person added “I don’t like how Commissioner Rodger Goodell has handled things.”

As a sports fan, I have been told the experience of watching MLB live, in person is greater than watching it on television. However, I have been to Spring Training in Arizona, and to Fenway Park in Boston, Massachusetts, to watch the Red Sox host the New York Yankees, which is arguably one of the most historic rivalries in all of sports. Both times I left equally bored, whether I watched the game on television or in person. However, I felt it was important to address the participants’ personal preferences in this analysis. Fourteen percent of the people had attended Spring Training, 92% had been to a regular season game, 11% had been to a playoff series, 3% had been to the World Series, and 8% had never been to a MLB event in person. When the stakes are highest in MLB, for example during the playoffs or the World Series, 92% of the people said they watch MLB on television, while 8% said that wasn’t a factor of whether they watched MLB on television. Compared to MLB in person, 44% of respondents had been to a NFL pre-season game, 100% of the people had been to a regular season NFL game, 24% had been to an NFL playoff game, and 8% had been to the Super Bowl. Also compared to the 92% of the people that watched MLB more on television during the post-season or World Series, 8% of the respondents answered they watch the NFL more on television during the Super Bowl, 81% claimed they watch the NFL more when the Super Bowl is on, 6% had no answer, and the other 6% commented. The response which stood out to me the most was whether the participants in this research watched the NFL more so on television during the Super Bowl, in which one participant said “the answer is no, but I want to say that football is most enjoyable to watch during the regular season.”
References

Annotated Curriculum Vitae

Adam Keener: McNair Scholar
Dr. Jesse Barber: Mentor
Biological Sciences, Ecology

Abstract

An annotated curriculum vitae is provided highlighting my accomplishments during my time as a McNair Scholar. Peer-reviewed publications, presentations, grants and awards, and research expeditions are listed and described. Additionally, a brief description of my research interests and long term goals is provided. The annotated curriculum vitae ends with a statement on the importance of studying sensory ecology.

Research Interests

I am broadly interested in sensory ecology and predator-prey interactions. My research has concentrated on bat-prey dynamics from several angles. Within the bat-moth arms race, my focus has been examining moth anti-predator defenses that circumvent capture by bats. I’m also interested in how multiple sensory modalities work synergistically, which I’ve explored in gleaning bats and their terrestrial prey. My long-term research goals are to move into visual ecology and pursue research that combines both acoustic and visual predator-prey questions in a multimodal framework.

Publications


Abstract: Bats and moths have been engaged in acoustic warfare for more than 60 million years. Yet almost half of moth species lack bat-detecting ears and still face intense bat predation. We hypothesized that the long tails of one group of seemingly defenseless moths, saturniids, are an anti-bat strategy designed to divert bat attacks. Using high-speed infrared videography, we show that the spinning hindwing tails of luna moths lure echolocating bat attacks to these nonessential appendages in over half of bat-moth interactions. Further we show that long hindwing tails have independently evolved multiple times in saturniid moths. This finding expands our knowledge of antipredator deflection strategies, the limitations of bat sonar, and the extent of a long-standing evolutionary arms race.

Presentations

Oral Presentations


An oral presentation examining bat-scorpion interactions and the limitations of the current literature. Heavy emphasis was placed on investigating subtle metrics that have been overlooked—flight metrics that require 3D videography, and qualitative metrics that require high framerate, high resolution video collection.
Poster Presentations


A proposal to examine bat-scorpion dynamics by measuring latency to capture under a variety of conditions. Latency to capture is intended to serve as a proxy to the amount of risk a bat poses while hunting scorpions. Examining this metric under conditions that limit the use of certain senses can illustrate the importance of each sense in dealing with risky prey.


Proposal to investigate discrimination abilities in a local gleaning bat. Aerial hawking bats are believed to be unable to discriminate prey due to bioacoustical constraints imposed by echolocation. However, gleaning bats should not be under such a constraint because they utilize passive listening for prey localization. This proposal suggests examining whether gleaning bats are able to discriminate between prey by listening to their footsteps.


This poster presented conservation-related research examining the effects of anthropogenic noise on a local gleaning bat. Presence of anthropogenic noise increased latency to capture prey items, showing an impact on foraging ability.

Research Expeditions

Panama, June 2013

Conducted international research on bat-moth interactions with Dr. Jesse Barber and Dr. Akito Kawahara from the University of Florida. Work was funded by an NSF grant. Involved field work, data collection, and animal care at the Smithsonian Tropical Research Institute on Barro Colorado Island, Gamboa, and greater Panama. Collected bioacoustic, behavioral, and genetic data.

French Guiana, May 2014

Further investigated bat-moth interactions broadly with Dr. Jesse Barber and Dr. Akito Kawahara at the Nouragues Research Station in French Guiana. Involved field work, bat mistnetting, animal care, and collection of bioacoustic, behavioral, and genetic data.

Grants and Awards

McNair Scholar, Boise State University (2013-current)

McNair Scholars are underrepresented students that aim for advanced degrees. Scholars are selected after a competitive application process. McNair Scholars are required to design and conduct research with faculty mentors, as well as engaging in two years of preparation for academia.
McNair Research Scholarship (2013-2014, Amount of $2,800)

A research stipend awarded for work towards McNair-directed research. These funds went towards a project examining the partitioning of sensory tasks in the pallid bat (*Antrozous pallidus*). This research is scheduled to go out for review in a peer-reviewed publication in May 2015.

Northwest Scientific Association Grant Award (2014, Amount of $1,500)

A highly competitive award given to the winners of a grant competition by a regional scientific association. My submission of “Can bats tell footstep sounds apart?: A test of a novel form of prey discrimination in the pallid bat, *Antrozous pallidus*” was selected. I was one of 11 grants awarded from a pool of 78 candidates. Ninety percent of applications were from MS or PhD candidates, and I was one of two undergraduates selected.

Purdue Doctoral Fellowship (2015-2017, Amount of $24,000 / year)

A highly competitive fellowship that supports outstanding Ph.D-track students at Purdue that enhance the diversity of the student body through their diverse backgrounds, views, and experiences. Two years of full stipend support is awarded as well as a guarantee of two additional years of support.

Dr. P.T. Gilham Graduate Fellowship (2015, Amount of $3,000).

An honorary fellowship given to the brightest and most capable students of the entering graduate class at Purdue University. Intended to provide young scientists with resources to ignite their scientific careers with a one-time award.

**Research Importance**

Sensory ecology allows us to examine information exchange over a vast number of ecological interactions. Important drivers of evolution such as finding and capturing prey, detecting and avoiding predators, and finding and judging mates are governed by information acquisition and efficiency. Examining sensory abilities and how such abilities are utilized provides a window into these essential drivers of evolution. Implementing sensory experiments can allow us to examine dynamics between predators and prey and signaler and receiver at the most fundamental levels.

**Acknowledgements**

The successes that I have managed to accomplish would not have been possible without the support of several people. My mentor Jesse Barber, my coworker and friend Brian Leavell, friend Brett Howell, and the McNair community (especially Helen Barnes, Greg Martinez, and Bernice Olivas) were all instrumental in providing support throughout this process. Of course, an entire sentence is reserved for the support and patience of my wife, Tiara Keener, whom I would be lost without.
Creative Expressive Writing and Perceived Self-Efficacy in the Writing Center—A Tutor’s Narrative

Allison King: McNair Scholar

Dr. Bruce Ballenger: Mentor

English, Writing Emphasis

Abstract

You know the story…the one about a curious little girl, captivated by a little white rabbit? Like young Alice, my curiosity compelled me to follow my own white rabbit down an unknown path, at least to me. It found me when I attained an internship in our university writing center the fall of 2012. And down the rabbit-hole, I fell. My adventures in writing center wonderland grew into an infatuation with writing—the tutoring of, the process of, the pedagogies of, the praxis of. Many discourses of writing pull at me, begging to be consumed and adapted to suit the situation. This infatuation led me down a path in which I could prepare myself for the rigors of graduate research, through the McNair Scholars Program, in 2013. For nearly two years, I developed and attained a summer research fellowship where I had the opportunity to explore the intersections of creative expressive writing, perceived self-efficacy, and the theory/practice of tutoring writing. I sought insight into new ways of combatting writing apprehension, both for my clients in the writing center, in addition to new apprehensions I was feeling as a writer/researcher/tutor. This exploration pulled me in directions that were unexpected, forcing me to face anxieties that I’d managed to suppress for many years. I found that intentionally applying low-stakes creative writing activities into the writing center consultation brought even more relevance to undergraduate creative writing programs. Moreover, making creative writing studies more transparent brings levity to the seriousness that often stigmatizes writing center praxis, fosters writing development across the curriculum, and shifts the writing center focus on perceived self-efficacy. This essay is a culmination of my research experience—it shares some insight into case studies documented over the Summer of 2014, my reflection of my research development—and intends to demonstrate the ongoing value of narrative inquiry, the methods of my madness.

Down the Rabbit Hole

“My toe skimmed the lip climbing the stairs of the Liberal Arts Building. I had to block my fall up the stairs. Sweaty palms left haunted marks on the concrete. Nerves were getting the best of me. I am not a writer. I have no business talking about writing to anyone.”

Reading this reflection, one could imagine the narrator was a nervous student, shaken by the idea of what to expect in a college English class. It was actually my initial thoughts heading in to my first official consultation as a peer writing tutor. With five weeks of theoretical training, observations of seasoned peer writing consultants, and hours of discussion, I should have been ready. But, my anxiety was through the roof. I began my internship with the writing center the same semester I took my first creative writing workshop, a fiction writing workshop. So, as a ‘newbie’ in both the creative writing and the writing center realms, I found myself in flux. Just dipping my toes in courses for my major emphasis, I questioned whether I had the capability to pursue a writing career. This, coupled with my increasing apprehension about my abilities as a writing tutor, manifested into nervous knots that left me visibly shaking in the back room of the writing center, reaching for my shiny new name badge.

What I was plagued by was writing apprehension. I was scared. Scared to talk to clients whose papers were sure to be stronger than anything I could write. Scared that they’d see right through my façade, or worse, could condemn my major, creative writer. In the three years I’ve been a peer writing tutor, I am still aware of my anxieties, but learned to be ever-mindful of what I’ve gained through multiple creative expressive writing courses; these creative expressive writing strategies are what shape my tutoring writing approach. I treat each client session as another opportunity to seek out new information—every session begins discovering context about the client. I ask about their major, which semester they are in, their week/weekend, and the course their current project is for all in an effort to benefit the writing development of each client. This information allows me to decipher what writing strategies might alleviate the client’s writing apprehension.
Venturing deeper into the rabbit-hole, I sought connections to how creative expressive writing has served as a way to curb my own writing and tutor apprehension. Wendy Bishop asserts that, “Before tutors can help apprehensive students, they must understand their own writing processes and, I would argue, the creative aspects of writing apprehension” (33). This new consciousness of my own fears about writing has motivated me to pursue research regarding perceived self-efficacy (PSE), or the perception of capability to accomplish a specific skill. Pajares (562) says that there are two ways of self-efficacy research. The first looks at the relationship of PSE levels to performance outcomes (i.e., grades), and the second type explores how PSE affects one’s learning development (qtd. in White 22). This study is structured to align with the second type of self-efficacy research. The writing center serves as a site for inquiry; it provides a reader’s perspective for writers, regardless of skill level. This student-centered approach offers writers the space to find opportunities for writing development, discuss revision strategies, and gain skill development. Exploring the impact of creative expressive writing in the writing center consultation through this lens of PSE, seeks to ensure that the focus of the writing center is for the writer (North). To narrow this lens even further, I seek to explore the client’s PSE in regard to their perceptions of writing capability. For the sake of this essay, I refer to this as perceived ‘writerly’ self-efficacy, or PWSE.

Curioser & Curiouser

I had been actively working as a peer writing tutor for over a year when I first learned about PWSE. In the fall of 2013, I worked with Karen¹, a biology undergraduate who was revising a lab report her instructor had “murdered” (student’s emphasis). The report was littered with red ink; at the top of the cover page were the words “Get help from the Writing Center and Resubmit” beside an oversized “D.” The instructor may or may not realize that this mark affected the student’s perception of writing capability. Regardless, this student—an honors student—looked at the writing center as a triage, a space filled with writing ‘masters’ that would fix her paper. She couldn’t see beyond the red comments. It wasn’t until we were midway through the hour-long session that the negativity melted away. The paper was well written and followed the conventions of a standard scientific lab report. Mostly, the comments and editing marks were due to a difference of opinion regarding the use of commas and semicolons. The kind of knowledge students would not gain until they submit work to the instructor.

The vibe in the session shifted even further once we reached her Discussion section. It revolved around the effect of displacement, why this animal’s habitat was integral to its livelihood, etc. She was lost, unable to see what she was missing. Her timidity, the physical shrinking of her body away from the table, was palpable. I felt her disengagement with the assignment as this aspect of the draft had her frozen in writing apprehension. It didn’t matter what I inquired about the topic, I was losing her. I opted to try a new tactic and asked her about her home back East (information I learned during the pre-textual conversation at the beginning of the session)—what specific features of that space, that town, contribute to the feeling she gets when she returns there on breaks. She lit up—the information was flowing out of her. As she dictated, I transcribed on her behalf a running list of the characteristics that were significant to her hometown.

Wanting to strike while the iron was hot, I encouraged her to set the lab report aside for a moment and asked her if she would be comfortable drafting out a scene using the features she’d ratted off. She was skeptical, but willing to “sketch a story about home.” I left the table while she composed. Those five minutes of writing was all she needed to spark her writing ‘groove.’ Together, we went over the narrative she sketched; we discussed the elements of scene, sensory detail, and place—that all derive from my background in creative writing—and she was able to articulate the impact these elements had on informing the audience about her subject, her home—I interjected with, “Wouldn’t this be considered your habitat?” A light bulb moment occurred; Karen beamed with realization.

After taking in the creative writing activity, we looked back at her lab report. She quickly created a new list on behalf of the animal she was studying. While the discussion section remained in a traditional lab report format, Karen transferred the details she recalled from her list, compared it to the narrative she crafted, and ultimately brought the reader into the animal’s relocated space, highlighting the major differences that were ultimately impacting the animal’s growth and development. When I articulated how confident Karen was in herself post-session to Shaun White, one of our graduate assistants, he mentioned that what it sounded like was perceived self-efficacy.

¹ All client names have been changed.
White was drafting his master’s thesis on the topic in regard to our tutor-training program and shared that with low PSE, writer’s tend to not only suffer from anxieties about the very idea of writing, but will shut down if confronted with some writing projects. Looking back, I know that the result of our consultation was a significant increase in Karen’s PWSE regarding her capability to communicate through writing. I don’t know if Karen would have left with the same level of confidence in her writing capability had I not encouraged the narrative fast-write. What I do know is that she loved the revision plan we constructed and looked forward to the idea of revising other areas of her paper. My perception of her PWSE was further compounded by Karen’s enthusiasm to bring in a draft for a literature course. She had stated during that first session that her writing in the sciences “sucked,” and that she’d been procrastinating on her literature paper.

This turnaround in Karen’s PSE was the inspiration for this study. Through subsequent observations of writing center consultations I began to see that creative expressive writing had a great deal of potential as a tool for revision—our main topic of conversation in the writing center. However, I wanted to formally inquire into this further. I wanted to explore using more case studies, to document more sessions. This evolved into a proposed and approved Summer Research Fellowship the following summer. While Karen was the inspiration in my preliminary research, I found that there is much scholarship supporting how creative expressive writing holds potential when used for critical reflection, which could benefit both tutor and client.

By melding existing writing center theory and practice with that of creative writing studies, clients may experience a tutoring session that encompasses each of the three main learning styles—visual, audible, and tactile—which could aid in a more individualized, yet collaborative learning experience. This understanding then, naturally, leads to the development and/or increase in the client’s perception of their capability to communicate through writing. In this essay, this is defined as perceived ‘writerly’ self-efficacy (PWSE). I say writerly because the writing center mission statement is to maintain a student-centered approach. The suffix ‘-ly’ shifts the word writer from noun to adjective, ‘like’ a writer or the characteristic of a writer—whereas ‘writing’ connotes a product-centered focus whether it’s seen as a noun (written product) or verb (process of inscribing). The intent behind encouraging the client to engage in creative expressive writing during the writing consultation is to maintain a focus on the process of learning, therefore the development of the writer.

Drawing on my experience with creative writing, I used a series of consultations to introduce creative expressive writing. I was attempting to use cognitive scaffolding, hoping to influence the clients’ PWSE. By offering the writer a PSE-building activity using expressive writing, I hoped to show that these approaches give the client a feeling of agency. Additionally, I hoped to demonstrate that one critical way writing center consultants can encourage/develop better writers is through expressive and reflective writing practices. Meaning, creative expressive writing can make the purpose of the writing center more transparent to both the client and the tutor, by encouraging positive PWSE in both the tutor and the client. This PWSE development not only allows for both the tutor and client to overcome writing apprehension, but potentially enriches their disciplinary writing process, which also could extend beyond academia. This practice potentially opens the student’s mind to what it would look like to actively participate within their field of emphasis—Nurses communicating with writing at an International Medical Conference, Engineers proposing the latest in Self-Sustaining Urban Development.

**Literature Review**

To better understand the context of my research, the following is a general breakdown of key terms, background information, and exigencies for the research I conducted these past two years.

*Creative expressive writing.* Writing scholar James Britton identifies the three styles of writing discourse as expressive, transactional, and poetic (*Language* 176). Most disciplines outside of the arts and humanities are familiar with what is referred to as transactional discourse, where students are active, but perhaps less engaged with the genre of writing produced (such as an informational report or cover letter).

Expressive discourse is a more organic, more natural form, resembling how humans communicate (Britton, *Language* 177). Expressive discourse—fast-writing, journaling, and critical reflection via the personal essay—are often utilized in English 101/102 and composition courses. Britton states, “Expressive language is associated with a relationship of mutual trust, and is therefore a form of discourse that encourages us to take risks, to try out ideas we are not sure of, in a way we would not dare to do in, say, making a public speech. In other words, expressive language favors exploration, discovery, and learning” (83). Students exposed to more opportunities to engage with expressive writing are also flexing their inquiry muscles, questioning ideas within their discipline, etc.
Poetic discourse, or creative writing, demands more active engagement from the writer. It is asking them to make something with language. The working knowledge of the conventions of different creative genres places the writer in the position of creator, audience, and spectator—forcing writers to think critically about how they can shape their knowledge of their discourse and show readers how they see themselves interacting within their field of expertise.

For the sake of this essay, I have combined poetic and expressive discourse into ‘creative expressive writing.’ There were two reasons for this. First, the nature of the standard writing center consultation is such that I needed a phrase that referred to the low-stakes writing strategies I imposed in the consultations generally. This way, the activity could draw from one or both discourses. Second, shaping one’s knowledge of expressive to the more formal poetic discourse is where the most critical thinking may actually occur. John C. Bean identifies critical thinking as “interaction with a problem, identification and critique of assumptions, and a dialogic interchange with the ideas of others” (2-3). Britton argues that the techniques derived from creative writing changes how students share their understanding of course content, “yielding new perceptions of experience and the necessary distance for the individual involved in the self-examination of values” (83). As a result of this melding style of tutoring, students may be more likely to have the strength to overcome their writing apprehension. And by extension, may develop their disciplinary writing on a deeper level by drafting through different writing approaches.

To gain more insight into integrated creative expressive writing into the writing center consultation, I sought more research about scholars who have successfully used creative and/or expressive writing within the classroom. Without the knowledge and guided practice of expressive/poetic writing, even in low-stakes writing activities, students are less likely to gain a full contextual understanding of writing within their discipline. There is much scholarship that supports crossing disciplinary boundaries through the use of all three writing discourses. Alexandria Peary considers Creative Writing across the Curriculum (CWAC) assignments to be the “continuum between expressive and poetic discourse” (65). Assigned tasks included writing that used plot development, dialogue, and scene in order to immerse students within a fictional realm that resembled their ideas of professional life within their fields. Peary says, “Working toward more formal creative writing affords benefits to learning” (66). Meaning, assignments that asked students to create fictionalized narratives of their selves working in their disciplines provokes thought on both a personal and social level. Students are asked to think critically about how to transfer their knowledge of discipline-specific content with the writing techniques built throughout their academic journey. This idea of ‘transfer’ is what writing scholar Elizabeth Wardle calls “fostering agency” (1). Fostering agency is where poetic discourse comes in. It is feasible that creative writing assignments can be used across the curriculum for the promotion of discipline-specific learning.

Art Young says that he assigns creative writing to students from a variety of disciplines, such as science, business, and engineering majors, all within the context of a literature course. He uses this pedagogical approach to demonstrate that creative writing should not be limited to literature courses but instead can be “tailored to the content of courses from across the curriculum” (“Considering” 87-88). Through creative writing, students are provided the opportunity to adopt alternative points-of-view, give consideration to context, and search for multiple possible outcomes, or conclusions. In actively bringing this practice into the writing center consultation, students are offered a safe, low-stakes space in which to develop their writing. Thus, develop their perception of self as an academic writer.

