2013

Evaluation of Antibiotic Resistance Emerging from use of Antibiotics in CAFOs

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XJUR
Xavier University Journal of Undergraduate Research

Faculty Introduction

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We are excited to welcome readers to the inaugural issue of the Xavier Journal of Undergraduate Research in the Arts and Sciences. This journal was founded in 2013 to promote and share high quality research and creative works produced by Xavier University undergraduate students. Work published in the journal exemplifies the Xavier University College of Arts and Sciences' effort to achieve a more integrated understanding of humanity, the world, and God through studied reflection on the enduring questions raised by the core curriculum and departmental curricula. We are pleased that this inaugural issue lives up to these aims, promoting excellent student research that investigates significant human questions.

This issue includes a broad range of research from the natural sciences, mathematics, the social sciences, and the humanities. Student authors have investigated topics such as the cost of treatment for diabetes, the relationship between privacy and gender in classical literature, perceptions of Cincinnati in the nineteenth century, and the effects of Facebook on self-esteem. We hope that readers will find

in these articles not only quality scholarship but also scholarship with implications for the way we approach literary analysis, farming, the health care industry, popular culture, and even orthodontics.

Each of the fifty submissions to the Xavier Journal of Undergraduate Research was reviewed by a student editorial board composed of representatives from each department in the College of Arts and Sciences. The inaugural editorial board included these students:

John Appeldorn, Classics and Modern Languages
Hannah Barker, English
Katherine Colborn, Art
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Forest Hempen, Theology
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Natalie Kohls, Sociology
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Michael Petrany, Philosophy
Joshua Sabo, Political Science
Porter Windom, Biology
Chi Wong, Economics

As faculty advisors, we are particularly grateful to these students for the energy they brought to the task of peer review. For a week in May, they read submissions, argued the merits of each piece, and provided tremendous feedback to the authors. The quality of the papers in this issue reflects a strong, generative peer review process driven by our student editorial board.

We are also grateful to members of the Xavier University faculty and administration for their support of the journal: all of the faculty members who promoted the journal to their students and encouraged them to submit work; the faculty mentors who assisted students with final revisions to their accepted papers; Professor Barbara Hopkins, for her support of the journal and her commitment to undergraduate research at Xavier; Nanette Moore, for much-needed logistical support and enduring patience; Professor Ganesh Malla, for serving as a faculty advisor and statistics consultant during editing week; Associate Dean James Snodgrass, for enabling the student editorial board to enroll in English 316: Publishing

Undergraduate Research; and Dean Janice Walker for her financial support and encouragement of this project.

Finally, we are thankful to Katherine Colborn (Class of 2014) for editing and publishing the Xavier Journal of Undergraduate Research. The professional quality of this issue owes much to her creativity, diligence, and energy: Katherine created the XJUR logo and the style guide for the journal; edited and formatted all papers, which often involved heroic technological and citation-related feats; and prepared the entire issue for web publication. It has been a privilege to work with you, Katherine, and we greatly appreciate how well you have positioned the Xavier Journal of Undergraduate Research for the future.

Xavier University
Cincinnati, OH
July 2013

Variability of Teeth and Skull Size in Sub-Adult and Adult Humans

Maria Botros

Abstract

Previous studies show various skull dimensions to be predictable prior to full development.[1] Other studies suggest tooth and skull sizes are correlated throughout development.[2] The purpose of this study was to further investigate if specific skull dimensions could be utilized in predicting teeth sizes. Digital images of human skulls from archeological sites were obtained from collections at the American Museum of Natural History, New York. Linear measurements of teeth and skulls were taken using ImageJ and statistically analyzed using SYSTAT. It was found that overall skull dimensions, palatal dimensions, and mandibular dimensions were highly correlated to the crown module (CM) and mesiodistal diameter (MCD) of various teeth ($r = 0.6$-0.8). The highest correlations ($r > 0.8$) were between palate length and cranial breadth and the third molars (wisdom teeth), namely teeth 16 and 32.

[1] See References, 3.

[2] See Ref., 8.

Introduction

Many studies have resulted in mandibular growth prediction models, such as the Growth Potential method and the Growth Percentage method.[3] One such study found an equation to calculate mandibular length based on the dimensions of the third and fourth cervical vertebral bodies from the analysis of two study groups of 23 Japanese girls each.[4] According to this study, the predicted range of the mandibular length showed an error of 1.5 mm, as compared to the 2.4 mm and 2.8 mm error for the Growth Potential and Growth Percentage methods, respectively. These findings indicated that mandibular dimensions can be predicted prior to full development.