When describing the application of creative expressive writing for an Abnormal Psychology class, Patricia Conner-Greene, et. al states that “writing a poem is an exercise in problem finding, a skill essential to creative work in both the arts and sciences” (“Poetry” 215). Another example comes from Patrick Bahls, who develops poetry assignments in mathematics both for general education courses and courses taken by math majors. The shift in discourse offers students alternative ways to explore math in personal and jargon-free ways. As a result, “general education students gain the comfort of using genres familiar to them from the qualitative work of their majors, and undergrad math majors gain the confidence that may persuade them to continue with the major” (Student Writing 120; “Math and Metaphor” 76-79).

Creative expressive writing via poetic discourse could provide the solid foundation, or a stronger sense of PWSE, students need in order to overcome writing apprehension. Each of these examples of immersion writing is extensive and fits appropriately within the time constraints of a classroom. But, many offer inspiration to draw from for the sake of the client’s development needs in a writing center consultation. They illustrate how integrating creative expressive writing strategies in the writing center may allow students the opportunity to better adapt to their discourse communities. In doing so, their PWSE could be further developed as they foster and develop agency through their engagement within the writing center.
**Perceived self-efficacy.** Considered an extension of social cognitive theory, Albert Bandura (1993) defines perceived self-efficacy (PSE) as “one’s belief in one’s ability to succeed in specific situations” (130). In other words, self-efficacy relates to the individuals’ beliefs and personal judgments about their abilities to perform at certain levels and affects their choice of activities, effort, and performance. Bandura highlights how motivation and persistence are factors that aid in PSE that connect to cognitive development and functioning. Psychologists Gist and Mitchell add, “self-efficacy is an internalized construct which can be learned and developed over time through a synthesis of consistent self-evaluation, coaching, and repeated practice” (qtd. in Lavelle 470). There are four sources of PSE that speak to writerly processes:

- mastery experiences
- vicarious learning
- reduction in stress reaction and negative emotions
- social persuasion

The writing center serves as a prime example of a site for inquiry where coaching, self-evaluation, and repeated practice are inherent. Tutors are offering peer writers an opportunity to broaden one’s perspective beyond performance evaluation to include more positive beliefs about one’s future writing. In offering additional strategies through low-stakes creative expressive writing and in a space the client feels safe, like the writing center, writing tutors are essentially tackling all four sources of PWSE during the session; I am suggesting that in persuading clients to engage in low-stakes creative expressive writing during their consultation, tutors are providing an avenue for clients to gain insight into their PSE that they may not have discovered otherwise.

Likewise, the tutor’s use of creative expressive writing, by way of critical reflection, allows them to examine their motivations as a writing tutor—offering tutors a means to actively engage with their professional development, their tutorly PSE. Meaning, there is an opportunity through using creative expressive writing in a more transparent and applicable sense that could benefit both the tutor and the client. According to recent research that expands on Bandura’s theories to discuss PSE, writing, and motivation (Hidi and Boscolo; Pajares and Valiente; Boscolo and Hidi; Zimmerman and Kitsantas), motivation influences and is influenced by three major components—interest in the writing task, self-efficacy concerning successfully completing the task, and the ability to self-regulate performance. In focusing on PSE in the context of the writing center consultation, this research is choosing to focus on the process of learning as opposed to the acquiring of new skills.

Simply put, PSE is the ability to face one’s writing apprehension and use it for one’s benefit—for good rather than evil. Often writers will allow their apprehension to sabotage their development, resulting in poorly crafted drafts, even lower self-worth with regard to writing, and a lingering fear of future writing projects. PWSE is gained by developing a higher perception of writerly self-efficacy, their perceived confidence in their selves as writers within their disciplines. Recent research (Schmidt and Alexander, 2013) attempts to measure the effect of the post-secondary writing center on PWSE. Schmidt and Alexander argue that the primary factor enabling writing centers to forge better writers is, in fact, PWSE. They say, “Writing centers are increasing student-writers’ beliefs about what and how they can perform as writers, which is being introduced in this study as perceived writerly self-efficacy” (1). This is why I opted to include PWSE as a lens for my own research.

With a student-centered approach, I have to address the fact that, within the writing center consultations, there are actually two writers involved. Both tutor and client constitute “writers” and so both perspectives must be accounted for. In order to demonstrate how writing center consultations are focused on supporting positive PSE, it is critical to explore not only the interaction between tutor and client, but it is also critical to explore the experience of the tutor. Therefore, this essay explores the ways a consultant can support PSE through expressive and creative writing practices.

**Motivation and persistence through cognitive scaffolding.** From the first day of training, tutors recognize that improving writing skills is something that requires effort over time. Motivation—the drive to actively invest in sustained effort toward a goal—is essential for writing improvement (Mackiewicz & Thompson). A concern for many writing tutors is the problem of limited time to encourage motivation. There’s no way of knowing whether the client will maintain motivation to persist with their revision plan once they leave the writing center. Mackiewicz and Thompson point out that “tutors must work to develop and maintain students’ motivation to participate actively during the brief time (30-60 minutes) they are collaborating in the writing center consultation” (38-39). Though creative expressive writing activities, tutors may encourage motivation by showcasing a different way to articulate through writing. With help from PSE theorists Pajares and Valiente, Mackiewicz and Thompson point out that PSE can be influenced through tutors identifying client successes, allowing the client to make a connection through their efforts (45).
In the case of the writing center, scaffolding refers to “tutoring strategies used to support the students’ efforts to decide on topics and revisions of existing drafts. According to Jennifer G. Gromley and Roger Azvedo, motivational scaffolding is the feedback tutors provide to promote student’s active participation in writing center consultations” (qtd. in Mackiewicz and Thompson 39). To summarize, scaffolding generally looks like the following: one-to-one tutoring, where the tutor structures the task—motivates the client to participate in the task, and sometimes performs those parts of the task the student cannot perform, allowing the client to concentrate on what he or she can do (Mackiewicz & Thompson). In order for writing tutors to effectively support student-learning through scaffolding, tutors need to know how to accomplish the following:

- to make the writing task manageable for each individual student without oversimplifying the outcome
- to mutually define the goals and establish the agenda for the consultation
- to recruit students’ interest in writing tasks
- to encourage students’ persistence and effort in completing the tasks
- to attend to the students’ motivation and active participation
- and to minimize students’ frustration and anxiety during the consultation (46)

This is what my study was inspired to do. It could bridge a gap in scaffolding research by exploring whether the creative expressive writing activities could be used as scaffolding—through an authentic connection, rapport and solidarity, between client and tutor.

Because scaffolding in the writing center can influence solidarity and rapport with students, while guaranteeing in-the-moment success as long as the tutor is present, writing strategies undertaken in the consultation should be less frustrating, less anxiety-provoking, and “less dangerous” (Wood, Bruner, and Ross 98). Unfortunately, Mackiewicz and Thompson point out that only a few studies of scaffolding in the writing center consultation have been published, but they don’t discount scaffolding as a feasible avenue to pursue. They say, “Its potential for understanding and improving writing center tutoring is largely untapped” (46). What I am suggesting through my research experience is that integrating more creative expressive writing activities among our traditional tutoring approach may offer more in the way of motivational scaffolding research in the writing center. While this is one method tutors could utilize, the act of writing during each tutoring session develops the learning of each participant—the client seeking out more writing development, as well as the tutor providing the necessary feedback and information during the session.

Writing apprehension. Bishop (1989) also asserts that as writing center workers focus on writer’s apprehension, they should also consider the tutor’s apprehensions about working with such writers. Utilizing the Daly-Miller Writing Apprehension Scale, she demonstrates how students with high apprehension tend to have less control over usage and written conventions and typically write shorter, less complete pieces, especially personal narratives. Bishop argues that in order for student tutors to help the apprehensive writer, they too must understand their own writing processes and the “creative aspects of writing apprehension” (34). This helps to ensure that tutors are process-oriented rather than product-oriented for the sake of the client and the purpose of the writing center. Bishop argues that because of the tutor’s awareness of the writing apprehension, or an understanding of how to effectively use one’s anxieties about writing, tutors are prepared to offer their client’s successful strategies with which to promote development of the writer. Therefore, Bishop emphasizes the importance of awareness and ongoing development of PWSE for the sake of the tutors as well.

Writing apprehension linked to low PSE is one of the largest contributors to the need for a student-centric tutoring approach. In shifting the focus toward alleviating writing apprehension through active participation, the clients gain more confidence because of the nature of tactile learning. Additionally, critical reflection through writing for both the client and the tutor during the final moments of the session gives each some food for thought. Perhaps the client considers how they might take what they learned in the session for further revisions, or locks it away for future reference. Either way, there is potential that the active engagement through creative expressive writing has the ability to foster agency in the writing center; this is a factor I hadn’t considered as there is a gap in research in this regard. Peary’s research on this very subject in the disciplines touches on the potential of creative writing to fostering agency over time in the classroom setting, but the issue of time is a constraint tutors in the writing center face. Based on these outcomes, however, it may be beneficial to inquire into this further.

What is striking about Bishop’s claims regarding the importance of tutors and their awareness of their own writing apprehension are her connections to PWSE. Her claims force tutors of writing to address their own concerns pertaining to working with writers from across the curriculum. For me, one of the more significant concerns I had as a new writing consultant stemmed from the need to validate creative writing as an academic emphasis. More specifically, I felt challenged to make it more transparent to STEM majors that creative expressive writing would be
of great benefit to their discipline-specific writing. In an effort to creatively approach my apprehensions, I reflected on my own writing process. What I found was that I gravitate toward expressive and creative writing. I look at how to tell a story to my audience; I consider what the audience needs to know about the main topic, what details are needed to paint a clear scene of this context. Once I can see an unbiased picture on the page, I am able to pick apart the sort-of story elements and transfer the narrative to suit the assignment at hand. In so doing, my process lends to the argument that actively engaging through creative expressive writing in the writing center—either through reflective, expressive writing about the drafting process, fast-writing, listing, drafting using low-stakes narrative prompts, etc.—serves as another option tutors can look at to help clients to develop a stronger perception of themselves as writers.

**Provocative revision through creative expressive writing.** One of the primary conventions of creative writing pedagogy is an intensive focus on revision. Composition scholar and writing center Director Dr. Toby Fulwiler points out that for novice writers, learning to re-write is “an alien activity that doesn’t come easily” (190). His approach to teaching post-secondary composition mimics that of the creative writing workshop. When it comes to revision, he says “revision is the primary way that both thinking and writing, mature, and improve […] I not only encourage it, I provoke it, emphasizing where, when, and how to do it, while going to great lengths to ensure the writing is the writer’s own” (190). Within my first year as a writing center tutor, I crafted an approach to addressing multiple needs for clients using creative expressive writing prompts for clients to respond to. The response was very positive. By individualizing each session through these writing activities, my rapport with the clients improved, and I’ve witnessed their PWSE improve. For those I’ve worked with multiple times, they have expressed how they have found ways to transfer what they learned from our previous interactions to address new writing projects outside of their English composition courses. The initial outcome of this approach boosted my own perception of capability, my ‘tutorly’ PSE. This boost was the motivation to develop this research project.

Fulwiler implants the general methodology in outlining the four major revision approaches that are considered High Order Concerns—Limiting, Adding, Switch, and Transforming. Limiting refers to the common writing concern of overgeneralization where specific concrete detail is warranted. Adding addresses the issue of including more—more detail, more research, more analysis, etc. For switching, writers consider the value in shifting the overall voice of the piece, to see the writing from a whole other perspective. For example, switching from a third-person passive voice (common STEM-driven writing) to first-person active voice, or perhaps changing the point-of-view to a different person all together. Transforming refers to looking at the piece through a completely new genre, or stylistic approach, of writing (like transforming a research analysis into a presentation; a story into a haiku; a topic sentence into a tweet). These areas are primarily what the creative expressive writing activities in this study addressed.

There are many expressive/poetic writing exercises that draw from each of these categories. The experience one has in actively engaging in writing poetically (e.g., fictional scene building, poetry, character development) could enhance one’s academic writing because of one’s increased perception of writerly self-efficacy. Activities from expressive discourse include free-writing, personal narratives, journaling, etc.

**Creative approaches to writing center theory/practice.** Writing Center (WC) pedagogy relies heavily on composition and rhetoric pedagogy to develop new peer writing tutors/consultants; however, it only takes a few minutes in a writing center space to see and hear a multitude of interdisciplinary pedagogical approaches at play. Peter Carino (1995) claims that no single “political, pedagogical, or theoretical, relationship exists collectively between writing centers and writing programs, for every relationship varies by local context.” Wendy Bishop (1990) pushes for a theory that offers students the opportunity to consume writing from both creative and academic realms to emulate consumption and production through embodying the conventions of the authors. She questions why there has to be separation in writing when both work so beautifully together (123-24). If the writing center is truly the intermediary “space” that can bridge the gap between how students communicate naturally (expressive) and the classroom expectation (transactional), then creative expressive writing can be seen as the possible conduit with which both tutors and clients can grow and develop their PWSE.

With the mission of the writing center to develop the writer and not simply the writing (North 1984), approaches to revision play a significant role in their consultations and discussions (Bean, 1996; Bishop, 1989; Clark, 1999; Fulwiler, 1992; Geller, Eudice, Condon, Carroll, & Bouqet, 2007). Fulwiler’s suggestions for transferring writing are beneficial for students who anticipate presenting their academic writing in multiple formats—such as a written proposal and a digital media presentation. Scientists are often publishing study findings, but also are expected to share their knowledge with the general public via interview or mass media publication.
Students who actively practice writing in these conventions may develop mindfulness about their audience that can influence the effectiveness of their academic writing. Fulwiler’s claims and specific suggestions for revision support the key component of this research as he demonstrates the value of creative writing in academia.

**We’re All Mad Here**

My inquiry is motivated by the following question: How can active participation through low-stakes creative/expressive writing during the consultation help writers develop motivation and persistence that ultimately impacts PWSE?

Thus, comes the method to my madness. I performed the following tasks to determine the impact of fusing creative expressive writing strategies with writing center praxis to explore PWSE development:

**Task 1. Utilize a case-study observational approach to document PWSE development in the writing center consultation.** The pre-textual conversation is where tutors elicit information about the writer directly from the writer. In line with writing center praxis, the pre-textual conversation is vital in matching the appropriate creative expressive writing activity to the clients and their writerly needs. This conversation (3-5 minutes) allowed me to discover nuanced detail about the client—demographics (personal and academic), their thoughts about the writing process, assignment requirements, classroom experience, and the amount of feedback they’ve received thus far for this project, among other details.

I collected field notes and chronicled my study data, opting for a case-study approach for each participant’s writing center consultation. Under IRB Protocol, these case studies asked for voluntary participation. Informed consent was verbal, and each willing participant was provided a copy of the proposed study, its purpose, and the option for anonymity regarding all aspects of their participation.

I listened for emotional triggers using indicators inspired by the Daly-Miller (1995) Writing Apprehension Test. Triggers included the following expressions voiced by the participant:

- I avoid writing
- I am afraid of writing graded essay drafts
- Expressing myself through writing is a waste of time
- My mind goes blank when I try to write down my thoughts or ideas
- I am nervous about writing
- I knew I was going to fail when there was writing involved
- When I hand in an essay, I know I will do poorly
- I have a terrible time organizing my ideas on paper
- I don’t think I write as well as other people
- I don’t like my writing to be evaluated
- I am not good at writing

**Task 2. Document the suggested use of creative expressive writing activities intended to help develop PWSE and combat writing apprehension within the context of each writing center consultation.** Additional field notes included a checklist of revision topics categorized using Fulwiler’s scholarship regarding provocative revision that addresses four main areas of content-related revision concerns. This checklist, dubbed, “The Tutor’s Toolkit,” helped to set the agenda of each consultation. The revision concerns addressed during each consultation categorized according to the following:

- Limiting
- Adding
- Switching
- Transforming
- Other

The checklist also allowed me to catalog both the writing activities practiced during each writing consultation drawn from the previously mentioned ‘provocative revision’ and the agreed upon plan for revision at the close each consultation.
Task 3. Research client attitudes toward their PWSE. To determine if an improvement of writerly self-efficacy is affected by expressive/poetic writing activities, an additional variable will be provided following each consultation that is facilitated by the researcher. I provided an online survey through Google Forms. The survey was provided online through Google Forms and specifically addressed the writing activities used during the session and specifically measured the client’s perception of capability as a result of actively participating in these exercises using a Likert Scale.

Task 4. Critically reflect on each participant’s writing center consultation. Qualitative data regarding post-session reflection was documented through field notes I took after each consultation. Specific questions, adapted from Gillespie and Lerner’s *The Allen-Bacon Guide to Peer Tutoring* (2000), were used for each reflection, and organized and expanded on by way of a blog. I cross-referenced the documented case study material to further inform my reflections. The intentions of the blog were to connect the dots from theory to practice, from internal construct to performance assessment. The following are the specific questions I used to direct each post-session critical reflection:

1. What type of consulting took place—was I directive or more collaborative with the client?
2. Do I feel like we established a good rapport?
3. Can I see myself working with this client again? Did the client ask about scheduling a follow-up visit?
4. Did the client ask me questions about their own text?
5. Did I encourage positive aspects of the client’s work?
6. Did we discuss issues not directly related to their paper?
7. Did digressive conversation help our mutual understanding of the assignment at hand?
8. How did I respond to the client’s attitudes? Did I feel like I had to adjust my tone in order to work with them?
9. Did I feel as if the client expected something from me that I wasn’t prepared to offer (i.e., did the client expect me to edit and make all the corrections myself)? If so, how did I negotiate their expectations?
10. Were we able to spend a few minutes reviewing at the end of the session?
11. Did I suggest any follow-up strategies for the client?
12. What would I change or do differently about the session?

Follow the White Rabbit

The following section offers the overall results of the 10-day field study I conducted in the writing center over the summer of 2014. Included are statistical results.

Statistical Results of the 10-Day Study

- 8:9 session participants agreed to case-study observation
- 7:8 session participants engaged in creative expressive writing activities during the session
- 6:8 English 102 portfolio work
- 5:8 participants identified as International Student/ELL
- 4:4 ratio of male participants to female participants

Task 1. What insight did I gain from my observations, with regard to writing apprehension and PWSE development? Writing apprehension linked to low PSE is one of the largest factors that builds a wall between clients and writing center tutors. In shifting the focus toward alleviating writing apprehension through active participation, each participant—regardless of their level of PWSE—gained more confidence because of the nature of a more tactile learning environment as a result of their creative expressive writing activity.

The conflict of being “lost between languages” was a contributing factor I hadn’t thoughtfully considered before, with regard to developing this study. I was pleased that most of my participants wound up being non-native English speakers in some capacity. I find that this demonstrates the value of considering creative expressive writing as a means to help develop PWSE as it is not hindered by any cultural differences. On the contrary, these particular

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2 2:8 study participants returned a second time during the 10-day study and are counted twice.
participants seemed emboldened by the writing activities. They felt they had more control over their writing, as they continued to grow and develop as writers. In light of this perspective, it motivates me to pursue more inquiry among this thread of thought. Creative expressive writing, low-stakes of course, to approach ELL/ESL/international students is definitely worth pursuing further.

Task 2. What creative expressive writing strategies were proposed during each case study? What purpose did each strive to serve with regard to revision? The following is a breakdown of the creative expressive writing activities proposed and the corresponding revision concern each attempted to address:

CS1: First, Sarah opted to try a creative expressive listing exercise comparing the physical appearance and clothing customs of Iraqi women to women in the United States. Using this list, she was able to plug in specific details. To address awkward sentence phrasing, Sarah wanted to know if it was okay to have some of her native language included into the narrative. Sarah and I referred to the second activity as “Lost in Translation.” Meaning, sometimes sentence clarity was anything but clear when she tried to translate phrases from Arabic to English. She switched these awkward phrases back to Arabic and added sensory detail in English to help show readers specifics rather than tell them generalized detail.

CS2: Neal opted to try the “Tweeting Your Thesis” exercise to address vague, general, or otherwise wordy thesis statements and/or topic sentences for each paragraph in his essay draft. Initially, he opted to not engage in a creative expressive writing activity, but did keep a pencil in his hand to jump in and annotate missing articles as I read aloud to him. Reading aloud to him helped to naturally segue into discussions about wordiness, awkward phrasing, etc. I was able to sneak in an activity without him realizing it at first. I asked if he used Twitter. He said he ‘loved the Twitter’ because it made him ‘think hard about what he writes.’ I focused revisions then on trying to keep a dialogue via tweets: looking at his sentences individually to determine which were the most important phrases that got his points across the clearest. The creative expressive writing, and the connection to social media that Neal uses often, gave him a sense of even higher PWSE. He left saying that he was going to use Twitter to test out different thesis statements to make sure his friends understood what he was wanting to write about for his next essay.

CS3: Neal returned for a new project and opted for more hands-on grammar practice first. Then, participated in his own “Lost in Translation” activity to address some generalization and awkward phrasing concerns we found along the way. He also used free-writing to figure out if his draft was informative or argumentative. He also mentioned that he was ‘tweeting’ his sentences more often and really liked using that ‘trick’—his wife told him his stories are becoming less long-winded.

CS4: Sarah returned to discuss an argument essay draft. First, she wanted to address dropped articles throughout, but realized her opening paragraph was missing a clear thesis/claim. So, she free-wrote a list of images that came to mind when I said the phrase “cost of higher education.” The list served to address both limiting issues (sweeping generalizations) and adding—she constructed an outline of what needed more research as well as what specific topics she wanted to address for the sake of her argument. The last 20 minutes of her session, Sarah used the list again to craft a small narrative describing the diverse needs that motivate people to consider college and the consequences (positive and negative) of those decisions in today’s society.

CS5: Fred was frustrated about revising his review of an art exhibit. He initially was super aggressive and wanted me to tell him what to write (i.e., showing me a photograph he took of the exhibit and asking me how I would describe it, what meaning did I get, etc.). To help him structure his review, we reviewed the assignment requirements. With this framework, Fred was able to free-list specific characteristics that he felt suited each assignment requirement. These included adding sensory description—I prompted him by first asking him to close his eyes after he pulled up the art exhibit photo on the computer. Then asked, “What do you remember seeing? What stands out about this exhibit?” He admitted he was more into music and “not so much the visual art.” I suggested putting his reflection of his art experience into lyrics to help him find a way to engage with the material a little more. This motivated him to approach the writing process more positively. Fred was also receptive to the idea of drafting an introductory scene to help place the reader in the art museum and free-rapped who, what, where, when, and why as I scribbled the information he shared.

CS6: Erica wanted to address the issue of clarity in the draft of her literacy memoir. The draft suffered from a lack of focus—lots of filler about her friend throughout. First, Erica opted to engage with “cut n’ paste”—and moved these passages into a dedicated section of the draft. Second, she built a scene to emphasize these relevant moments and connect the individual memories to the topic of literacy development. She also enjoyed “tweeting” why this friend was pivotal to her writing development. In fact, Eric liked the “Tweet Your Thesis” activity so much that she attacked her draft, tightening sentences and/or removing them entirely. Near the close of her session, Erica
disclosed that she loved poetry. So, for her revision plan, I suggested that she think about the specific elements necessary to construct a haiku to help her to cut the extra and focus on relevant details.

CS7: Susan wished to address issues of organization, grammar, and meeting assignment requirements. The reflective essay revolved around identity. The opening of the draft was particularly broad in scope—how children inherit the sins of their parents. The majority theme of the draft was about the dichotomy between who is impacted by male/female behavior. To help address the generalized language, Susan opted to engage in sketching mini-narrative scenes, each from her perspective, but at specific ages. For all three scenes, I prompted her by asking what she saw, heard, felt. To help narrow the focus, she free-wrote about how she hoped to connect to the reader. I prompted her by asking what the essay is really about. The draft lacked the reflection aspect of the assignment. To help add this aspect, more free-writing was prompted after each paragraph. I asked Susan to look back on those moments as her present self. Did she feel the same way? What was she doing, specifically, to ‘break the chains?’ She free-listed about both the impact of her father on her and on her family and her relationship with her husband.

Task 3. What were the results of the PWSE-inspired survey? What were the observed attitudes regarding client PWSE? The results of the post-session PWSE survey proved to be inconclusive. Only one of the eight study participants agreed to take the survey. The number of participants and abbreviated amount of time devoted to field research severely limited this aspect of the study. That said, I don’t think that the lack of participation in the PWSE survey had any bearing on the validity of my research study given the demonstrated increase in PWSE reflected in each study participant’s demeanor when he or she left the writing center.

Seven of the eight study participants each displayed high levels of writing apprehension at the onset of their consultations. Many sat across from me, shoulders hunched, as if they were physically afraid to be near the ‘dreaded draft.’ What was interesting was the behavior of one participant in particular. Neal identified as the only non-traditional student participant, due to his age. He also identified as an international student. While his English was somewhat limited, he came into his consultation intending to face his fears about not coming across as “a fool.” He was aware of his grammatical ‘issues.’ However, he wasn’t letting any dropped articles or awkwardly translated phrasing get him down. He was excited to face what I have often observed to be a vulnerability reflected in the eyes of many international/ESL/ELL clients. He was smiling, even laughing upon leaving the writing center, as were the rest of the participants. The seven participants that initially were demonstrably anxious about talking about their drafts progressively engaged with me the longer we talked. None of the participants left with what might be considered an inflated perception of their writing capability. Each exited their consultations with a more positive mindset. All articulated their endorsement of creative expressive writing through phrases such as crafting; sketching; demon-writing (aka free-writing); telling stories; and listing. All were happy with their mutually agreed upon revision plan.

The most telling aspect of my field observations was that two participants returned the following week to discuss revisions and talk about new writing projects. One was Neal, mentioned before. The other was Sarah (Case Study One). Each arrived early for their second appointments, engaging with the summer staff, whereas each was cordial, yet quiet prior to their first sessions. Neal was joking with me, nudging me with his elbow. He was more than happy—jolly to be back in the writing center.

In Sarah’s second consultation, she was extremely engaged—full of questions about how to craft an argument. The timid, downtrodden client from the week before was gone. Like Neal, she kept a pencil in her hand the entire hour, creating lists in the margins of her drafts, posing questions above each paragraph in an effort to perform a reverse outline for herself. She was proactive in wanting to articulate what her revision plan was, for when she got home. She knew it was going to be a few hours before she could revisit the draft, so she repeated her plan a few times as I scribed it onto her client revision plan sheet that we offer every client at the end of their consultations. She nearly skipped out of the writing center with her four-page argument draft, the back-side of one page loaded in her swirlily-scripted free-write list of things that came to mind when I said the phrase, “cost of higher education.” For 20 minutes at the end of the session, Sarah drafted a new narrative built from the list she’d made. This filled up the other two pages of her draft-backs. Both Neal and Sarah articulated that they felt more in-control of their writing process. I asked if they felt like I was manipulating their style. But each felt that by using prompts to help spark ideas, it was the act of writing during the session that helped the ideas “stick.” Neal mentioned that he would remember the writing part the session, and that would help him to remember what we talked about. I think that this speaks to the impact that creative expressive writing could have on developing PWSE in the writing center.
Task 4. What insight did I gain through critical reflection immediately following each field study-related consultation? What, if any, insight was attained through narrative reflection (i.e., drafting and revising research data to transform into a polished journal article)? Narrative reflection. Critical reflection through creative expressive writing during the final moments of each consultation gave both participants, me and the client, some food for thought. Perhaps the client considered how they might take what they learned in the consultation for further revisions, or locked it away for future reference. Either way, there’s potential that active engagement through creative expressive writing has the ability to foster agency in the writing center. This potentially fills a gap in scaffolding research that is certainly worth researching further.

When I consider Peary’s research of creative writing and the potential it has on fostering agency in the composition classroom, I can’t help but wonder if the issue of time is truly a constraint anymore in the writing center. Granted, my research is somewhat skewed by the fact that two of my participants returned. There’s no telling whether my clients fostered agency unless I see them again, meaning multiple experiences in the writing center over time. The idea of agency is another avenue worth exploring.

It is nearly one year since I proposed my research fellowship. It’s been surreal to continue deep, critical reflection on my research, and on the processes I chose, in an effort to develop a tutor narrative for publication. Going through the writing process of this tutor’s narrative, I am even more convinced of the positive influence creative expressive writing can have on developing both writerly and tutorly PSE. Mindfulness of potential writing activities that could benefit the client gives me a more innate need to reflect on my tutoring experiences, even today. The caveat to this is to allow tutors in the writing center to find their ‘right-fit’ in regard to reflection style. I will freely admit that I much prefer a Luddite-style of reflection, good old pen and paper versus a blog. I believe that my preference is skewed by my choice in approach. I opted to not face vulnerability online. Instead, I leaned on a structured reflection, carefully crafted from notes I chose not to publish online until they were drafted and revised into coherent renditions of the consultations.

The blog is a great option to format reflective practice and share thoughts openly and organically. Patrick Bizzaro (2009) suggests that this approach to researching writing—through the act of writing itself—can be described as writing “from the inside out” (265). This ethnographic approach to writing research, proposed and initiated by Bishop (1999) served as a foundation for my concept of narrative reflection. She was articulating ideas with regard to developing writing instruction, not peer tutoring strategies. That said, I felt that incorporating a blog would allow me to maintain a sense of accountability. Unfortunately, my choice in using a formal reflective practice was a bit stiff, constrained, and ultimately limiting.

I find that the format I chose is especially dry. It is interesting that little to no creative expressive writing was utilized on the blog, only in my chicken-scratch field notes. To be honest, my apprehension about being a new writing researcher blinded my focus in this regard. I should have taken my own advice leading to my own writing apprehension. My choice to approach reflection in this manner is also worth investigating further.

In regard to the process I’ve experienced with transferring my research into a published article, expressive and creative approaches to segments of this essay have been more fruitful. I’ve had months of writing, reflection, and more writing in an effort to mold my findings into a narrative that conveys the effect creative expressive writing has had on me and my study participants. This is reflective of how I feel the writing center experience has been for me. At the same time, I’ve discovered elements of Greek rhetoric, specifically metanoia and Kairos during the latter half of my research experience that I wished I’d learned much earlier. My basic understanding of Kairos alludes to the significance of action at a specific moment in time. For the sake of this research, I can’t help but wonder about the significance of me, researching creative expressive writing as a developmental strategy for writers during a writing center consultation, at this moment in time. As far as metanoia is concerned, I have been mindful of reflection on my failures as well as successes in this research process and look forward to diving even deeper into critical reflection through this lens of Greek rhetoric once I have my bearings of the subject.

Through the Looking Glass

How can active participation through low-stakes creative/expressive writing during the consultation help writers develop motivation and persistence that ultimately impacts PWSE? This research expands on the idea that creative writing in the disciplines allows course material to become a vivid detail, part of a tricky plot, to be molded and fused and passed around by complex characters—all of which becomes part
of a complex critical act of asking, “what if?” Therefore I ask, “Why not the writing center?” Integrating creative expressive writing in the writing center consultation serves as a testing ground for students to try out writing strategies that they can, then, transfer to accomplish various writing projects. Additionally, the critical thinking skills provided by poetic discourse gives them a more contextual understanding of what today’s professional climate is expecting from individuals transitioning from student to professional.

Through this research I suggest creative expressive writing become more transparent writing center praxis. Offering clients prompts to write toward during their session offers the writers (both the client and consultant) a way to actively and thoughtfully build PSE, which, in turn, improves writing. Granted, this development of agency occurs over time, but planting the seed through creative expressive writing is a viable method. I am motivated, however, to researching PSE further within the context of the writing center. Developing a measurement scale to assess the use of creative expressive writing requires significant critical thought and the aid of scholars from sociology, psychology, among others—warranting further inquiry.

From the tutor’s perspective, my motivation to continue encouraging the use of creative expressive writing for writing development is directly connected to the positive reaction my clients share. Seeing people get excited about writing definitely carries weight in my overall tutorly PSE. Of the sessions I observed, I was most surprised by the overwhelming changes in demeanor expressed by the international student participants. As five out of six participants identified themselves as international students, I feel this exposes a significant opportunity for consultants to capitalize on and warrants further inquiry. For example, one of these participants struggled with clarifying his thesis statement/purpose statements in each paragraph. He was so pleased with the ‘tweet my thesis/purpose statement’ exercise that he returned a week later to “learn more through creative eyes.” Based on the physical and emotional response of the clients, the results affirm the idea that low-stakes creative expressive writing during the consultation is one effective approach writing center consultants can utilize, not only for the sake of the client, but for the tutor’s own sake as well.

Ongoing reflective practice has been part of our writing center training for some time. There is always the fear that over time, writing center tutors may become complacent in their roles—the end-of-semester rush of students requesting last-minute consultations, the tutor’s own course load bearing down on them, maybe they’ve been following the same lock-step session routine to the point that they could do it in their sleep. Once their tenure with the writing center ends, tutors can reflect back on the experience, and most find it rewarding. With the addition of active critical reflection, I feel that the value of tutoring writing has become more transparent to me. Engaging in critical thought in this manner forced me out of my comfort zone. I was motivated to remain centered on the needs of the client and ever mindful of how my engagement with them could impact their overall PWSE. It may not be a suitable course of action for every writing center tutor—but I do feel that should a tutor opt to utilize more formal reflection (blogging, journaling, perhaps a weekly roundtable meeting among all tutors) in their writing center experience, complacency may be less likely to occur. Additionally, this practice offers insight that proves invaluable to the tutor while in the moment—versus simply in retrospect—allowing for self-directed ongoing professional development that may be easier to transfer to incoming tutors. The value of ongoing critical reflection, specifically of how it impacts the tutor—while actively tutoring writing—is worth exploring further.

In regard to using creative expressive writing, with respect to critical reflection, I feel that I ended up with more questions than answers. The process of narrative inquiry and critical reflection by way of creative/expressive writing seems to remain at the forefront of my interests. Having just stumbled upon the idea of Kairos, metanoia, and phronesis—I am seeing a correlation among Greek rhetoric with my writing center consultation approach more than ever. As Alice eventually found her way back home, she also found her way back to Wonderland. I, too, hope to eventually offer even more insight into the significance of reflecting on these everyday situations through a more rhetorical lens. What would be even curiourser, would be to share on-going conversation with others in regard to transparency of creative expressive writing in the writing center. I guess that will have to be another story.

Acknowledgements

I’ve been asked frequently about my choice to structure my essay after allusions to Lewis Carroll’s Alice in Wonderland. There are two reasons. First, Carroll’s protagonist demonstrates curiosity better than just about any other literary character. I identify with her, embrace her excitement and her frustration in making logic out of what appears to be utter nonsense. As a creative writing, liberal arts major surrounded by STEM-driven scholars, I often felt I fell down a well rather than a rabbit-hole. But, Alice learned to apply her perspective with the guidance of her newfound friends. Much like I have. My cohort of McNair Scholars has been there from day one, putting up with my nonsense these past two years, and I couldn’t ask for a more understanding, insightful, or passionate group of
colleagues. Thank you for being my guinea pigs and dipping your toes into more creative expressive writing as I sought activities to bring into my formal consultations.

Secondly, I couldn’t have utilized my method of inquiry without the mentorship of Dr. Bruce Ballenger. As the pioneer of the Curious Writer textbook series, I wanted to take a page from a scholar I am humbled to have had the opportunity to work so closely with. He has been immeasurably supportive, forced me to challenge myself, to remain steadfast to an inquiry-based research approach. To him I will forever be grateful.

To Josh, Raegan, and Cooper. You all have sacrificed so much time to allow me to grow as a scholar. Thank you for your continued support. This has always been for you.
References


Appendix A

The following section offers one expanded narrative from Case Study One. I chose to share this narrative, versus an exhaustive rendition of each consultation narrative for the sake of brevity. For those interested, additional case study narratives and post-session reflections are available via my study blog-sight, www.downthewritingcenterrabbithole.blogspot.com.

Case Study One: Sarah

During our pre-textual conversation, I learned Sarah was a health sciences major, with a goal of becoming a surgeon. Sarah warmed up the longer she talked about her major; her eyes brightened when talking briefly about human anatomy and physiology. When I asked her about what motivated her to choose medicine, Sarah revealed she was an international student, born in Iraq, but immigrated to Syria when she was six years-old.

“There are few female surgeons in Iraq, but those that are, are highly respected,” she said.

Sensing that Sarah was comfortable, I transitioned over to the English class, asking her about writing—specifically writing in English. She offered that she is a “nervous writer,” but that it wasn’t that writing in English caused her anxiety (“It is difficult, yes, but manageable.”). Being in the United States for the past five years, she’d lost most of her native tongue, Arabic. Therefore, some of the choices she’d like to make with regard to her assignment—reflecting on memory—are even more difficult because she felt lost between two languages. The personal essay draft was a narrative about women’s customs she was recalling from when she and her family immigrated to the United States. At just 11-years old, she hadn’t personally felt the impact of native Muslim customs, but has memories of the difficulties her mother and sister endured.

“I wanted to compare female Muslim customs with the Western customs I first experienced when we arrived in New York,” she said, setting her draft on the table.

Understanding the intent of the draft, I shifted to agenda-setting. I asked Sara about specific areas she’d like to work on. Based on her instructor’s feedback, the participant asked if I could help her with some small grammar mistakes, and to understand how to ‘show’ readers something rather than simply ‘tell’ them about something. In response to this, we set the agenda for the session collaboratively. I explained that because the essay draft was short (only three pages) we could read through for content-related revision concerns and this way her primary concerns about grammar and showing/telling could also be addressed without impacting the overall content of the draft.

As I read the draft aloud to her, I noticed that for the most part, her phrasing was clean. There were very few instances where the translation muddled the phrasing. I asked her about the phrases openly. One, for example was the way she had translated the word *hijab*, by referring to it as a ‘head curtain.’ I was familiar with the terminology, but I was curious about how Sara chose to describe it to me, someone outside of her culture. She depicted it as warm, enveloping the head and neck as opposed to loose, or tight-fitting. These were two ways I had experienced head scarves. In our discussion, the phrases she’d used to describe the feeling of wearing a hijab were so poetic, that I let her know using ‘veiled head curtain’ would be an effective translation with the accompanying description to offer detail to the reader.

One thought as I was listening to her describe this custom to me in English was how powerful it might be to just include the phrase itself in Arabic, with the accompanying poetic description. I shared this idea with Sarah, offering that this was a great example of showing, versus telling—something her instructor had requested. She scribbled notes frantically in the margins as we talked and she opted to switch the awkward phrases back to Arabic (some she admitted that she had to re-research because the exact phrasing escaped her). This blossomed into almost a scavenger hunt to find key places where Sara felt she wanted to add more Arabic ‘flavor’ to her essay.

Sara was incredibly enthusiastic about the results. She voiced that she felt the essay was “more powerful” because she was able to incorporate her native language. I validated this statement by sharing with her that I felt, as a reader, the choices she made with the sensory descriptions in English were poetic and unique, meaning rhetorically effective. By unique, I meant strong and distinctive—her essay had a voice that reflected the person sitting before me that day. The blending of her native language and the English descriptions provided insight and detail in a concrete way. The revisions delivered much context and perspective that showed rather than told, very effectively.

At the close of the session, I reviewed the specific activities used during the session and the benefits each offered to her writing. Sarah asked me to write down the ‘prompts’ on her revision plan sheet for future reference. To close the session, I asked her to reflect briefly on the session, fast-writing the experience and how it made her feel about not only the project, but how she felt in regard to her perceptions of self as a writer. This was completely for her benefit as I finalized my session notes, which included one additional creative writing activity to consider for this and future assignments on her Revision Plan Sheet. When she left, she was looking forward to trying the new
activity and already had some ideas for how she wanted to expand her paper after reflecting on the activity she used in the session.

Post-session reflection one. The pre-textual conversation at the start of the session really helped inform me about the writer’s anxieties, about writing in general, and specifically about this assignment. She confessed that she felt lost between languages because she has been away from Iraq and Syria for so long that she’s lost some of her native tongue, yet lacks proficiency in English as well.

I never considered the idea of writing apprehension stemming from feeling ‘lost between languages’ like my client today. As an observer, Sarah appeared to be empowered by bringing in words and phrases from her native language into her essay. Likewise, the rhetorical choices she made with the English sensory descriptions also seemed to bolster confidence and capability.

I felt that Sarah’s goals for the session remained consistent but what was striking was witnessing her anxiety physically wash away during our hour together. She confessed that she loved writing short stories—English was easier in comparison to trying to write entirely in her native language. Her physical tension melted away as she wrote throughout the session. Her responses were always candid, but, the further we went along, our exchanges over how to adjust an awkward phrase felt, to me, like they were becoming more comfortable—the vibe was very collaborative rather than tutorial-esque.

As far as encouragement is concerned, Sarah had a very solid grasp of formal English grammar that eclipsed my own. I made sure to share this with her often. Again, her draft was solid overall in flow, content, organization. Some of the turns of phrase she opted for were incredibly poetic and I believe this comes from her international background. Many were more poetic than anything I could conceive of. These I stressed to Sara because they are distinctive to her voice. I wanted to ensure that in working with her today that I didn’t negatively impact her poetic voice.

Although part of the initial conversation was off-topic, it was important to me to make Sarah comfortable in the writing center before diving into her paper. Our pre-textual conversation (1-3 min) gave me insight and context about her feelings about writing in general, her major, and her plans for the future after college. While these were not directly related to her paper, I feel this time was vital to help me determine the best course of action during the session. Additionally, this gave me insight into individualizing writing activities to help her in revision.