Other studies have indicated that tooth eruption and mandibular growth are closely associated, suggesting that they are correlated throughout development.[5] One study revealed that mandibular growth displacement in French-Canadian girls showed correlations to the girls' tooth eruption patterns between the ages of 10 and 15.[6] In this study, inferior mandibular growth displacement was correlated to mandibular molar eruption in 54% of the cases between 10.5 and 14.5 years old. These results suggest that tooth eruption may be linked to and potentially explained by mandibular growth. In another study, the Molar Tooth Basis method was shown to predict molar tooth size based on measurements of the mandible.[7] These studies indicated a correlation between mandibular growth and tooth development exists.

Similar research has been conducted showing a correlation between teeth and jaw sizes in primates.[8] This study referred to previous research that had revealed an association between large teeth and deep, robust jaws in hominins. In this study, intraspecific studies involving 36 species showed a correlation between tooth and jaw size as a function of sexual size dimorphism. Moreover, interspecific studies involving 84 species revealed a direct correlation between jaw breadth and molar tooth breadth. In comparing these two studies, it was shown that species-specific studies revealed a greater association between jaw and tooth size than intraspecific

[3] See Ref., 3.

[4] Ibid.

[5] See Ref., 7 and 8.

[6] See Ref., 8.

[7] See Ref., 7.

[8] See Ref., 9.

studies. These studies suggested that future interspecific studies researching jaw and tooth size could result in a better understanding of the correlation between jaw and tooth dimensions.

Comparable research to the mentioned studies of primates has been conducted with regards to measuring teeth and skull dimensions of humans. For example, studies have determined tooth to face size ratios for edentulous patients.[9] Various factors, including face size and shape, have been deemed important in choosing morphologically accurate teeth sizes for an edentulous patient. Many of these studies have discovered methods that relate tooth size to facial dimensions. Berry's Biometric Ratio method revealed that the width of the upper central incisor tooth is one sixteenth of face width and one twentieth of face length.[10] The Anthropometric Cephalic Index method found proportionality between tooth and face size; more specifically, the width of the upper central incisor was determined to be equal to the transverse circumference of the head divided by 13 or the bizygomatic width divided by 3.3.[11] Many other techniques, including the Frame Harmony method and the Tabular Dimension Table method, have shown that correlations exist among various dimensions of the skull and teeth.

Based on these findings, further investigation was necessary to determine if predicted skull sizes could be used to predict teeth sizes based on skull and teeth size correlations. It was hypothesized that if a correlation between teeth sizes and skull dimensions was found, then the sizes of teeth could be predicted based on known predictions of skull size. In this study, digital images were obtained from specimens housed at the American Museum of Natural History in New York. Various dimensions of the skull and teeth were measured using ImageJ Image Processing and Analysis in Java and then analyzed using SYSTAT®.

Materials and Methods

Digital images of human skulls from archeological sites were obtained from collections housed at the American Museum of Natural History, New York. The following specimens were studied: adults from North America (n = 3), Africa

[9] See Ref., 7.

[10] Ibid.

[11] Ibid.

(n = 3), Europe (n = 4), and Asia (n = 3), as well as sub-adults from Africa (n = 3) and Europe (n = 2), where n represents the number of specimens.

Using ImageJ, an Image Processing and Analysis software program, linear measurements of the teeth were taken. These measurements were taken for each individual tooth of the specimens. From the tooth measurements, the crown module, which is an estimation of the relative crown mass, was calculated. The definitions of the tooth measurements and calculations are shown in Table 1 and illustrated in Figure 1 below.

Table 1

Measurement/Calculation	**Definition**
Mesiodistal crown diameter (MCD)	maximum mesial-to-distal diameter
Buccolingual crown diameter (BCD)	maximum diameter perpendicular to mesiodistal axis
Crown module (CM)	average of MCD and BCD

Table 1. Definitions of tooth measurements and calculation used in determining tooth size. Tooth measurements include mesiodistal crown diameter and buccolingual crown diameter. Crown module is a calculation based on tooth size.