I believe that there’s always a fear in me when working with international students. Often, I find that I question whether I am capable of appropriately addressing their concerns in a way they can understand and take with them (fostering agency). I don’t feel that I had to adjust my tone or demeanor with Sarah. In fact, there’s a part of me that was bolstered by her enthusiasm for the writing activities. I realized that part of my own motivation to include active writing during the session is to witness others engaging with creative expressive writing, and enjoying what these activities offer. Sara’s demeanor during and especially afterward demonstrated for me the impact this style of tutoring approach had on her and her perceptions of writing capability.
Raising Arrowrock: A Political Ecology Case Study

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Abstract
The US Army Corps of Engineers (Corps) currently evaluates construction alternatives for the Arrowrock Dam’s future. The process presents a uniquely complex situation as policy, public, and private interests converge. The fear of flooding and availability of irrigation water have deeply influenced the economics through which federal agencies justified building dams in the early 20th century. However, the current political, economic, and environmental stakeholders grapple to fulfill their interests. Furthermore, major policies such as the National Environmental Protection Act, Endangered Species Act, and state protections on the upper tributaries of the Boise River convolute the final decision set for 2017.

Raising Arrowrock

Dedicated in 1915, Arrowrock Dam was the “engineering marvel of its time.” Headlines in Boise City proudly stated “Arrowrock, Highest Dam in the World,” a record held until 1932 when the height of the Owyhee Dam in Eastern Oregon surpassed it. However, pride for the dam continued, as reflected in the poem “Arrowrock Speaks” published in the Idaho Statesman in 1932, “Dependent upon me is….an empire….in the Boise Valley….I was built to store water to irrigate farm lands. Not for Beauty.”

Today Arrowrock Dam stands as one of the most significant federally funded dams on the Boise River. Over the last century, the structure has contributed to growth of the Boise Valley’s agricultural base and overall population. Specifically, in the municipality of Boise where the population jumped from under 6,000 residents in 1900 to over 17,000 by 1910, and current estimates by the US Census Bureau rank Ada County alone with a population of approximately 416,500. The investment made by the federal government helped realize the mission of reclaiming much of the sparsely settled land along the Boise River.

In 2008, the U.S. Congress identified the Arrowrock Dam, just upstream from Lucky Peak Reservoir, as an “aging federal structure of concern,” and in 2015, the Corps of Engineers aims to prepare a draft Environmental Impact Statement surveying a height increase of the impoundment up to 74 vertical feet. The complexities involved with raising the Arrowrock Dam bring together many legal authorities and present some of the hardest questions we face in modern politics: economics, safety, and natural resources.

The construction of large water infrastructure projects were the highlight of the early 20th century and this contributed substantially to the evolution of life in the arid west. Today the process of gaining approval for reconstructing Arrowrock Dam has become a game of political chess. The last major flood occurred in 1985 and challenged the capacity of Arrowrock Dam to control major floods. Both federal and state agencies knew there were limitations with Arrowrock Dam, which is an integral component of the upper Boise Water Project.

A series of policy moves both by the federal and state government later came together attempting to address the issues with the dam. In 1992, Idaho adopted new protections of the Boise River’s South, North and Middle Forks into its state water plan. By 2004, federal agencies completed a $20 million upgrade on the century-worn ensign valves with new stainless steel clamshell gates to increase the Arrowrock’s ability to release high snow melts during the yearly spring runoff. The evaluations that followed led the state to move forward on investigations of future water needs with state legislation allocating funding to survey potential water storage expansion of twelve dam sites throughout Idaho in collaboration with a federal partner starting in 2006. An agreement made by Idaho Water Resource Board (IWRB) and the US Army Corps of Engineers (Corps) locked in federal funding via the 2007 amended version of the Water Resources Development Act (WRDA) of 1999, which then included surveying for water supply and ecosystem restoration analysis.
The Arrowrock Dam appears as an example in a congressional report in 2008 highlighting the need to address rising maintenance expenditures of aging federal dams. The report specifically referred to the $20 million upgrade, signifying it would not be the last as the dam completes a century of continual service. Furthermore, a succession of evaluations by the federal and state partnership finished in 2010 and placed the Arrowrock Dam at the top of the list for feasibility of water storage and flood control benefits. By 2011, the Corps, focusing specifically on the Arrowrock, completed and presented results of a preliminary evaluation to the public for commentary on alternatives, including raising the height of the dam up to 74 feet, building a new one, upgrading bridge heights down river, replacing smaller push up dams with inflatable weirs, among others options. Comments from community residents, governmental agencies, the private sector, and environmental groups offered a broad range of concerns, including lack of water availability, why build at all, and environmental consequences of the construction options.

The status of the ecosystem restoration component in the amended WRDA of 2007 at this point no longer exists. In an interview, Ellen Berggren, the Snake River Project Manager of the Corps, stated funding is not available on the behalf of the Corps or the IWRB. Further adding that the Corps would welcome an external partner to help fund the ecological restoration effort, but the subject alludes to one of the most difficult valuation processes in environmental economics. Liz Paul, the Spokesperson for Idaho Rivers United (IRU), said that they are willing to collaborate in restoration, but offered little detail as to what such a partnership would accomplish. Ecosystem restoration by definition aims to repair damaged or destroyed ecosystems by facilitating an increase in biodiversity and balance with human systems. That said, coming up with a price to realize that goal is not simple. Unfortunately, the challenge lays in justifying the investment of tax dollars into environmental restoration that does not directly pose negative affects to human health or forecast noteworthy profits. A traditional contingent valuation with valley residents would show a wide range of responses to the value of higher biodiversity, which exemplifies the difficulty of situation. The unpredictable value attributed the environment will make even the most ambitious environmental advocate scratch their head when it comes to deploying an effective strategy to fund and restore the damaged reservoir ecosystems.

Originally built for irrigation, the concerns with Arrowrock convey a provocative shift in construction justification. A clear decline in acres of farmland to subdivision housing in the riverside communities in the Boise Valley advance flood risks. Change in land use makes the assessment of irrigation storage, and flood protection of an ever-growing urban population on the river’s floodplain, a formidable opponent of environmental protection. Likewise, the water management mission of US Bureau of Reclamation (USBR) and the Corps mission of flood control align with the most powerful portions of the population in the valley below. Canal companies and farmers with first-in-time water rights are very well established and have plenty of political connections within the area. Naturally, when an opportunity to expand water supply comes about they are all ears. The maximum 74-foot dam raising option expects to amplify the storage capacity of Arrowrock Reservoir by an additional 300,000 acre-feet.

However, Rocky Barker an environmental journalist from the Idaho Statesman writes that maximum number of acre-feet proposed by the Corps might seem substantial, but after current irrigators take their shares, only 60,000 acre-feet will remain for distribution. In addition, Compass, the Treasure Valley regional planning agency, projects that the Boise metropolitan area will reach a population of 1.5 million by 2040. These projections are at the core of the IWRB’s argument to move forward on a new dam. The projected need of water for future valley residents warrants state action.

**Historic Arrowrock**

As all rivers, the Boise River experiences cycles of flooding at the surrender of melting snow pack, forming the tributaries that feed into the confluence with the Snake River and beyond. However, the water infrastructure and development have long since domesticated the Boise River. The construction of dams and active river channelization was a response to the flooding, which in turn permitted the transformation of the flood plain into urban developments. The rationale of a living river prior to completion of the Arrowrock quickly evaporated in light of the new irrigation dams and enhanced flood protection. This security provided by the three major Boise Water Project dams, which consist of the Diversion in 1908, the Arrowrock in 1915, and the Lucky Peak in 1955, bolstered growth on the more susceptible tracts of land in the valley.

Prior to the completion of the Arrowrock Dam, irrigation and flood control systems in the Boise Valley limited development on the flood plain to farming. Valley residents understood that building residences or any other physical structures on the flood plain guaranteed damages from the annual snow melt. The high costs and low returns in building a dam on the Boise River detoured private companies from domesticating the river via the federal
land exchange with private companies of the Carey Act of 1894, which proved successful in the Magic Valley just over a hundred miles away. The funding necessary for the project came after passage of the Reclamation Act of 1902, when farmers began to petition the federal government to build a federally funded dam for irrigation benefits.

The Corps conducted the initial reconnaissance surveys around the existing location of the Arrowrock Dam from 1903 to 1904 on behalf of the US Reclamation Service (now US Bureau of Reclamation). Congressional approval for funding the project came on June 10, 1910. Construction on the selected site did not officially begin until the completion of many preliminary projects, including a 17-mile rail line, a sawmill, a camp fit to house 1,500 men, a 1,500-kilowatt power plant for concrete mixers, and 54 miles of telephone line laid for direct contact with the main Boise Reclamation Service office. Furthermore, two cofferdams and a diversion tunnel allowed official construction to commence in 1911. The original price of the dam reached approximately $5,000,000, which originally provided 276,500 acre-feet of water until 1937 when the Corps added the additional five feet to the height of the dam that have remained until today.

**Environmental Matters**

Unlike the initial construction, the current decision-making process includes the IRU defense of the state river protections, the federal Endangered Species Act (ESA), and National Environmental Protection Act (NEPA) against the Arrowrock project. IRU claims that raising the Arrowrock Dam would be waste of tax dollars. Paul stresses her point that “there is absolutely no good reason to raise the Arrowrock Dam.” Adding that, “the Treasure Valley has plenty of water” and that people “need to have better water use practices instead of spending millions of dollars on a project that will inevitably benefit only the people living on the flood plain.”

The IRU confidence in the pertinent policies that make up their argument shifted their focus on the potential alternatives to flood control such as off stream detention ponds, raising bridges, building levees, better construction zoning on the rivers flood plain, and water conservation standards. “Investing in such alternatives would save taxpayers thousands if not millions of dollars in comparison to building a dam,” says Paul. With tight budgets on both sides of the state and federal partnership, these measures would be encouraging. However, the ideas proposed by the IRU forgo the economic realities of setting aside land for such flood control runoff and the water storage ambitions of the state. Seventy-five percent of the land in the rivers flood plain belongs to private owners. In competition with developers, the market prices and cost to purchase enough land for those measures could turn out to be an expensive endeavor to accomplish. Despite valid points in terms of demanding water conservation and the inherently unequal benefits from raising the dam, the IRU position relies heavily on the provisions set by federal and state protections of the North and South Fork of the Boise River. Together the claims of inefficient use of tax funds and water use, the ESA, the NEPA, and the state river protections, creates the IRU defense against construction at the Arrowrock Dam.

An unfortunate ambiguity in the Arrowrock proposal lays in its location, which is positioned in an area just beyond the zone of the state river protections and federal critical habitat zone of the endangered bull trout in an already ecologically damaged section of Lucky Peak Reservoir. The state protection statues specifically exclude the following: Construction or expansion of dams or impoundments, construction of hydropower projects, construction of water diversion works, dredge or placer mining, alterations of the streambed, mineral, sand, or gravel extraction within the streambed. It may sound like a sure winner for the IRU, but the designated protections explicitly read for the protection from the “backwaters of the Arrowrock Dam to the confluence of the North and South Fork.” The proposed raising of Arrowrock positions all construction on the “front waters” of the dam.

The Corps 2011 preliminary evaluation used the successful raising of the San Vicente Dam in California as an example to show the probable methodology for construction. The example shows a cross-section diagram that demonstrates all construction taking place in front of the dam from the base up, using the existing structure as a foundation. Moreover, Lucky Peak Reservoir does not have a dead pool limit, which means there is not a minimum water level required by law nor are there state or federal environmental protections on that body of water. The concrete wall of Arrowrock quite literally separates the protections that make up the bulk of the IRU argument and the proposed dam. The Corps could build a barge below the Arrowrock dam and drain the portion of the reservoir bypassing most state and federal protections.

USBR biologist Dimitri Vidergar indicated that there is a non-migratory population of bull trout that live in the headwaters of Mores Creek, a tributary that feeds into Lucky Peak Reservoir from the north. He also said that the waters in the lower section of Lucky Peak Reservoir near the Mores Creek Bridge are too warm for the bull trout. Vidergar declared that a small migratory population of bull trout may exist in Lucky Peak Reservoir, but only wintering in the lower reservoir and returning to the headwaters of Mores Creek during the summer. A reasonable
statement to make as the completion of the Lucky Peak Dam in 1955 has since produced yearly irrigation drawdowns of the reservoir, which creates an abysmal environment for the temperature sensitive bull trout. In addition, the USBR actively seeks any bull trout via their “trap-and-haul” program that aims to catch any bull trout presumed to have made it through the Arrowrock clamshells and return them to the Arrowrock reservoir.

Despite the environmental uncertainty, it has not resulted in a derailment of the IRU defense. The impending problem remains in the expansion of the Arrowrock Reservoir and the building of new access roads if raised. Corps evaluations estimate a maximum expansion of 6.5 miles to the reservoir if a 74-foot dam raising resulted. Conversely, the US Fish and Game states that any “activities” above normal high water marks “can and often do, impact critical habitat areas.” Activities include movements such as maintenance or building of roads. Therefore, one of the primary issues with the project in terms the EIS required by the NEPA will be the expansion of the reservoir that can inundate roads, creeks, and other land below the new proposed 3290-foot watermark. An elevation exploration of the roads along the South Fork and roads leading up to the North Fork are in fact below that elevation.

These activities have the potential to conflict with the ESA as it states that federal agencies must, “insure that any [federal] action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat.” However, in section 7-h of ESA, it also states that if an action clearly outweighs the alternatives that may conserve critical habitat, an exemption is possible. The action must be in the public interest, and must have a regional or national significance. If the action meets the criteria outlined in the ESA, then the federal agency pursuing the action and the state governor could apply for an exemption to alter the designated critical habitat area. The need for a biological assessment will determine the adverse effects, and a formed committee will ultimately judge the exemption for final approval. The effects of expanding the reservoir on the tributaries closest to the main body of Arrowrock Reservoir will definitely be the issue of focus for the IRU. Furthermore, the politically conservative IWRB does hold the power to modify the state protections to move forward on their plans for water storage.

**Urban Growth and Flood Risk**

In terms of the public interest, the socio-economic risks further complicate the situation. Ellen Berggren of the Corps asserts that the valley has never been without flood risk, which is an integral part of the Corps’ mission to address the matter. Berggren says it is difficult to get the funding approval from congress for direct flood control measures, which stifles efforts by the Walla Walla District Corps. Valley residents have constantly battled with flooding throughout the Boise River’s recorded history. The book *When the River Rises* offers one of the best summaries of that history. The title alone asserts the reality of a living river. In the book, Susan Stacy discusses in detail the most recent major flood events from 1943-1985. The 1943 flood event caused an estimated $1,000,000 in damages and solidified the decision to build the Lucky Peak Dam. Despite the flooding certainties that continued to occur over the years it was ultimately pressures from irrigators that drove most of the policy made pertaining to dam building, not so much the flooding itself.

The second major flood event in 1985 truly put the Boise Project dams to the test. The winter snowmelt uncovered the limitations of the Arrowrock Dam specifically. The timeworn ensign valves that released excess water during the 1985 spring melt created a noticeable bottleneck. Thus, the upgrade on the Arrowrock made for more than just routine maintenance. In 1915, engineers did not incorporate or even understand the precaution of building dams to withstand the modern standard of a probable maximum flood. Despite the new improvements on the Arrowrock, the Idaho Flood and Seismic Risk Portfolio of 2012-2017 ranks the Lower Boise Sub-basin as the number one area concern in the state due to population growth on the floodplain.

Overall growth in the valley has received national attention, such as in an article in *USA Today*, whose title seems to encompass the going trend: “No end in sight for Idaho’s growth.” The article boasts of the economic prosperity and urban expansion specifically in the Treasure Valley just prior to the nation’s economic downturn. Even in the shadow of the 2008 economic crisis an unrelenting push for riverside development continues. Remarkably, some of the most expensive pieces of property in the valley lay in the most volatile places geographically, including the 952 homes under federal flood protection insurance directly on the floodplain. Well known hazards have yet to deter economic gains by developers using aesthetics as a selling point.

Nowhere will the potential for future floodplain development be greater than in the cities of Star, Eagle, and the western edges of Garden City. These cities hold some of the remaining floodplain farmland in the Boise metro area. According to the United States Department of Agriculture’s Census Bureau, the housing boom from
2002 to 2007 reduced Ada County’s farmland by 14% and by 4% in the adjacent Canyon County. Records from 2012 show that only 16% of the total area within the two counties qualifies as irrigated farmland. Agricultural land is perfect for developers as the land is typically flat and free of debris, which makes construction that much easier. Aerial images of the valley demonstrate the expanses of land between Eagle and Star as ripe for the picking for subdivision contractors. Growth seems to be an unescapable part of any thriving city, but the laissez faire flood plain zoning that took place over the last 50 years highlights the lucrative profits and apparent risks involved. Stimulating the local economy at the increasing loss of riparian habitat and farmland. In addition, Compass has been working since 2002 to build a commuter transit expansion on State Street that would facilitate the flow of traffic from downtown Boise through Eagle and in to the city of Star. If such a design were to be implemented the farmland and riparian regions on the northern banks of the Boise River between Eagle and Star would eventually sell at premium rates.

The proposal for construction at the Arrowrock Dam influences all valley residents, but in particular the canal companies, farmers, wealthy floodplain homeowners, and the defenders of the river’s health. The agencies involved in the matter begins with the USBR who rightfully owns the Arrowrock Dam and whose core mission in the arid west relates to water storage. The USBR has operated the largest water storage facilities in the Boise Valley since the completion of the Diversion Dam. The Corps and the USBR have parallel missions. Historically, their efforts brought ideas into physical reality by constructing all the stages of the Boise Water Project. The Walla Walla District Corps is highly concerned about the flood protection of the largest population in their region. Modifying dams to accommodate for the probable maximum flood risk is a part of water resource management, in part to avoid having to make difficult decisions that would leave principal agencies liable for any possible damages.

The potential economic losses from property damages are a concern to the federal government if payouts under the National Flood Insurance Program (NFIP) are significant. Taking a stroll on the green belt in the cities of Boise, Garden City, and Eagle confirms the volume of properties directly on the floodplain of the Boise River and its tributaries. The three cities are participants of the NFIP. The program is not a requirement, but it allows for variable subsidy rates of insurance for the city’s residents that meet or exceed Federal Emergency Management Standards. As of 2012, the coverage liable for payout in the Lower Boise Sub-basin totals $462,378,164, with a collection of $1,105,069 in total premiums by the federal government. Subsidies are available for residents on a scale rated from one to 10, one being the highest and 10 meaning that the city does not participate in the program.

Boise and Eagle rank in at six, while Garden City ranks as an eight. The active performance on flooding awareness and flood risk prevention standards gives these cities these rankings. A set of 19 individual measures split into four categories: public information about risks, mapping and regulations, flood damage reduction, and warning/response. Despite the implementation of some standards in these cities, the risks still exist as they have continued to experience flooding events, such as the 1998 flooding in Eagle affecting multiple subdivisions. As the flood risk analysis from the Arrowrock Dam can equate to variable gains the proposal for construction at the Arrowrock Dam influences all valley residents, but in particular the canal companies, farmers, wealthy floodplain homeowners, and the defenders of the river’s health. The agencies involved in the matter begins with the USBR who rightfully owns the Arrowrock Dam and whose core mission in the arid west relates to water storage. The USBR has operated the largest water storage facilities in the Boise Valley since the completion of the Diversion Dam. The Corps and the USBR have parallel missions. Historically, their efforts brought ideas into physical reality by constructing all the stages of the Boise Water Project. The Walla Walla District Corps is highly concerned about the flood protection of the largest population in their region. Modifying dams to accommodate for the probable maximum flood risk is a part of water resource management, in part to avoid having to make difficult decisions that would leave principal agencies liable for any possible damages.

The economic advantages that might come from raising the Arrowrock Dam can equate to variable gains distributed throughout the valley beyond that of property values. The water expansion to the proposed 300,000 acre-feet could provide at current water bank rates ($17) a maximum value of $5.1 million dollars. With the state’s general fund for the fiscal year of 2015 approximating $2.9 billion, the number may sound like a drop in the bucket.
However, when the Arrowrock Dam underwent its $20 million upgrade in 2004, the federal government only anticipated a return of $6.9 million over a 15-year period from the State of Idaho. Berggren stated that the typical cost share between state and federal agencies ranges from a 30/70 to a 40/60 split respectively. The purchase of a new dam at this kind of discount may be worth it. On the other hand, the San Vicente Dam example used by the Corps when finalized produced a price tag of $415.9 million, which if comparable could burden the state with a debt upwards of $120 million plus. Arrowrock differs by 170 feet more in length and 43 feet less in height, which may add or subtract to San Vicente figure. The actual price tag of the proposed dam remains to be determined if granted a green light.

**Future Arrowrock**

The contention between the irrigators, developers, riverside residents, and environmental advocates involved in the potential raising of Arrowrock make the process an attention-grabbing dilemma for the valley. The push for flood control by the Corps works for the floodplain residents and developers. The IWRB wishes for more water storage, which serves the irrigators and the USBR. The IRU wants the protection and greater consideration of the health of the South and North Fork of the Boise River. All the interests converging at once will make the final decision a difficult one. The Corps hopes to have an environmental impact statement by the end of 2015 and their final recommendation by 2017. That assumes that all goes well. Depending on the outcome of the EIS, the IRU may decide to challenge the strength of the assessment. This may lead to lawsuits that would further delay the process of deciding to begin construction or not.

Without the strong support of the public backing further environmental protection, the odds are against IRU. Of the scoping publications released by the Corps, the alternatives under evaluation fall short of meeting all the expectations of the all the stakeholders involved in one action. For example in terms of addressing water needs, managed aquifer recharge is the one alternative under evaluation in opposition against the dam. USBR and the Corps hydrologists feel hesitant on that action meeting the future water needs of the valley. The IRU asserts water conservation measures can aid in the need for water, but this only receives brief mention in the Corps reports. The unsettled alternatives all refer to alternative methods of flood control that will alleviate risk in isolated areas. The improvement of irrigation head gates will decrease impact of flooding near canals. Raising low bridges will protect areas in their proximity against water backing up against the bridges during high water events. Implementing all of the alternatives would indeed provide protection in strategic areas in the valley that are at risk. However, it still undermines the state’s main objective of attaining more water storage, which the Corps asserts they must accommodate to since the IWRB is their client in the project. The Corps, in due course, plan to incorporate several of the alternatives that will best address the flood control risks as well as water storage.

Water conservation if done right could help alleviate future water needs, but the lack of developed methodology makes the endeavor a difficult one to incorporate. Even Paul carrying the torch for water conservation, had only a few ideas how to conserve water, like recommending the low flow faucets, appliances, xeric landscaping, and so forth. She went as far as saying that urbanization off the floodplain will help with water conservation because most new homes come stocked with modern low water use equipment. However, getting to a level of water conservation necessary to ensure the longevity of our current water resources will take more than just a few “green” folks starting to conserve water. It will take citywide initiatives to bring the high levels of water management necessary for success. There may be hope for that vision. During the public commentary meetings held by the Corps in 2010, the principal concern of the residents from the Ada and Canyon Counties were for the environmental impacts of raising the dam and expressed low concerns for water availability, although the representation of residents in those meeting may be a skewed portion of concerned citizens.

The following three years will prove whether the value of ecosystem services can stand against flood plain development plans and future water demands. Whatever the conclusion of the proposal, the topic of water availability, flood control, and ecosystem services will continue to surface in the Boise Valley as these complex issues come center stage overtime. Additionally, the separation of the aquatic ecosystems of the Upper Boise River will remain subject to the ebb and flow of the Boise Water Project dams. The manner of protection will continue to challenge biologist, economists, bureaucracies, and communities. As population growth increases, the amount of people visiting the protected bull trout areas will also intensify, placing added pressure on their ability to survive, while the overarching human ecosystem does the same.
Works Cited


Distribution of Genotypes within and among *Taeniatherum caput-medusae* (Poaceae) Populations from Eastern Washington: Assessment of an Invasion at a Local Scale

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Dr. Stephen J. Novak: Mentor

Biological Science

Abstract

Multiple introductions from many source populations can increase the chance of introducing preadapted genotypes, increase standing genetic variation, and increase the likelihood of adaptive evolution, all of which might contribute to invasion. *Taeniatherum caput-medusae* is an annual, highly self-pollinating grass that is invasive in the western United States. Through previous genetic analysis, five multilocus genotypes (MLG) were detected in the relatively small geographic area of eastern Washington, which suggests that multiple introductions have occurred in this region. Fifty-seven populations of *T. caput-medusae* from eastern Washington were assessed at 23 loci using starch gel electrophoresis. Based on these data, a sixth MLG was detected in the study area. The Steptoe Butte genotype, which was first introduced in 1901, has the largest range of the six genotypes and is creating polymorphic populations where it comes into contact with other genotypes. Founder effects appear to have reduced genetic diversity within and among populations from eastern Washington in comparison to native populations. The results of this study contribute to our understanding of the invasion process at a local spatial scale by reconstructing the introduction and range expansion of *T. caput-medusae* in eastern Washington.

Introduction

Biological invasions are defined as the introduction, establishment, spread, and proliferation of an organism into a new and often distant range. In the past 200 years, invasions have been increasing due to human-mediated dispersal (Mack et al. 2000, Sala et al. 2000, and Wilson et al. 2009). Humans not only provide efficient means of transport over increasingly large geographical distances, but also favor invasions through increased homogenization of the ecology among geographically remote areas and the destruction of native habitats (Estoup and Guillemaud 2010).

Human-caused invasions have both ecological and economic consequences. The invasive species can intensify natural disturbance regimes. For example, invasive grasses foster more frequent and intense fires, which key native species are not adapted to (Mack et al. 2000, Novak 2007). Invasive species can also alter community composition by eliminating dominant species and altering ecosystem functions, such as nutrient cycling and primary productivity, which in turn allows newly arriving invaders to establish and spread (Mack et al. 2000, Lockwood et al. 2005). These ecological consequences incur heavy economic costs; the total cost of invasive species in the U.S. (plants, animals, microorganisms) exceeds $138 billion per year (Mack et al. 2000, Pimentel et al. 2005).

Propagule pressure is defined as the number of individuals (propagules) introduced into a new range. There are two components associated with propagule pressure: (1) propagule size, the number of individuals associated with a single introduction event, and (2) propagule number, the number of distinct introduction events. Both propagule size and number influence establishment success and increase the likelihood of invasion (Lockwood et al. 2005, Simberloff 2009). While *en route* to a new range, many immigrants perish, and once they have arrived at a new range, many more perish due to abiotic conditions and/or biotic agents (Mack et al. 2000). High propagule pressure increases the likelihood of establishment for those immigrants.

Human-mediated dispersal tends to contribute to multiple introductions (invasions with high propagule pressure), which in turn leads to higher levels of within-population genetic diversity. A growing body of evidence suggests that multiple introductions may be the rule rather than the exception (Novak 2007, Gaskin et al. 2013, Genton et al. 2005). Multiple introductions may increase the evolutionary potential of invasive populations challenging the classical view of low genetic diversity due to founder effects (Facon et al. 2008). Multiple
introductions increase the likelihood of pre-adaptation and post-immigration evolution occurring by increasing the likelihood of introducing a pre-adapted genotype, and/or increasing the genetic diversity of invasive populations (Lavergne and Molofsky 2007).

*Taeniatherum caput-medusae* (Poaceae) is a highly selfing, Eurasian annual grass that is invasive in the western U.S. This invasion is well documented, and the first instance was recorded in 1887 (Figure 1).

There are three subspecies in its native range: subsp. *crinitum*, subsp. *caput-medusae*, and subsp. *asperum*; only subsp. *asperum* is believed to be invasive in the U.S. Through previous genetic analysis seven multilocus genotypes (MLG) were detected among 45 invasive populations from the western U.S., indicating multiple introductions of this species into its invasive range. Five MLG were detected in Eastern Washington alone, indicating multiple introductions into this relatively small geographic area (Figure 2).

Studies examining the introductions of an invasive species generally are conducted at a large spatial scale (e.g. Gaskin et al. 2013, Huttanus et al. 2011), I propose to analyze 57 populations of *T. caput-medusae* at a local spatial scale in eastern Washington to better understand the genetic and evolutionary consequences of multiple introductions.

In this study we use enzyme electrophoresis to address three main goals to aid in the understanding of the effects of multiple introductions at a local spatial scale: (1) determine the distribution of genotypes within and among the 57 populations, (2) examine the level of genetic diversity within and among the populations, and (3)
compare the level of genetic diversity with the rest of the western United States, native populations, and putative source populations.

**Materials and Methods**

Seeds previously collected were germinated at room temperature in petri dishes lined with moistened filter paper. Approximately 7-10 days after germination, they were harvested and macerated in a tris-HCl grinding buffer-PVP solution. Enzyme electrophoresis procedures generally followed Soltis et al. (1983), with modifications described by Novak et al. (1991). We will use 15 enzymes (ALD, GOT, CE, GDH, G3PDH, IDH, MDH, ME, PGI, PGM, 6-PGD, SKDH, SOD, TPI, and ADH) using four buffer systems. This data was used to determine the MLG of each individual within each population from eastern Washington, specifically Whitman and Spokane counties. This will allow us to map the MLG and look at the geographic distribution of different MLG within the study region and provide genetic evidence for multiple introductions and admixture.

All individuals in the 57 populations were scored by hand at 21 loci. Multilocus genotypes are based on five variable loci (Adh, Mdh-2, Pgi-2, Pgm-2, 6Pgd-2). We mapped these MLG to identify the potential geographic structuring of the populations. To measure the within population genetic diversity of these populations we calculated the number of alleles present, the number of polymorphic loci, the number of polymorphic populations (defined as a population with two or more MLG present), and the percentage of polymorphic populations. For the among population genetic diversity, we calculated the ratio of alleles per locus, percent polymorphic populations, observed heterozygosity and expected heterozygosity. Both the within and the among population genetic diversity values were compared to other populations from the invaded range (western United States) to determine whether multiple introductions to the small spatial area of eastern Washington changed the genetic diversity of the 57 analyzed populations. These values were also compared to populations from the native range as well as populations considered putative sources for the invasion into the western United States and eastern Washington.

**Results**

Mapping the multilocus genotypes of the 57 populations revealed a slight structure among the populations (Figure 3).
Fig. 3: Map displaying the distribution of MLGs among 57 populations of *T. caput-medusae* analyzed in eastern Washington. The color of the marker corresponds with the populations’ associated MLG. White markers correspond with polymorphic populations (populations with two or more MLGs present).

This map does reveal a possible dispersal corridor, U.S. Route 195, where the Ladd Canyon genotype, as well as several polymorphic populations, appear to be dispersed along the roadsides and adjoining areas. The Steptoe Butte MLG was likely introduced in 1901. The next documented introduction event was in Pullman in 1940, which most likely introduced the Roseburg genotype to eastern Washington. Roseburg and Steptoe Butte have expanded their ranges the most out of the six present MLG. At contact zone 1, there are four polymorphic populations, all of which have the Roseburg and Steptoe Butte MLG. At contact zone 2, there is a more complex array of polymorphic populations, all four of which contain the Roseburg MLG. Two also have the Steptoe Butte MLG, and the other two have the Ladd Canyon MLG. When the ranges of these genotypes expand and come into contact with one another, they will create polymorphic populations. The Malloy Prairie MLG is much more restricted and only occurs in the northwestern corner of our study area. This study revealed a sixth MLG, Rattlesnake Station, which was found in one population in Pullman, Washington, along State Route 27.

Our analysis of among population genetic diversity revealed a lower number of alleles in the eastern Washington populations than in the western United States, and the invaded range has lower numbers of alleles than native and putative source populations (Table 1).
Table 1: Genetic Diversity among Populations

<table>
<thead>
<tr>
<th></th>
<th># Populations</th>
<th># Alleles</th>
<th># Polymorphic Loci</th>
<th># Polymorphic Populations</th>
<th>% Polymorphic Populations</th>
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<td>Putative Source Populations</td>
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<td>38</td>
<td>10</td>
<td>8</td>
<td>80.0</td>
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</table>

This trend continues with the other parameters used to evaluate the among population genetic diversity. The within population genetic diversity values indicate an overall lower diversity than the other areas compared (Table 2).

Table 2: Genetic Diversity within Populations

<table>
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<tr>
<th></th>
<th># Populations</th>
<th>Alleles/Locus</th>
<th>% Polymorphic Populations</th>
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Our analysis of within population genetic diversity revealed a lower percentage of polymorphic populations in eastern Washington than in the western United States (1.4% and 1.9%, respectively). While the expected and observed heterozygosity in eastern Washington (0.005 and 0.00020, respectively) was slightly larger than the western United States (0.004 and 0.00010, respectively), this is not significant. These results highlight the low level of genetic diversity in the invaded range compared to the native range of *T. caput-medusae*.

**Discussion**

As previously mentioned, the Steptoe Butte MLG was initially collected in 1901 and has the largest distribution of all the genotypes in this study area. The multilocus genotype map shows the expansion of the Steptoe Butte MLG and the Roseburg MLG (likely introduced into Pullman, Washington, in 1940) and their mixture where the expanded ranges come into contact with other genotypes (contact zone 1 and 2). This map also helped identify a potential dispersal pathway, U.S. Route 195. If the contaminated products being transported along this route could be identified, it could help curb the spread of at least the Ladd Canyon MLG. Another potential dispersal pathway is State Route 27, the main north-south road through Pullman, Washington, and the site of introduction for the sixth multilocus genotype found in eastern Washington, Rattlesnake Station. The closest population containing the Rattlesnake Station MLG is in White Bird, Idaho, and its presence in Pullman is likely a case of long distance dispersal. In the summer of 2014, we visited some of these sites in Pullman again and discovered that *T. caput-medusae* plants are no longer present in the location where the individuals with the Rattlesnake Station MLG were collected. Thus, it is likely that this MLG no longer occurs in the study area, although this result requires further testing.
Multiple introductions tend to increase genetic diversity due to an increase of propagule pressure. Our results indicate a decrease in genetic diversity in the invaded range, which may, in part, be due to *T. caput-medusae*’s high selfing rates, keeping it from forming novel genotypes by way of outcrossing. The main driver, however, for the low within and among genetic diversity in eastern Washington populations and populations throughout the western United States is founder effects. Eastern Washington only represents 6 out of 66 (9%) genotypes (including Rattlesnake Station) present in the native range, which is a steep decrease. The rest of the western United States contains 7 out of 66 (11%) genotypes present in the native range, indicating founder effects for the invaded range as a whole.

The aggregate effects of human-caused invasions threaten efforts to conserve biodiversity, maintain productive agricultural systems, sustain functioning natural ecosystems, and also protect human health (Mack et al. 2000). Humans not only provide efficient means of transport over increasingly large geographical distances, but also favor biological invasions by decreasing ecological differences between geographically remote areas (Estoup et al. 2010).

The control of invasions is a costly activity, exceeding $138 billion per year (Mack et al. 2000), but with research like this study, we can mitigate those costs through increased knowledge about the invasive organism. Lack of genetic variation decreases the chances of establishment during an introduction, and both multiple introductions and secondary introductions from highly variable introduced populations may greatly favor the establishment and persistence of new introductions. As a result, invasive-species management, such as biological control, may need to account for genetically diverse biological invasions resulting from multiple introductions (Kolbe et al. 2004). The identification of all genotypes in an invasion, which is likely for species that engage in uniparental reproduction (e.g., self-pollination or clonal propagation), allows more complete testing of the host-specificity of potential biological control agents, thus lowering the risk that there will be unexpected resistance or tolerance to introduced biological control agents (Gaskin et al. 2013). Elucidation of the routes of introduction of undesirable organisms is essential for the development of effective management strategies and sustainable science-based policies (Estoup et al. 2010). With this study we increased our knowledge of the potential dispersal pathways in eastern Washington as well as what genetic consequences multiple introductions may hold for invasive and native species populations and the potential to implement genotype specific biological control agents to control this invasive species.

**Acknowledgments**

The author wishes to express their appreciation to Yves Tindon, Zana Delic, Kelly Burden, and Kim Kreider for previous analysis and collections. To Steve Novak for mentoring me on this project, and to the McNair Scholars program for funding and support from both my cohort and staff.
References


Idaho Sexual Orientation Policy Debates: Local Discourse

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Multi-Ethnic Studies

Abstract

This study conducts a content analysis with the use of NVivo software of the local news outlet, Idaho Statesman, and its articles from 1999-2012. This research focuses on two specific sexual orientation policy debates: hate crime prevention and the Boise city ordinance. These issues highlight examples of framing. The findings from this analysis highlight how a media can play a supporting role for LGBTQ advocates through liberal and moderate frames by taking on an assimilationist approach to inclusion. This research adds to the literature on the role of newspapers in mediating public discussion and has larger impacts of how public debates over sexual orientation policies are changing in character and in tone since the mid-1990s.

Introduction

Media infiltrates our daily lives in small and large ways. Whether we like it or not, media also has the power to influence the general public’s perception of individuals, groups, and events from local to global levels. Media is often used as a tool to debate public matters in which elite writers, editors, and non-elite citizens participate in (McFarland, 2009). As of 2015, there have been large volumes of media coverage over national LGBTQ issues, like same-sex marriage, as state by state is added to growing list that now allows it. It is undeniable that there is a national culture shift in favor of the LGBTQ community. However, there are still states, like Idaho, that are resistant to this national cultural shift demonstrated by zero state-level policy protections (Hasenbush and Mallory, 2014). This research asks the questions of how might Idaho news media be framing local specific LGBTQ policy debates? How does this framing support or not support LGBTQ advocates? And lastly, how are Idahoans impacted by this type of framing?

McCombs and Shaw (1972) developed agenda setting theory as means to understand political communication and its effects. Agenda setting refers to the idea that there is a strong association between how much emphasis surrounds an issue and its perceived importance. The idea of “framing” emerged as a communication tool to measure how agendas are being set (McCombs, 2004). Scheufele and Tewksbury (2007) argue that “the concept of framing is based on the assumption that how an issue is characterized in news reports can have an influence on how it is understood by audiences” (11). In other words, media connects with social-psychology of the audience, which has a lot of power and influence to create the interpretation of an issue within the minds of that audience depending on how the media frames it. Framing is significant to understanding this research because media framing demonstrates that media actors like a newspaper company, specifically like the Idaho Statesman, can act as an ally by being supportive of the LGBTQ community or potentially inhibit the LGBTQ community depending how they frame the grievances of the advocates to a broader audience.

In this paper, I argue two points. The first is that one local news media, the Idaho Statesman, displays liberal, conservative and moderate frames on the sexual orientation policy issues: hate crime prevention and the Boise city ordinance. What I mean by liberal framing is that the frame aligns with modern liberal ideologies pertaining to a desire of more government involvement for equal opportunity, protecting civil liberties and human rights, and addressing social grievances. What I mean by conservative framing is that the frame aligns with modern conservative ideologies of small government interference in social issues, low taxes, an emphasis on a free market, and often associates with traditional or moral religious philosophies. What I mean by moderate framing is that a frame attempts to remain nonpartisan drawing on traits from both liberal and conservative ideologies like more fiscal economic reasoning to complement the inclusion of diversity.
The second point I argue is that the Idaho Statesman acts as an ally primarily through the use of the liberal and moderate framing in news articles to support local Lesbian, Gay, Bisexuals, Transgender and Queer (LGBTQ) advocates. The Idaho Statesman uses a liberal framing because it is easily identifiable with liberal audiences by highlighting “fairness,” a common euphemism for equality. The Idaho Statesman also uses a moderate framing because it is an easy way to connect with both conservative audiences by highlighting the fiscal benefits of including the LGBTQ community. This type of framing is demonstrated by the Idaho Statesman news stories from 1999-2012. This paper specifically focuses on two major news stories: the hate crime prevention and local anti-discrimination ordinance, and utilizing media agenda setting as a theoretical concept, this research examines how media agenda setting influences an audience.

Specifically, it examines the construction of a liberal and moderate framework that takes on an assimilationist approach, commandingly used by LGBTQ advocates. The assimilation approach is the practice of encouraging the assimilation of people from all minority groups or cultures into the dominant culture. It gives the blanket idea that these minority groups are “no different” from the dominant groups and therefore deserve equal opportunity. The Idaho Statesmen, in favor of the LGTBQ community, seems to display an overall assimilation argument for why Idahoans should support policy changes through liberal and moderate framing in articles. I hypothesize that I will find “traditional morality” framing from conservative opponents against LGBTQ advocates displayed within the Idaho Statesman. I also expect to find more of a presence of liberal and moderate framing in support of LGBTQ advocates. How the Idaho Statesman chooses to frame these particular LGBTQ issues could have the potential to benefit or inhibit their success for policy change.

**Literature Review**

For the purpose of understanding how media may impact how the broader community views the LGBTQ community, it is important to discuss how the LGBTQ movement approaches policy change. Craig Rimmerman (2008) discusses the how the assimilation and liberation strategies within the Gay and Lesbian Movement have developed and changed over time and argues that there have been conflicts within the Gay and Lesbian Movement over the assimilation versus liberation approach to gaining equality. Rimmerman argues there is a more widely used assimilation approach demonstrated through a historical context of core LGBT-related policies that have occurred over the last several decades. Rimmerman defines the assimilation approach as being more concerned with rights and working within the framework of the pluralistic democracy, while the liberation approach focuses on more radical cultural change (Rimmerman, 2008). This divide in change approaches is significant because opponents to the movement often reference the liberation approach as overly radical as it attempts to “dismantle” traditional morality views and therefore is the more threatening “gay agenda.”

The assimilationist approach has been more popular in issues like hate crimes, protective ordinances, military inclusion, and now more recently, in the issue of same-sex marriage. The issue of same-sex marriage has a lot of mixed results in regards to success. Gary Macciaroni (2008) argues that there are two basic conditions that shape the level of success for sexual orientation policies: the perceived threat of change and how political institutions mediate the resistance that rises from the perceived threat. In other words, threat level is very important to the amount of success LGBTQ advocates have and political institutions are the government entities like legislation, judicial or execute branches. Muccaroni fails to address how non-political institutes can facilitate the resistance to threat like local police stations, businesses, or even how the media frames the argument.