Figure 1

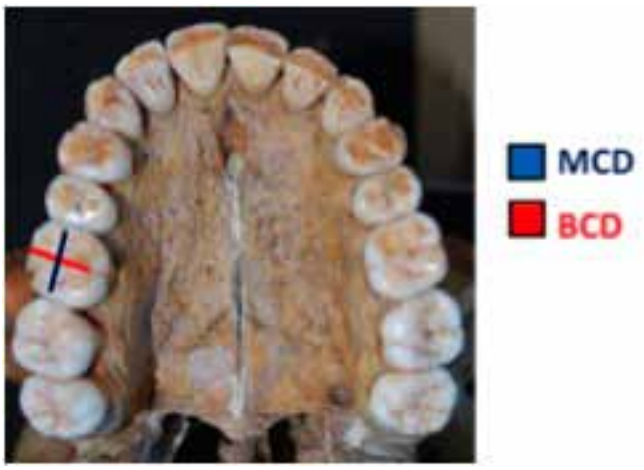

Figure 1. A depiction of tooth measurements, as described in Table 1. The mesiodistal crown diameter (MCD) and the buccolingual crown diameter (BCD) are shown in this adult African example.

Linear measurements of various skull dimensions were also taken. From the skull measurements, the palatal index, cranial index, and the upper facial index were calculated. Table 2 presents the overall skull measurements and calculations, followed by an illustration in Figure 2.

Table 2

Measurement/Calculation	**Definition**
Cranial breadth (CB)	eu-eu (maximum distance above eyes from anterior view)
Cranial length (CL)	g-op (most anterior point on frontal bone to most posterior point of skull)
Bizygomatic breadth (BB)	zy-zy (maximum distance between zygomatic bones)

Upper facial height (UFH)	pr-n (midpoint of most anterior point between incisors to midpoint of intersection of vomer and frontal bones)
Cranial index (CI)	(cranial breadth / cranial length) x 100
Upper facial index (UFI)	(upper facial height / bizygomatic breadth) x 100

Table 2. Definitions of skull measurements and calculations as utilized in determining overall skull dimensions. Overall skull measurements included cranial breadth, cranial length, bizygomatic breadth, and upper facial height. Calculations included cranial index and upper facial index.

Figure 2

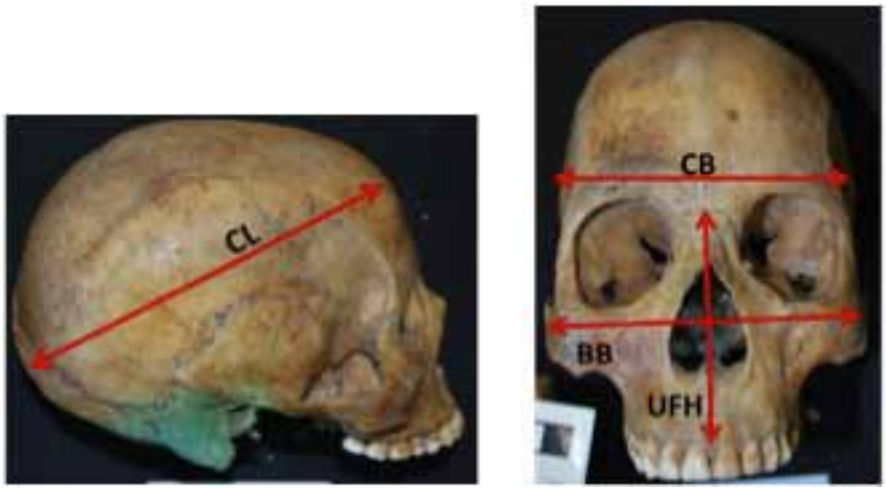

Figure 2. Illustrations of skull dimensions, as described in Table 2, on an African skull. On the left, the cranial length (CL) is shown. The following measurements are shown on the right: cranial breadth (CB), bizygomatic breadth (BB), and upper facial height (UFH).

Palatal measurements, as depicted in Figure 3, are defined in Table 3 below.

Table 3

Measurement/Calculation	Definition
Palate breadth (PB)	enm-enm (most medial point on alveolar process)
Palate length (PL)	ol-sta (from anterior to posterior ends of palate)
Palatal index (PI)	(palate breadth / palate length) x 100

Table 3. Definitions of palatal measurements and calculation. Measurements include palate breadth and palate length. Palatal index is a calculation based on those measurements.