For example, “In Political Culture, Public Opinion, and Policy (Non)Diffusion: The Case of Gay- and Lesbian-Related Issues in Arkansas,” Barth and Parry conduct a 2005 Arkansas state-level survey to gauge the relationship between public opinion and specific LGBT issues. Barth and Parry argue that conservative politics and rural roots do not provide guaranteed insight to how the public views each specific LGBT issue and that there is variance. The take away was that this study did not prove that residents of Arkansas were approving of these policies, but they were less approving of more “threatening” policy changes like same-sex marriage and slightly more approving of less “threatening” policy changes like gays and lesbians in the military. Connecting to Muccaroni’s (2008) point, this signifies that there are important factors that facilitate how threatening or non-threatening these issues are to a broader audience. Media agenda setting theory could be playing a role in this perception. This also aligns with what Rimmerman (2008) says about assimilation impacting success on certain issues over others. For antidiscrimination grievance, the efforts of LGBTQ advocates won a series of limited victories at the local and state level because their demands for ordinances seemed elementarily fair and would entail no increase in public spending (Theoharis and Theoharis, 2003). Policy changes like city ordinances take on a more
assimilation approach which are perceived to be less threatening, simpler, and do not require a lot of fiscal or social change, which could be key to their potential success.

Sara Diamond (1995) uses a historical account and sociological comparative to analyze how shifts in strategies like state interaction and support of certain issues turned the Right-Wing movement into a politically powerful entity from 1945 to 1995. Diamond states that consistent with right-wing ideology, “moral majority”-type activists opposed policies that would expand or distribute power to subordinate groups, namely women and homosexuals, and supported state enforcement of “traditional” or “moral” gender relations and personal behaviors.

In 1996, Idaho was sent into a debate over the right-wing generated anti-gay initiative also known as Proposition One (Diamond, 1999). The initiative aimed to prevent gays and lesbians from receiving “special rights” in employment, housing and public accommodations. It also sought to prevent the “militant gay agenda” from corrupting kids in school by preventing gays and lesbians from teaching. Lastly, it sought to prevent literature in public libraries that promoted or viewed homosexuality in a positive light (Witt and McCorkle, 1997 and Blain, 2005). LGBTQ advocates and other opponents to the initiative depicted in the Idaho Statesman attacked the need for it and its cost, appealing to Idaho’s fiscally conservative politicians, its discriminatory intent, its constitutionality, the hate generated from the campaign, and lastly, the unwarranted intrusion of “big government” into the private lives of citizens using neoliberal discourse (Blain, 2005). A content analysis of letters to the editor and articles confirmed that initially opponents used a liberal political discourse that claimed the proposition to be discriminatory and hateful. In the final period of the fight, opponents switched to a conservative political discourse that the proposition was a government intrusion into private lives. A move which, Blain argues, contributed to the narrow prevention of the measure from passing (Blain, 2005). This becomes a moment in which Idaho LGBTQ advocates heavily use conservative rhetoric to defend themselves specifically using “small government” and the “fiscal” consequences for implementing these restrictions against LGBTQ Idahoans. Given the conservative social institutions that dominate Idaho, LGBTQ advocates were beginning to speak to Idaho conservatives in terms they understood. Therefore it was becoming more common to use arguments like fiscal reasoning and small government to promote more liberal ideas.

Methodology

I used articles from the largest print newspaper by circulation in Idaho. The Idaho Statesman, which has a daily circulation that reaches 14% outside the metropolitan statistical areas (SRDS, 2006). It is the primary newspaper serving Ada and Canyon Counties, two large voting populations, which comprise Idaho’s lone metropolitan statistical areas. The Idaho Statesman is the number one media company in the state of Idaho, reaching 267,519 adults every month including 115,657 weekday readers and 147,106 each Sunday (Media Audit, 2013). Its prominence could serve as indicator of what is and is not considered news. The Idaho Statesman could also serve as an indicator for public opinion trends among LGBTQ issues in Idaho since they are two of the largest voting counties. The articles and editorials used were pulled from the NewsBank, Inc. database off of the Boise State Library tool.

To find relevant articles I used the search terms “homosexual,” “lesbian,” and “transgender,” “queer and gay.” I included all articles that addressed any issues or debates related to LGBTQ policies at a local and state level. For this research, articles were collected from 1999, 2001, and 2012 that pertained to such LGBTQ issues. The two issues that were policy driven were the case of hate crime prevention and the implementation of the Boise city ordinance. I organized the articles by month and year of publication and downloaded all data into NVivo, a computer software program that is used for qualitative research. Through the use of NVivo, I was able to document the total number of articles and editorials that pertain to any relevant LGBTQ issues. More importantly, NVivo provides tools to track qualitative data, which is my focus. What were the articles saying and framing these issues to be?

I wanted to focus on the articles written by Idaho Statesman staff because they are elite writers tasked with covering the events at hand and have direct control over how this event or group is framed and therefore how an audience responds to that issue is contingent upon how the writer presents the information. I included issues of "Our View" because it is the editorial position of the Idaho Statesman. It is an unsigned opinion expressing the consensus of the Statesman’s editorial board. These editorials strictly take a position written by neutral and objective journalists. I excluded editorials written by community members to gain a better understanding of how might professional or elite writers influence the public with how they frame subject matter. I paid special close attention to quotes writers chose to display from the community to the common language used. I considered this framing the issue in one way or another.
Though numerous issues involving LGBTQ-related social issues took place in Idaho during this time (1999, 2001, and 2012), my focus was articles and editorials about sexual orientation policy written by professional staff in the late 1990s and early 2000s. The purpose of focusing on this timeframe was to fill a gap of knowledge of sexual orientation policy debates during this time. There is a little research done on Idaho sexual orientation policy debates beyond 1996. The events documented in this article include when LGBTQ advocates pushed for hate crime prevention legislation and an attempt to push for a Boise city protective ordinance.

The limitations of this research are that is a small scale case study. Another limitation is that the Idaho Statesman dedicates more articles to certain issues over others. The particular issues of hate crime prevention and city anti-discrimination were not highly covered issues which creates a limited amount of articles to be used for analysis. However, there are plenty of quality data that are useful for the purpose of this research.

Findings

I will discuss the two sexual orientation policy debates during this time frame. In 1999, LGBTQ advocates pushed for legislation that would extend protection for sexual minorities to the Idaho malicious harassment law. The law carried a possible five-year prison sentence for offenders who injure, threaten, or commit vandalism against a person because of race, color, religion, ancestry, or national origin. There were four articles dedicated to this particular issue. The issue highlights the dominant narrative between proponents for the adoption of this bill and the opponents who felt it was unnecessary.

Table 1 and Table 2, located under the “Tables” section of this paper, display the frames referenced within Idaho Statesman articles and are organized into the broader themes of “conservative,” “liberal,” and “moderate.” In Table 1 (hate crime prevention), it shows how the Idaho Statesman as a media entity facilitated proponent and opponent discourses surrounding hate crime prevention for LGBTQ advocates as indicated by articles written by elite writers. Idaho Statesman writers displayed liberal, conservative, and moderate themes when discussing this public debate. The conservative themes consisted of “slippery slope” arguments referenced four times, in which allowing this law would lead to other things; insisting that gays and lesbians were “already protected” by general law referenced 2 times; and a discomfort around “defining specific groups” under law referenced once. The liberal themes consisted of emphasizing “rights” referenced 5 times; creating “protections” referenced 12 times; preventing “hate” referenced 14 times or “harassment” referenced 9 times; and lastly, promoting a sense of “equality” for the LGBTQ community referenced 3 times. In the case for hate crime prevention, most reference frames were centered on getting rid of “hate” followed by “protections.” This makes sense given the nature of the policy. Overall, this particular issue is framed from a liberal ideology as liberal frames dominated the number of references throughout the articles surrounding the issue of hate crime prevention. The moderate themes consisted of using quotes from “business” managers or pointing to how local businesses implement inclusive policies referenced 3 times and how Idaho’s intolerant “image” was an issue that needed to be fixed and could be fixed with a policy like this referenced 5 times.

Table 2 shows the date for the issue of a Boise city ordinance. In 2001, LGBTQ advocates attempted to push for a city ordinance that would include sexual orientation and gender identity in a non-discrimination law for employment, housing, and public accommodations within the city limits of Boise. In 2001, there was a great deal of hesitation from city officials to implement the ordinance and Idaho Statesman writers, on several occasions, pointed out that it was an election year in 2001, alluding to the lack of support being due to officials’ fear of not being re-elected. In 2012, however, the tone presented in the Idaho Statesman of new city officials is much less fearful and very adamant to add sexual orientation and gender identity to Boise’s city anti-discrimination ordinance. There was only one article dedicated to this issue in 2001 but four more in 2012 when the actual ordinance was finally amended.

In Table 2, the data shows how the Idaho Statesman as a media entity facilitated proponent and opponent discourses surrounding Boise city ordinance implementation for LGBTQ advocates as indicated by articles written by elite writers. In this table, it is important to note that there is more variance in themes due to this issue popping up originally in 2001 and then eleven years later in 2012. There are more conservative themes in 2001 and more liberal and moderate leaning themes in 2012. Overall on the issue, Idaho Statesman writers displayed liberal, conservative, and moderate themes when discussing this public debate. The conservative themes consisted of “fiscal” concerns of implementation, the argument that LGBTQ are “already protected,” and that there is “no need” and a “slippery slope” that this ordinance would lead to marriage benefits for same-sex couples. The liberal themes consisted of “education” for those who lack understanding of LGBTQ people, “fairness” for equal opportunities, “safety” so that LGBTQ Idahoans no longer have to live in fear, and “simplicity” of implementing the ordinance. And lastly, the
moderate themes consisted of emphasizing “business” benefits for implementation and how “diversity” is the progressive and necessary thing for the city of Boise to do. The frame of pro-business was the most referenced in the particular issue of the Boise city ordinance making this issue overall framed in moderate ideology.

**Analysis**

In both the following examples of hate crime prevention and an Idaho city anti-discrimination ordinance, there is a clear indication of liberal, conservative, and moderate discourse being used to justify why these policies should or should not be put into place. I will further define what I mean by liberal, conservative, and moderate in each of the following sections.

**Liberal Discourse**

“Traditional” liberal language consists of framing LGBTQ issues in terms of equality of rights, preventing discrimination, fighting hate, and/or bigotry. In these two cases, LGBTQ advocates were more likely to be quoted using this kind of language for their cause. Proponent’s mentioned how these policy changes would create a sense of equality. In some cases the *Idaho Statesman* writers would also use this theme of language to present the change in policy as being fair, simple, and worth it for education purposes.

There is evidence of liberal frames in regards to hate crime prevention for the LGBTQ community. The liberal frames predominately stem from proponent quotes. One example stated “Idaho laws should protect people” (Clouse, 1999a). This is an example of a liberal frame because it is suggesting the Idaho legislation needs to take on more responsibility for social decision making, and some people aren’t protected. It suggests that the role of government must intervene to prevent hate and protect minority groups. Another liberal discourse example stated “This [hate crime prevention law] would do nothing more than to extend that protection out to those who are persecuted based on sexual orientation” (Clouse, 1999a). It subtly suggests it is the “right” thing to do but it is also a form of liberal discourse because it is suggesting that passing this law is non-threatening to the hegemonic (straight and/or conservative) society. The less threatening a minority groups is, the more likely they are to get the policy changes they seek (Muccaroni, 2008 and Chavez, 2008). Therefore it makes sense that LGBTQ advocates would attempt to appease the fears of the Republican-dominated legislature. The *Idaho Statesman* frames the issue as a non-threatening, non-radical request that is simple and straightforward.

In addition to the hate crime prevention law, there is evidence of liberal frames in regards to the Boise city ordinance. Particularly in 2012, when there seemed to be a shift in the opinions of the new city council members. The *Idaho Statesman* staff approved of the city council and their decision to move forward with passing a city ordinance. They state in an editorial of “Our View” that “no one should have to fear losing their job or their apartment because of their sexual orientation or gender identity. That's a matter of fundamental fairness. And it's also a fairly simple concept” (Staff, 2012c). This statement alludes to the idea that everyone has a right to not live in fear and be treated fairly. The fear portion speaks to an ethos-heavy approach more commonly taken by liberal discourse, calling attention to more personal and human qualities to tug on the heart strings of readers. The idea of “fairness” is a euphemism for equality, which is a fundamental concept to liberalism when discussing LGBTQ issues (McFarland, Year). The *Idaho Statesman* also stated that passing this ordinance gives “the message of inclusiveness it sends beyond Boise's borders, to newcomers and new business…By promoting a safe, healthy community, an anti-discrimination ordinance is one component of a ‘21st century city’” (Staff, 2012c). This reference to a “21st century city” is a subtle indication towards being progressive, which is commonly associated with being diverse, modern, and competitive. The competitive component comes from the when *Idaho Statesman* staff point to “new businesses,” suggesting that new businesses want to build facilities in cities that are diverse and progressive. In another article, the *Idaho Statesman* stated, “[The city council] will propose an ordinance that would prohibit firing people, kicking them out of their homes and refusing to serve them in public places because of their sexual identity” (Berg, 2012a). The change in city policy was phrased in a liberal tone by making the issue more salient by emphasizing the people it will impact. In a way, it dramatizes the negative implications that happen every day this policy is not in place.

In both cases of the hate crime prevention law and the Boise city ordinance, there were clear examples of liberal framing to support the LGBTQ community. The liberal discourse emphasizes the necessity of these policy changes and the people they would positively impact if implemented with a lens on equality, rights, and protections.
Subtle Conservative Discourse

There is an absence of “blatant” traditional conservative discourse against LGBTQ advocates from professional writers and quotes selected from the Idaho Statesman in these two cases. Traditional meaning that is was popular in 1990s for the “conservative right” to openly demonize sexual minorities and their “lifestyle” or use religion as grounds for morality arguments and exclusion (Diamond, 1997; Blain, 2005 and McFarland, 2011). In these two cases, there is an overall lack of religious argumentation as support against inclusion of policies. Due to the nature of hate crimes, there is not a direct connection for the use of religion, unlike in the issue of same-sex marriage where religion is central for the case against it. And the Boise city ordinance also contained a religious exemption, which could explain the lack resistance from a religious opposition.

Instead, this data shows there was more “subtle” conservative discourse being framed within Idaho Statesman articles which is arguably more challenging to combat. This is because they are no longer stating that LGBTQ are inferior or undeserving in an open and direct way, which can harness opposition against conservatives and gain support from moderates (Blain, 2005). Instead, there is a subtlety in the arguments against policy change, by using more removed reasons. It is challenging to combat an opposition that does not publicly say it is against your cause, but rather the way you’re going about the change.

In the case of hate crime prevention, there is more evidence of a subtle conservative discourse. In one example, there is still a romance of the more traditional blatant conservative discourse. A republican representative was quoted stating “If I vote ‘yes,’ I’m telling my people gay and lesbian activity is great” (Popkey, 1999b). This representative doesn’t want his conservative constituents to believe that that he approves of this “lifestyle.” It is clear that the belief that this “lifestyle” is looked at as being abnormal and therefore undeserving of protection. In a more subtle example, Committee Chairman John Tippets, R-Bennington, said “he knows of no lawmaker on the committee who condones hate crimes against gay people—or anyone” (Clouse, 1999a). This is a deflection from the fact that gay Idahoans have specific marginalized experiences unique to them. This statement generalizes their experience by stating that lawmakers are “for everyone’s” well-being and therefore removes the responsibility of lawmakers to access their own privilege. Another example of this can be found in this quote from Tippets: “I’m uncomfortable with the whole concept of who the crime addresses,” he said. “Once you start choosing groups, where do you stop?” (Clouse, 1999a) “The message we want reported is that we don't condone hate crimes against anybody—even if they don't fit into one of those groups,” Tippets added. “Everybody should be treated fairly.” Again, this is an overgeneralization that removes that marginalization from specific groups. By focusing on “everyone,” it ignores the fact that minority groups face more marginalization than dominate groups. Dominant groups don’t have to re-access their position in society and avoid blame. Adamant groups against this legislation were the Idaho Family Forum and Idaho Christian Coalition who said “the state currently has sufficient laws to deal with hate crimes” (Clouse, 1999a). Both of these groups were heavily involved in the creation of the 1996 Proposition One campaign against LGBTQ Idahoans in which they aimed to prevent “special rights.” There is a strong desire from these groups to prevent “special rights” to be granted to LGBTQ advocates, in fear of them gaining strength and pushing their lifestyle on others. These groups find them threatening to their way of life and therefore supported every legislation against them and spoke against every policy change attempt they pushed for during this time.

In the case of the Boise city ordinance, there were very few conservative views displayed in 2012 as the ordinance was passing. Again, the religious exemption that was added that could explain this. There was only one instance framed in the Idaho Statesman in which a Boise resident who spoke against the ordinance using more the tradition conservative discourse. He spoke in “support of ‘traditional marriage’ and warned of the dangers of sodomy…[and] urged the council to reject the ordinance, saying it infringes on his religious freedom and is not necessary” (Cuniff, 2012b). This is a traditional conservative argument we are used to hearing and reading in the Idaho Statesman in the past. However, in this case it seems to have lost its effect. Plus marriage and sodomy were not center issues to the ordinance, making this argument rather out of place and easy to ignore.

In both cases of the hate crime prevention and Boise city ordinance, there is a presence of conservative discourse in the framing of articles produced by the Idaho Statesman. There is an absence of overt grievances with LGBTQ advocates in article framing, but instead more subtle conservative approach to undermine advocates. This framing displays more than one side to the sexual orientation policy debate but it also inhibits the LGBTQ community. This framing poses a challenge for LGBTQ advocates as it is challenging to overcome subtle arguments against their cause rather than face overt grievances and gather support from a moderate audience.
Pro-Business Moderate Discourse

This paper suggests that there is more than just the traditional liberal and a subtle conservative rhetoric battle. In many cases, the local media commonly uses moderate arguments by actively seeking the opinions of local tech business managers or groups that have an indirect investment in the issue. They commonly refer to the policy changes as being beneficial to overturning Idaho's supposed intolerant image, improving Boise’s diversity, hinting that a tolerant, diverse image affects business and Idaho’s economic well-being positively. Advocates want to be viewed as human beings who lack basic rights and suffer due to a lack of those rights (more in line with liberal discourse); yet, the conversation is more driven to label advocates as commodities that either benefit or don't benefit a local or state economy. As it would seem, this cause is only as good depending on how much revenue it can generate. Throughout this study there are two major events that directly connect with sexual orientation-related policy in which advocates interact with legislature: Hate Crime Prevention (1999) and Boise City Ordinance (2001 and 2012). These examples highlight how media framing was greatly involved.

The Idaho Statesman most often framed the issue of hate crime prevention to how having this law would affect Idaho’s image in a positive way, sending the message that Idaho is not an intolerant state. This was done through quotes from supportive legislators like “the strength of the bill is the widely held view that Idaho must shed its undeserved reputation as a haven for intolerance,” which demonstrate that some lawmakers did believe that Idaho was harmed by having an image like this (Popkey, 1-19-1999). Later in the same article, a piece from Gov. Dirk Kempthrone’s state of state address was also quoted: “the blemished image needs repair...we do not have room in this state for bigotry, intolerance and hate” despite having no official stance on the issue (Popkey, 1-19-1999). The “image issue” will surface quite a bit as media advocates use it as grounds for promoting equality.

But what is most intriguing is how Idaho’s image is connected to its quality of business. The image is almost always connected to how it affects business in a negative way. This is significant because now, businesses become the focus to which this conversation was about rather than the more liberal discourse of equality rights or discrimination of people. The media outlet actively engages local businesses into this conversation by asking for their opinion on LGBTQ issues. This is a clear example of moderate ideals, because it is framing to appeal to the interests of fiscal conservatives through pro-business rhetoric while appealing to the interests of liberals through the idea of creating a more diverse Idaho. The Idaho Statesman uses fiscal reasoning as means to support LGBTQ advocates.

The Idaho Statesman quotes what they call “Idaho’s most important corporation,” Hewlett-Packard Co., to give their opinion on the hate crime prevention issue. An HP manager confirms that it is challenging as a business to “overcome the image problem,” suggesting that recruitment and retention is impacted by intolerant laws (Popkey, 1-19-1999). In another article, the same manager is quoted saying that “Idaho’s image makes it harder for HP to stay competitive in Boise” when attempting to compete with other states for employee recruitment (Clouse, 1-21-1999). The Idaho Statesman, through this framing, normalizes the idea that businesses should be role models for lawmakers to pass this hate crime prevention legislation.

The hate crime prevention law was ultimately defeated by a 14-7 vote, and this decision sparked the Boise Police Department to take their own steps. The Boise Police Chief said “we have chosen to go beyond the Idaho state law” by adding sexual orientation and disability to their policy. This policy could not provide that same punishment, but victims of hate crimes will be given the same quality of investigations by police (Jackson, 3-31-2000). This is an example of neoliberal ideals—a small group is taking on the responsibility that traditionally would have been the governments in aiding social groups. This is also an example of the Boise Police Department acting as an ally for LGBTQ advocates through the media lens.

In the case of the Boise city ordinance, the Idaho Statesman also framed the issue using moderate discourse, but this time it was the advocates themselves who pointed to businesses for support. A representative from Your Family, Friends and Neighbors, a LGBTQ organization, was quoted stating, “we’ve had a lot of independent companies in the valley pick up on their own and do this,” in reference to adding sexual orientation and gender identity to employment protection criteria (Hoffman, 7-21-2001). Advocates point to local businesses (Hewlett-Packard and Albertson’s) who have already implemented inclusive policies trying to make them seem like credible role models the city should follow. This highlights the moderate undertones because it shows that businesses are taking on more social responsibility and influencing social decision making rather than waiting for city officials to take the reins. Corporations have more power to say what should or should not be done.

It wouldn’t be until 2012, when Boise city officials finally decided to implement a protective city ordinance for LGBTQ individuals. The media framed it as “discrimination against gays and transsexuals undermines public safety...It’s also bad for business” (Berg, 11-9-2012). The reasoning and justification used by the Idaho Statesman had minor liberal context but then blatantly used the moderate context in the end with the business comment. Next,
the issue of employer recruitment surfaces yet again as an issue for Idaho’s economy. City officials expressed concern that “companies looking to open new facilities saw Boise’s lack of legal protection for gays and transsexuals and crossed the city off their lists” (Berg, 11-9-12). This statement demonstrates a concern that the City of Boise is not doing all that it can to be competitive and progress forward. This is a moderate ideology because it is suggesting that passing this ordinance will encourage more diversity in Boise by showing that it is a safe city for everyone, which is a key to economic progression and modern times (Cuniff, 11-13-2012). The emphasis is on economic benefits for conservatives and the benefits LGBTQ Boiseans for liberals.

Conclusion

How does the Idaho Statesman frame sexual orientation policy issues? And how might this framing impact a larger audience? The Idaho Statesman is supporting LGBTQ Idahoans through liberal and moderate frames. The Idaho Statesman displayed 43 references to liberal framing in support for the LGBTQ policy hate crime prevention by primarily using quotes from LGBTQ advocates and in issues of “Our View.” This liberal framing highlighted the policy changes as being positive through themes of preventing discrimination, creating equality and a sense of fairness. I found evidence that the Idaho Statesman did present a conservative framing through quotes from opponents to policy changes, which were not supportive of LGBTQ advocates. But this was minor and used a more soft or subtle approach to convey a conservative message. And lastly, based on the data, the Idaho Statesman referenced moderate framing 16 times in the Boise city ordinance by focusing on themes of a pro-business approach and improving Idaho’s intolerant image. This was primarily achieved by quoting local business owners who have inclusive employment policies and by suggesting that including diversity benefits everyone in editorials of “Our View.” This contributes to media agenda setting theory because these liberal and moderate framings have the potential to influence how readers of Ada County and Canyon County perceive these issues and the LGBTQ community by using a more assimilationist approach.

The moderate framing is directed more to a conservative audience by highlighting fiscal benefits to inclusion, by emphasizing the “non-threatening” demands that LGBTQ advocates are making, and by emphasizing that LGBTQ are “just like anyone else.” My hypothesis was unsupported in regards to the conservative framing because I expected to see more frames centered on morality, but instead it was more indirect with the exception of one minor quote. However, my hypothesis was supported in regards to liberal and moderate frames because there were attempts make the LGBTQ community as non-threatening as possible and simply needing rights.

Further research should be conducted on other Idaho newspapers and media sites to add to this analysis. Comparing how Idaho is framing and facilitating conversations around LGBTQ issues in comparison to the national level. Assessing how Idaho may be impacted by national pressures and opinions. In addition, there should also be a state wide public opinion survey to conduct opinions on social policies, specifically for LGBTQ-based policies. Currently there are none, posing the challenge of how to measure if or how public opinions have or have not changed. Media plays a critical role in perception, but it is not the only way in which minds can be changed. Advocates should rely on other community allies in addition to media framing to gain support for policy changes. Educating cities and smaller communities can help them develop stronger alliances with other minority groups.
### Tables

#### Table 1: Hate Crime Prevention (1999)

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#### Table 2: City Ordinance (2001, 2012)

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Appendix

Hate Crime Prevention


Boise City Ordinance

Works Cited


Sexual Violence in India: The History of Indian Women’s Resistance

Renae Sullivan: McNair Scholar
Dr. Reshmi Mukherjee: Mentor

Abstract

This research seeks to recontextualize the understanding of the ways women resist sexual violence and agitate for change of socio-cultural and political practices in India. Modern Indian women’s social movements were revitalized in the 1970s with the Mathura rape case in Maharashtra. The historical context of this impactful activism is framed through analysis of four pivotal rape cases—Mathura, Bhanwari Devi, Imrana and “Nirbhaya,” otherwise known as the Delhi gang rape case. The assertive and innovative resistance of women includes such tactics as sit-down protests, marches, rallies, candle light vigils, street theatre, presentations, ad campaigns, freeze mobs, and social media. The persistent actions of Indian women continue to generate public awareness, spawn alterations of national laws, and advance the examination of patriarchal and hegemonic male centric social systems. Based upon the scholarship of Radha Kumar, Mangala Subramaniam, Debolina Dutta, Oishik Sircar, Himika Bhattacharya and Deepti Misri, this research aims to reframe the understanding of the ways women resisted sexual violence within recent history.

Introduction

This paper will trace the trajectory, from 1970 to today, of sexual violence in India, the Indian women’s collective agitation against it, and its socio-political and legal impact on the Indian nation. I focus on India not because of the international media attention but for the protest movements by the common people in India. According to the United Nations (UN) report of 2012\(^1\), there has been an abysmal increase in incidents of rape and sexual violation of female bodies across the globe. The United States, Sweden, and many other “first world” nations have a higher number of rapes than India per se. In India, however, the protest against rape has become a mass movement. It has not only forced legal changes but also forced people to question socio-cultural practices that demean female bodies and perpetuate violence against it.

Additionally, this paper also addresses the misconception of the West about the brown woman in need of saving.\(^2\) The Anglo-American world has long assumed that women in third world countries are oppressed and need to be redeemed or liberated. However, since the 2012 Delhi gang rape, the thousands of men and women continuing to agitate for the safety of women, regardless of class or caste, give a very different picture. This, among other things, has challenged the international rhetoric on the victimization of Indian women.\(^3\) The movement proved, yet again, that women in India are not submissive, subordinate, or asking anyone to save them. They are capable of speaking for themselves.

Over the past 40 years, there have been countless incidents of rape that have affected multitudes of individuals and families in India. While many of these attacks are not publicized, there are numerous other accounts of rape, which continue to occupy a major portion of everyday news reportage. Out of the innumerable women who have experienced sexual violence in India, this paper will focus on four cases—Mathura, Bhanwari Devi, Imrana,

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and “Nirbhaya,” otherwise known as the Delhi gang rape case. These specific accounts not only illustrate the way rape is used as a tool to proclaim power, but these cases also reveal the myriad ways women have historically vocalized and exhibited their resistance to sexual violence.

Indian women’s activism, individually or as part of an organization, is documented as early as 1892 with the founding of 13 groups. Despite a collective lull in group building from 1947-1971, over a period of 20 years, only 29 total new groups were created; by contrast, the decade of the 1970s is often referred to as a period of “awakening for the women’s movement in India’s history.” From 1972-1976 alone, a total of only four years, 15 new organizations working on gender issues were created. This increase is indicative of the awareness of many women of the need to systematize and harness their collective energies to bring about change within society for the benefit of women.

Mathura Rape Case

The Mathura rape case in 1972 is considered a watershed moment that brought the various women’s groups together for one united cause. In March of that year, a 16 year-old tribal girl named Mathura, her brother, Gama, and Mathura’s employer, Nushi, along with Nushi’s cousin, Ashoka, were taken to the local police station. Gama had complained that Nushi and Ashoka had kidnapped Mathura; Mathura and Ashoka were in a relationship and had planned to marry. While in custody at the Desai Ganj police station in Chandrapur district Maharashtra, Mathura was allegedly raped by two or three apparently drunk male police officers. Upon encouragement from family and neighbors, Mathura registered a case against the policemen; nevertheless, the lower court “held that she was ‘of loose morals’” and ruled in favor of the officers. Conversely, the Nagpur Bench of Bombay High Court reversed the lower court’s ruling; yet on appeal, the Supreme Court overturned the high court’s judgment and acquitted the policemen. The court cited that “Mathura did not raise an alarm and had no visible marks or injury on her body,” indicating that she did not resist the advances, and furthermore, “because she was used to sex, she might have incited the cops to have intercourse with her.” Other reports at the time suggested that Mathura was not a virgin; therefore, the judge ruled it as consensual sex, not rape.

The court proceedings entered the public realm in 1979 when four Delhi University law professors wrote an open letter of protest to the chief justice of India. Interestingly, earlier in the decade one of the four authors, Lotika Sarkar, the first Indian woman to graduate from Cambridge and the first woman to graduate from Cambridge with a Ph.D. in law, had served on the Status of Women Committee. Subsequently the following year, Dr. Sarkar created the first feminist group against rape, Forum Against Rape.

Once women’s groups “seized the issue…the debate was increasingly brought to public attention,” Dr. Sarkar told the New York Times in 1980. In addition to several marches that took place in many cities around India, “seminars on rape and the law” were presented, as well as a sit-down protest in New Delhi, and articles on rape appeared daily in national newspapers. The courts received increased pressure to not only re-examine

5. Ibid., 31.
Mathura’s case but also the “general attitudes toward sexual offenses.”12 Women prominently agitated to show their support for Mathura; to express their united intention to resist future inexcusable, poor treatment of rape victims; and to raise a combined national awareness of rape pervasiveness.

Bhanwari Devi Rape Case

These outward expressions of anger and refusal to remain subservient did not stop the incidents of rape or sexual harassment of women. Another historically significant rape case also involved a woman of lower caste and men in positions of power and authority. Different from Mathura, the rape case of Bhanwari Devi occurred while she was carrying out her employment duties.

For approximately seven years before the incident, Bhanwari Devi worked as an employee of the Rajasthan state sponsored Women’s Development Program. Her job consisted of encouraging her fellow villagers to follow laws such as the abandonment of child marriage practices. This was no easy task since she was a Dalit, India’s lowest caste, and her actions effected upper-caste men.

After preventing the marriage of a nine-month-old child in 1992,13 she was gang raped in front of her husband by members of the ruling caste who coincidentally constituted the village government. Not surprisingly, the local police investigated her claims with the assumption that she was lying. The lower court acquitted the five men implicated in the case. Justice Jaspal Singh pronounced that rural gang rapes do not occur as multi-caste assaillments—four men were Gujjars, and one a Brahmin; therefore, rape was impossible. He further stated that “Indian rural society would not degenerate to the extent that they would lose ‘all sense of caste and class, and pounce upon a woman like a wolf.”14 Bhanwari Devi’s experience clearly showed the connection between rape and power. The men who raped her were in positions of authority and influence but because her social ranking was lower than theirs, combined with her professional efforts to discourage the traditional practice of child marriage, they exercised their power over her through rape.15 Long-established caste politics dictated that she be put in her place and taught a lesson.

Although there was no justice given to Bhanwari Devi and her rapist remain free, through the activism of women’s social movements and their increasing influence on the judiciary, eventually guidelines were created to “ensure prevention of sexual harassment of women.”16 These guidelines are known as the Vishakha Guidelines. Essentially, the guidelines define harassment and place the responsibility of stopping the persecution upon the employer, not the individual.17 Many years following her assault and because of her continued pro-activeness against societal wrongdoings, Bhanwari Devi is considered a feminist icon who continues to advocate for women’s rights.18

Imrana Rape Case

In the ensuing 10 years following Bhanwari Devi’s maltreatment, rape has not ceased. However, the response of the courts towards the victims has improved due to the labors of several women championing the rights of all women. To illustrate this point, consider the 2005 rape of Imrana by her father-in-law. While her husband was working in a neighboring town, Imrana, age 28 at the time, and her five children were living with her in-laws. One June evening, her father-in-law, Ali Mohammad, crept into her sleeping quarters and threatened to shoot her and her sleeping children, who were next to her, if she did not yield to him.19

12. Ibid.
17. Ibid.
News of the rape spread around the village, Charthawal, which is located in Muzaffarnagar district, Uttar Pradesh. The local governing body, panchayat, declared her marriage to her husband, Noor Elahi, illegal. When she was told to marry her rapist and that her current husband would become her son by Islamic law, she chose to rely on the support of the National Commission of Women, along with other leading women’s organizations, and defied the ruling of the male dominated panchayat. With the backing of her husband, she did not marry Ali Mohammad. Sixteen months later, lower court judge, R.D. Nimesh sentenced Mohammed to a 10-year prison term and rejected a plea for leniency by saying, “…if a woman was not safe in her marital home, she could not feel safe anywhere.” Mohammed was also fined 10,000 rupees for the rape and 3,000 rupees for a separate charge of criminal intimidation with an additional three-year prison sentence. Courtesy of the efforts of “women’s groups, democratic rights groups, and others” who agitated for Imrana’s rights and basic human dignity, her perpetrator received punishment by law. This progress clearly shows the impact of female mobilization; it simultaneously proves Indian women are not in need of being saved by Western sources.

**Outcomes**

Undoubtedly, the agitations generated by the female population of India improved human rights conditions for many women. Because of the demand for justice surrounding the Mathura rape case, for example, the laws pertaining to custodial custody changed. Likewise, notable changes in the sexual harassment laws evolved because of the hard work of many people who were involved in Bhanwari Devi’s desire to obtain justice. These two cases, along with Imrana’s rape case, are well known in India. On the other hand, it was the brutal sexual violence forced on “Nirbhaya” that shed unprecedented, unwanted negative attention on India and its rape culture. Moreover, the world witnessed the extensive passion with which India’s women worked for societal change.

**“Nirbhaya” Rape Case**

So who was “Nirbhaya?” By many accounts, she was similar to many of New Delhi’s young, up and coming urban inhabitants. She worked in a call center in the evenings and went to school as a physiotherapy intern by day. She aspired to claim a better life than the poverty riddled existence her parents had left behind in Uttar Pradesh when they moved to New Delhi 30 years earlier. She also had two younger brothers; she enjoyed her academic studies and talking on her mobile phone like other 23 year-old girls.

On Sunday, December 16, 2012, she and a long-time male friend, Awindra Pandey, watched the *Life of Pi* at a theater located in South Delhi. Unfortunately, because of the lateness of the hour when the movie finished, no rickshaw driver was willing to drive the long distance to their respective homes. “Nirbhaya” and Awindra had the misfortune to believe the bus and riders which eventually picked them up had only professional intentions. According to Awindra, the altercation began shortly after the bus fare was collected by the fake attendant; the five men who pretended to be passengers knocked him unconscious and then each took a turn raping, biting, and sodomizing “Nirbhaya” with a metal pipe. Then the driver took a turn violating her.

When the moving bus stopped over two hours later, the rapists threw the two naked, lifeless victims off the bus, and then tried to run them over. Protests began the day after her rape and continued for over a month. Awindra survived; however, “Nirbhaya” died less than two weeks later in a Singapore hospital. The result of transferring her

22. Ibid.
26. Ibid.
to Singapore caused some people to speculate that government officials aided in her medical treatment due to the fear of backlash; ironically, the same quality medical care and doctoring was available in India.27

“This is not an isolated incident,” said Ankita Cheerakathil, a St. Stephen’s College student, at a protest rally 11 days after the rape. “This is the story of every Indian woman.”28 Sangeetha Saini echoed similar sentiments at a candlelight vigil held the day after “Nirbhaya” died. “That girl could have been any one of us…We can only tackle this by becoming Durga.”29

India’s women interpreted the violation and death of “Nirbhaya” on a very personal level. Whereas India’s law prohibits the public release of rape victim’s names, people gave the Delhi gang rape victim alternate names that induced inspiration and expressed feelings regarding a personal connection. For example, “‘Jagruti’ (awareness), ‘Amanat’ (cherished property), ‘Nirbhaya’ (fearless), ‘Damini’ (lightning), and ‘India’s brave heart daughter’” were a few of the most widely used names.30 It was as if people posthumously adopted her into their family; her rape experience and background made her relatable to their own aspirations and circumstances.

Protests

The fact that people related to “Nirbhaya” and thought her assault to be so cruel and atrocious, along with the lack of protection offered by police and elected public officials, which pervades the country, caused emotions to run high and anger spilled over onto the streets of New Delhi. Thousands of people joined other women and children who were protesting in front of the presidential palace and the India Gate monument. In addition to police, India’s elite special forces, Rapid Action Force, intervened in controlling the massive crowds. Some of the control tactics included a hastily enacted ban on groups of more than five congregated people, tear gas, bamboo sticks, and water cannons. Officials also shut down central subway stations, limited busing services, diverted traffic, and implored people via national TV to “stay away.”31 Several citizens even camped at protest sites and were arrested.32 Women throughout India protested and demanded that their voices and grievances be heard.

The activism was not limited to mass protest in the street seeking punitive measures. Activists, common people, and intellectuals expressed their demands and concerns about the punishment and its long-term impact on sexual violence against women. One of the pertinent issues at hand was the demand for justice. In this regard, the infuriated public not only wanted the harshest of punishment but also something that would shame masculine prowess that is often believed to be the first reason for rape. There arose a public outcry for castration of rapists. In January 2013, Himika Bhattacharya and Deepti Misri wrote an op-ed analyzing the validity of this suggestion. They based their opposition to this method on the following three points: rape does not only occur within a heterosexual context; it provides an unjustifiable excuse for institutions to promote and safeguard sexual assault, especially as it structurally relates to “caste, class, sexuality and disability, which shape sexual violence;”33 and finally, the implementation of castration relies on the fallible logic of “good, protectionist masculinity as the way”34 to create safer communities. Though castration was not legally mandated because of this case, one notable result did come to

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29. Ibid. Saini’s reference to Durga evoked the name of the Hindu goddess who slew a demon according to Hindu mythology.
32. Ibid.
34. Ibid.
fruition. The prevailing public outcry motivated the central government to appoint highly regarded Chief Justices and jurists to a committee tasked with the creation of a report within 30 days from December 22, 2012. Their assignment encompassed recommending criminal law amendments that pertained to sexual violence.\textsuperscript{35} It was known as the Justice Verma Committee. When the committee solicited public opinion relevant to eradicating sexual violence, over 80,000 suggestions were received.\textsuperscript{36}

### Resulting Changes

Upon presidential and parliamentary consent, the amendments became law on April 3, 2013. The passing of this law provided harsher conviction sentences for rapists, “including life terms and even the death penalty;”\textsuperscript{37} rigorous consequences for acid attacks, stalking, and voyeurism were also included. Furthermore, fast-track courts were set up to facilitate swifter justice and police officers are now required to register rape complaints. Moreover, the burden of proof changed from the victim to the accused.\textsuperscript{38} On the other hand, the government disregarded feminist requests and Justice Verma Committee recommendations to lower the age of consent from eighteen, exempted marital rape and military sexual assaults, and “did not recognize sexual violence against women from marginalized communities as aggravated forms of the crime.”\textsuperscript{39}

Although this landmark alteration of rape laws was a welcome change by many people, no one was under the illusion that it would finally end rape throughout the country. A year and a half after the brutal rape that shook the globe, women in India continued to agitate for nationwide transformation from current societal norms toward attitudes and behaviors that provide all women with safety and self-determination.

Alongside advocating for legal changes, other methods of protest were also adopted during this time. The country saw the rejuvenation of street theatre to propagate a message of social changes. Historically, street theatre and demonstrations have been and continue to be effective in generating awareness and educating people about the issue of rape.\textsuperscript{40} Likewise, sharing and speaking about their own personal experiences with rape empowered and inspired many survivors and non-victims alike.\textsuperscript{41} Unfortunately though, such agitation and nationwide outcry proved inadequate in stopping cases of rape in India. But what the Delhi incident did was to spread awareness and empower survivors of such heinous crimes. In February of 2012, a middle-aged woman was raped in a moving car, then tossed out half-naked onto Park Street in Kolkata in the “dead of night.”\textsuperscript{42} The show of support for “Nirbhaya” helped Suzette Jordan, also known as the Park Street rape victim, come out in the public domain to speak for other survivors. She challenged all allegations that portrayed her as a prostitute, promiscuous, and irresponsible. “If I fight, I need to fight for who I am, not behind a mask, not behind a screen, not behind a blurred image,” said Jordan, in reference to the obscuring of her identity. She went on to say, “I was raped. I was brutally raped. I was tortured but I am alive for that and I want to fight.”\textsuperscript{43} Eventually, her physical wounds healed but it wasn’t until she reached out to others by sharing her experience and making her identity unrestricted that the emotional wounds began to heal.\textsuperscript{44}

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35. Dutta and Sircar, “India’s Winter of Discontent,” 301
38. Ibid.
43. Ibid.
Unlike previous decades when mobilization was hampered by a lack of rapid communication, contemporary activism capitalizes on modern technology and innovative methods to spark attention. Freeze mobs, for instance, have been used in public locations throughout New Delhi to agitate for change. A freeze mob consists of typically 60-70 people who suddenly pull out posters and banners with slogans carrying messages that focus awareness on the safety of women. Similarly, social media outlets provide platforms for promoting social change. Facebook, Twitter, texting, and blogging provide rapid methods for disseminating information and encouragement around the country and the world at large. This is yet another way Indian women are rallying for their own needs and resisting sexual violence.

Conclusion

To conclude, in modern India the resistance of women against sexual violence is more visible than ever before. Since the 1970s, women took up the cause of advocating for basic human rights and the self-determination of each other. Although the Mathura rape case ignited the rallying cry for women’s organizations to unite in a vital cause, the collective efforts of India’s women continue to motivate others to action. The issue of rape has become a political issue and that in itself should be an example for women across the globe. The issue of rape is not the sole problem of India alone. UN reports show that the United States, Sweden, and other countries in the Global North have larger numbers of rape cases. What needs to be understood is that rape is integrally entwined with patriarchy and hegemonic male centric social systems. Therefore, rape, an act of sexual violence on women, is a weapon used to exert power and to feel powerful; such heinous crimes can only be combated with collective local and global activism. It is a social malice and can only be corrected if everyone comes together to protest against it. It is not only changes in the legal system but also chauvinistic mentality that must be questioned. It is a long road ahead but Indian women’s voices against rape have time and again set an example of change occurring through united activism.

Through women’s agitation activities, laws, attitudes, and behaviors changed. Women advanced a significant position through their insistence on the creation of safe environments where all women, regardless of class, caste, or political affiliation can enjoy a dignified and satisfying life. The empowerment and activism of women in India is not only laudable but worthy of emulation.

Acknowledgements

I wish to offer my sincerest appreciation to Dr. Reshmi Mukherjee for her extensive time and energy spent on my behalf. Likewise, my indebtedness to Dr. Shelton Woods can only be repaid as I pay-it-forward hereafter. Equally deep gratitude is extended to Helen Barnes for her unwavering encouragement and confidence in me, to Greg Martinez for providing this outstanding opportunity, and to the entire McNair Staff. Above all, to my husband and four children, you are my universe.

Bibliography


The Melville-Hawthorne Friendship and Its Impact on *Moby-Dick*

Connie Townley: McNair Scholar

Dr. Steven Olsen-Smith: Mentor

English

As arguably one of the most famous literary works produced by any American writer (often deemed as the great American novel), Herman Melville’s novel *Moby-Dick* and its genetic history have been subjects of extensive scholarship over the last seventy years. Every aspect of Melville’s personal life, his considerable creative and personal hardships, as well as the influences which brought forth such an enigmatic and uniquely devised novel, have been all deeply explored and hotly debated. Melville’s friendship and admiration of Nathaniel Hawthorne is widely believed among scholars to be a major influence and catalyst which fueled Melville’s decision to depart from his original conception of *Moby-Dick* as an adventure novel (such as his earlier successful novels, *Typee*, *Redburn* and *White Jacket*), to a major creative and philosophical undertaking. On the heels of Harrison Hayford’s groundbreaking exploration of the genetic history of *Moby-Dick* in his essay “Unnecessary Duplicates,” I will explore the late addition of Queequeg as Ishmael’s “bosom” friend in the opening “shore chapters” of the novel as it mirrors the Hawthorne/Melville friendship, and how their relationship influenced Melville’s revision of *Moby-Dick*.

Harrison Hayford’s 1978 essay, “Unnecessary Duplicates” explores the genetic progression and order of Melville’s writing of *Moby-Dick*. Hayford argues that the inclusion of several duplications, which suggest that the novel was written out of order and that several passages that were included later in the writing process, (including the opening chapters which develop the Ishmael/Queequeg friendship) were dramatically expanded in the final revisions of the novel. Hayford suggests that the replacement of the more conventional character of Bulkington by Queequeg as Ishmael’s companion in the opening chapters was part of an intentional shift on the part of Melville to evolve the book from an adventure tale to a narrative of more creative depth and philosophical significance. Hayford argues that duplicates within the narrative suggest that Melville was in the process of ongoing revisions, for which he intended to edit more thoroughly, but due to pressure to finish, was unable to complete the intended edits before publication. Duplications remained in the final version of *Moby-Dick* which gives chronological clues to Melville’s evolution as a writer as well his specific plan to alter the emphasis and major themes of the book.

Hayford suggests that the writing of the shore chapters (Chs.1-22) occurred in three stages. The first stage, Hayford proposes, did not include either Queequeg or Bulkington, but instead added both in the second stage. The third and last stage as Hayford suggests, removes Bulkington and includes Queequeg as Ishmael’s “comrade” (Hayford, 46). A move away from Bulkington as Ishmael’s companion does more than add narrative interest; it lays a foundation for Ishmael’s questioning of faith, exploration of religious conventions and his desire to gain connection with a “bosom” friend through the unconventional choice of Queequeg.

Hayford’s ideas surrounding the inclusion of the shore chapters as the last addition to Melville’s revisions to *Moby-Dick* seems especially relevant when considering the trajectory of the Ishmael/Queequeg friendship, which inexplicably breaks off after the conclusion of “shore chapters.” The closeness of the friendship all but disappears once the Pequod leaves shore and is never revisited with the same richness throughout the rest of the book. Though Queequeg is mentioned in passing as a harpooner, and his physical illness is included in “Queequeg in his Coffin,” (Ch. 110) it is not with the same connection and spirit of camaraderie that the reader experiences the friendship in the opening chapters of the book. Though Ishmael feels some level of camaraderie towards Queequeg, there is no mention of their shore experiences throughout the rest of the book, as he is “losing almost entirely his purported status” (Sattelmeyer, 214). This seems strange considering the significance of their exchange in the opening chapters as spiritually bonded, “boon companions,” sharing the same bed, to no further mention of their friendship. The richness in which Melville describes the friendship in the opening chapters leaves the reader confused and rather disappointed that it is never revisited with the same depth throughout the rest of the novel.

It is easy to imagine that Melville, inspired by his friendship with Hawthorne, intended to expand and integrate the richness of the Ishmael/Queequeg friendship throughout the rest of the narrative, if he had not been so rushed by publishing demands. The disconnection and contradictory nature of the Ishmael Queequeg friendship...
lends merit to Hayford’s argument that the significance of the close friendship described in the early chapters of the book were not added until the final stages of Melville’s writing of the manuscript, and were influenced by the introduction of Melville’s friendship with Hawthorne.

In his article published in 1940, Melville scholar Leon Howard, published his essay, “Melville’s Struggle with the Angel” in which Howard argues that Melville was not an inherently great writer and struggled both technically and artistically with his writing. Howard cites Hawthorne and Shakespeare as important influences in Melville’s development of a stronger narrative style in Moby-Dick. Howard regards Hawthorne as catalyst in Melville’s departure from the “exhausted autobiographical pattern of personal experience,” which Howard believes to be a literary device Melville depended on too heavily in the writing of his earlier books, (such as Typee, Whitejacket and Redburn) and became a hindrance in the creative development of his writing, substituting for any real “narrative invention” (Howard, 203). Howard argues that Melville’s professional admiration for Hawthorne developed into a default mentorship that showed Melville the possibilities of his creative aspirations under the tutelage of “the man who could teach him his art” (Howard, 204).

Howard P. Vincent’s 1949 book, The Trying out of Moby-Dick, also suggests that Moby-Dick was written in two distinct stages, and that Melville’s impetus for revision was influenced by the quality of his artistic vision as well as the influence of Nathaniel Hawthorne. Vincent suggest that Melville was “rotten-ripe” for a release and “revolution” of “forces long gathering” from years of creative frustration as well as “the sudden and magnificent release of those Shakespearian forces when Melville met Hawthorne” (Vincent, 14). Vincent does not share Howard or Barbour’s belief that Melville was inherently lacking as a writer, declaring Melville as “completely the master of his journalistic materials” (Vincent, 14). In a nod to William Wordsworth’s famous passage from The Preface to the Lyrical Ballads, Vincent suggests that Moby-Dick was a product of Melville's growing maturity and skill as an artist and the outcome of “powerful emotion recollected in tranquility” as compared to his earlier books (such as Typee) which were created from “vivid experience recollected in immediacy” (Vincent, 14).

In January 1954 George R. Stewart published his essay, “The Two Moby-Dicks,” outlining the genetic history based on “internal evidence” of the composition of Moby-Dick. Stewart introduces the idea of the “Ur-Moby Dick” (pre-revision) and the “Moby-Dick” as we know it now (Stewart, 418). Stewart believes that the opening “shore chapters” belong within what he describes as the “Ur-Moby-Dick” in its original state and describes this section as “very slightly revised” (Stewart, 417). Similar to Howard, Stewart suggests that it is Melville’s lack of technical skill, which led to his struggles to revise the book. Howard suggests that a lack of organization, planning and an overactive creative disposition on the part of Melville are contributing factors to the unfinished nature of Moby-Dick, saying “If there is one thing that seems certain about Melville as a writer, it is that he did not plan a book carefully to begin with or even think it through in his mind,” leading to Stewart’s suggestion that, “If a writer is unable to think his book through at first trial, he may also be unable to think it through at second trial or at third. Thus we may conceive of Melville—his creative imagination always outrunning his critical judgment and his technical skill” (Stewart 447). Stewart cites “shifts in conception and function of characters” as evidence for the revisions of Moby-Dick. This shift, Stewart argues, can be seen most clearly in the character of Ishmael, suggesting Melville’s transitioning of the book from “a south seas tale” to a more thoughtfull and artistic endeavor, suggesting that Ishmael begins “able to reproduce what people are thinking, and he has thus ceased to be a mere character in the book and has become a spokesman of the all-knowing author” (Stewart, 439).

James Barbour’s 1970 thesis titled “The Writing of Moby-Dick,” explores the genetic history of Melville’s writing of Moby-Dick and introduces the concept of Moby-Dick written in “three distinct stages of composition and not two as previously presumed” (Barbour, vii). Similar to Howard, Barbour argues that the opening chapters of Moby-Dick were written in the first stage of writing, and not as part of the final revision. Barbour outlines through his study the three main literary influences: “Shakespeare, Hawthorne and Carlyle,” which he contends most influenced and informed Melville’s revision of Moby-Dick. Barbour suggests that Hawthorne’s most significant influence on Melville’s writing is the introduction of “evil” as it pertains to development of the character Ahab’s “monomania” embodied by the white whale. Barbour goes on to say, “The blackness inherent in the ‘Mosses’ tales is an inseparable part of Moby-Dick. It forms the backdrop against which the novel unfolds” (Barbour, 154).

More recent criticism has offered interpretations of Melville and Hawthorne’s friendship which emphasizes the homoerotic aspects of their friendship, including much speculation surrounding the true extent and nature of their relationship based primarily on content within Melville’s letters to Hawthorne and Melville’s essay, “Hawthorne and His Mosses.” Robert Milder in his 2008 essay, “The Ugly Socrates-Melville, Hawthorne, and the Varieties of Homoerotic Experience,” explores the Hawthorne/Melville friendship as it relates to different interpretations and definitions of “homoerotic experience,” both historically and through a primarily Freudian critical lens. In his introduction, Milder points to the difficulties inherent in offering any definitive social definition to the Melville/Hawthorne friendship, but offers within his argument what he calls “provisional speculation”
In "Hawthorne and His Mosses," Melville praises Hawthorne’s ability to probe the dark center of “spiritual truth” (Melville, 523), stating “it is the blackness in Hawthorne, of which I have spoken, that so fixes and fascinates me” (Melville, 521). The same spiritual doubts and anxieties that Melville recognizes and appreciates in Hawthorne are mirrored in Ishmael’s connection and fascination with Queequeg. Ishmael embraces the alternative spirituality Queequeg offers as a way of declaring his independence from the hypocrisy of the dominant Christian paradigm at one point saying, “I’ll try a pagan friend, thought I, since Christian kindness has proved but hollow courtesy” (Melville, 56). This exploration of “hypocrisy and narrow-minded fanaticism” (Robertson-Lorant, 43) and morality in the opening chapters becomes “a criticism of American social and ethical thought” (Vincent, 80) which is integral
to the revisions of *Moby-Dick* in later chapters. Melville, knee deep in revisions, undoubtedly found inspiration in Hawthorne’s ability to probe deeply into the hypocrisy inherent in spiritual matters, and statements of artistic integrity in such stories as “The Artist of the Beautiful” which spoke to his own desire for artistic freedom and to produce a work free from the limitations of the material world.

Documented in Melville’s markings in his copy of “Mosses from an Old Manse,” is Melville’s attention to Hawthorne’s preoccupations with artistic integrity and morality in such stories as “The Artist of the Beautiful” and “The Birthmark,” which can be seen as directly influencing Melville’s development of characters like Queequeg and Ahab in the later narrative additions to *Moby-Dick*. Not only does Hawthorne’s writing influence Melville’s narrative style, but the “The Artist of the Beautiful,” a tale of an artistically frustrated clockmaker who constantly battles his desires to create art rather than pursue his mundane profession, would surely speak to Melville’s struggle to enact his own artistic vision. Melville’s markings in this passage suggest he connected to Warland’s assertion that, “It is requisite of the ideal artist to possess a force of character which seems hardly compatible with its delicacy; he must have faith in himself while the incredulous world assails him with its utter disbelief” (Hawthorne, 171). Undoubtedly, Melville identified with Warland’s assertions of the exclusivity and isolation of the artist. Melville expresses his frustration for his inability to complete *Moby-Dick* in the way he envisioned in his April 1851 letter to Hawthorne, in which he expresses his frustration in the publishing history of his works which are unfinished and therefore incomplete and unable to express his vision, saying “What I feel most moved to write, that is banned—it will not pay. Yet altogether, write the other way I cannot, so the product is final hash, and all my books are botches” (Melville, 539).

Hawthorne provides Melville the sort of psychic support and feeling of connection which propels him to move forward and transcend any lack of ability or external constrictions of a society which did not understand his artistic vision. Hawthorne represented to Melville a path of understanding and a sense of like-minded artistry which fueled Melville’s burgeoning creative aspirations. This connection is similar to the sense of connection and longing represented in Ishmael’s connection with Queequeg. Queequeg offers the “fraternity of feeling” and connection that Ishmael washed ashore in his “hypos” longs for.

In the opening “shore” chapters, Ishmael describes himself as being in a state of melancholic isolation and spiritual disconnection, finding himself “involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral” (Melville, 18). The introduction of Queequeg as his comrade allows Ishmael the opportunity to experience the physical embodiment and intuitive exploration of an alternative spirituality, laying the foundation for his deeper exploration of philosophical ideas within the later chapters of the book. “Knowing you persuades me more than the Bible of our immortality” (Melville, 546). This connection, which isolates Ishmael also connects him to the loneliness shared by Queequeg. The “fraternity of feeling” is more significant than the isolation of their current circumstances.

It is Hawthorne’s willingness to explore the deeper philosophic nature of things, his “boundless sympathy with all forms of being” which speaks to Melville’s sense of exclusivity which he feels connects him most deeply to Hawthorne (Melville, 520). The “fraternity of feeling,” which Melville explores in his essay “Hawthorne and His Mosses,” is similarly shared between Ishmael and Queequeg in the opening chapters of *Moby-Dick*. Ishmael’s desire for connection with the heathen Queequeg places him in direct opposition to many of the social mores of his time, mirroring Melville’s desire to embrace within his own writing the “blackness,” spiritual and philosophical questioning as well as the artistic integrity he finds so important in Hawthorne’s writing. Hawthorne’s writing influences Melville and bolsters his confidence to explore in depth the deeper philosophic issues of *Moby-Dick*. Melville wishes to write a book that allows him to explore his expanding interest in philosophical ideas for which he finds an ally in Hawthorne.

In the chapter “A Squeeze of the Hand,” Melville explores the camaraderie and connection that man feels in the shared experience of isolation. Ishmael describes a transcendent experience through the action of breaking down (with his hands intertwined among his shipmates) the sperm from the head of the whale. The meditative nature of the work allows Ishmael to glimpse into the interconnectedness of man as an alternative spirituality to an interventionist and paternalistic god as well as the interdependence of humans, and the physical and intuitive connection in their loneliness and isolation, “I have perceived that in all cases man must eventually lower, or at least shift, his conceit of attainable felicity; not placing it anywhere in the intellect or the fancy; but in the wife, the heart, the bed, the table, the addle, the fire-side, the country” (Melville, 323). This “attainable felicity” is surely reflected in Melville decision to include the Queequeg/Ishmael friendship in the opening of the book.

In “The Whiteness of the Whale” chapter Melville moves beyond Hawthorne’s preoccupation with darkness and “puritanic gloom” by introducing the power of whiteness as a symbol of relativism, atheism, and the potential of God’s indifference to man which is equally terrifying, (if not more) as the concept of sin, explaining: “with whatever is sweet and honorable, and sublime there yet lurks an elusive something in the innermost idea of
this hue, which strikes more of panic to the soul than that redness which affrights in blood" (Melville, 160). In his February 12, 1851, letter to Evert A. Duyckinck, Melville writes about what he finds lacking in Hawthorne’s preoccupation with sin, “Still there is something lacking—a good deal lacking—to the plump sphericity of the man. What is that?—He doesn’t patronize the butcher—he needs roast-beef, done rare” (Melville, 535). Melville’s philosophy surrounding the idea of “whiteness” can be seen as a direct response to Hawthorne’s “too largely developed” fascination with darkness and sin, suggesting that sin itself is irrelevant when weighed against the potential of God’s non-existence (Melville, 522).

The connection in *Moby-Dick* between Ishmael and Queequeg in the shore chapters lends a sense of the intuitive connection which Melville strives for, as well as adding some much needed humor to the narrative. Melville preoccupied with uncovering “the Truth” does not forget to highlight the absurdity and humor within the expansive darkness and “whiteness” of the universe. The intuitive attention paid to corporeal experience, which Melville finds lacking in Hawthorne’s writing, underlines his need for connection and hope, among the existence of hypocrisy and conceit inherent to man. Melville speaks to the hollowness in human isolation in the “Castaway” chapter, perhaps also illuminating the perils of internal isolation at the hands of over intellectualization, and writing “But the awful lonesomeness is intolerable. The intense concentration of self in the middle of such a heartless immensity, my God! Who can tell it!” (Melville, 321). Melville finds the intuitive connection he desires in Hawthorne’s writing, tempering the frustration of his artistic failures and isolation, discovering a kindred spirit, as he writes in his November 17, 1851, letter to Hawthorne, “But, I felt pantheistic then—your heartbeat in my ribs and mine in ours, and both in God’s. A sense of unspeakable security is in me this moment, on account of your having understood my book” (Melville, 545).

The replacement of Bulkington with Queequeg as Ishmael’s “bosom” friend signals a shift or desire for a development of characters with a more intuitive and physical connection. The sharing of the bed and Ishmael’s participation in Queequeg’s worship is also symbolic of this change in Melville’s writing. This closeness, if viewed within the context of the historical timeline and development of the friendship of Ishmael and Queequeg is most definitely influenced by the friendship between Melville and Hawthorne. The “fraternity of feeling” that Melville speaks of in “Hawthorne and His Mosses,” can be seen as prototypical in development of the close friendship between Queequeg and Ishmael. The friendship offers lightness to the novel as well as a sense of connection to the overall bleakness in it. It is connection that Ishmael craves which draws him to Queequeg, despite his initial reservations and fears. The friendship of Queequeg and Ishmael is necessary to the development of Ishmael’s philosophical explorations in later chapters of the book.

If the genetic history is preoccupied with what Melville would consider an overly intellectualized preoccupation of what is known, current criticism would surely slide to the other extreme of instinctual speculation. What genetic scholarship and current criticism has failed to do up to this point is integrate the significance and influence of the friendship on Melville’s artistic vision and revision of *Moby-Dick*, while also carefully considering what exists in genetic scholarship. Hayford’s introduction of “Unnecessary Duplicates” as the apex of genetic scholarship, offers the most believable explanation for revision, answering the baffling question of exclusion of the Ishmael/Queequeg friendship throughout the rest of book, and highlights the importance of the Melville/Hawthorne friendship to the major thematic changes to the revision of *Moby-Dick*. Melville, inspired, yet ultimately unsatisfied with Hawthorne’s preoccupation with darkness, is driven to explore the concept of “whiteness” and atheism, which remains as one of the enduring images and matters of philosophical importance in *Moby-Dick*. Similarly, the inclusion of the Ishmael/Queequeg friendship to the novel remains as some of the most striking, humorous and relevant imagery from the novel, not only inspiring a new wave of current criticism but also illuminating even further the degree and magnitude of Hawthorne’s influence on Melville’s revisions of *Moby-Dick*. 
Works Cited


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