Figure 3

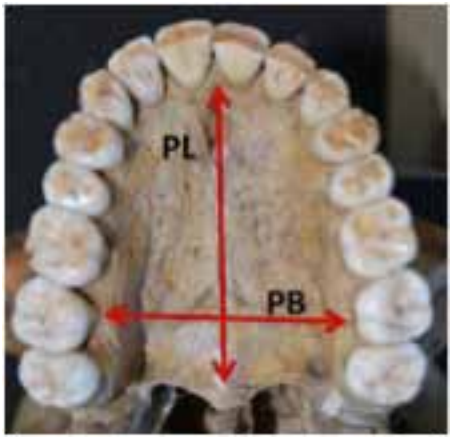

Figure 3. Illustration of palate length (PL) and palate breadth (PB), as described in Table 3.

Lastly, mandibular measurements are presented in Table 4 and Figure 4.

Table 4

Measurement	Definition
Height of ascending ramus (HAR)	cs-go (most superior point of condyle to the point where the angle of mandible is bisected)
Minimum breadth of ascending ramus (MBAR)	smallest width of the ramus that is perpendicular to HAR
Mandibular length (ML)	horizontal component of pg (midpoint of the most anterior portion of mental protuberance)-go (above)

Table 4. Definitions of mandibular measurements, which include height of ascending ramus, minimum breadth of ascending ramus, and mandibular length.

Figure 4

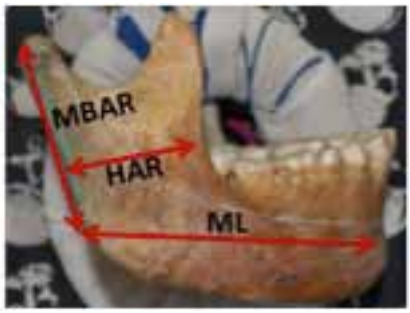

Figure 4. Depiction of mandibular measurements, as defined in Table 4. These measurements include height of ascending ramus (HAR), minimum breadth of ascending ramus (MBAR), and mandibular length (ML).

These measurements and indices were then analyzed using the statistical package SYSTAT®. Simple and multiple linear regressions were completed with tooth measurements as the dependent variable and skull measurements as the independent variable.

Results

The linear measurements were subject to statistical analysis. Analysis resulted in an R2 value, slope, and constant. For each regression model, the residual plot was inspected, and the conditions of the residual plots were satisfied for the regression models that are listed below. Linear regression models with an R2 value greater than 0.5 were considered significant for this study. The slope and constant of these regression models could be used to create a linear equation to predict tooth size based on skull size. The simple linear regression models with an R2 value greater than 0.7 are shown in Table 5 below.

Table 5

Dependent Variable	Independent Variable	R^2	Slope	Constant
16 MCD	PL	0.858	0.178	0.602
32 CM	CB	0.824	0.064	16.391
32 CM	PI	0.805	0.063	15.45
30 CM	HAR	0.793	0.042	7.409
15 MCD	PL	0.733	2.103	2.103
32 CM	CI	0.72	0.075	14.465
5 MCD	PL	0.718	0.145	0.218
16 CM	HAR	0.718	0.091	14.71
30 CM	ML	0.701	0.038	6.882

Table 5. Simple linear regression models with R2 values greater than 0.7. In the regression analyses, various skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope, and constant are shown for each simple linear regression model.

Simple linear regression models with R2 values greater than 0.6. In the regression analyses, various skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope, and constant are shown for each simple linear regression model.

Table 6

Dependent Variable	Independent Variable	R^2	Slope	Constant
28 MCD	ML	0.688	0.042	9.665
29 CM	PI	0.68	0.055	12.127
13 MCD	ML	0.673	0.054	10.833
20 CM	PI	0.672	0.059	12.65
31 CM	CB	0.668	0.034	13.014
31 CM	CI	0.665	0.039	12.049
2 MCD	PL	0.662	0.153	3.073
14 MCD	PL	0.656	0.144	4.146
10 CM	MBAR	0.63	0.123	0.555
3 MCD	PL	0.629	0.133	4.74
8 CM	MBAR	0.628	0.148	1.053
20 CM	PL	0.611	0.124	1.95
1 MCD	PL	0.608	0.12	2.93

Table 6 shows the simple linear regression models that have an R2 value greaterthan 0.6, and those with an R2 value greater than 0.5 are shown in Table 7 below.

Table 7

Dependent Variable	Independent Variable	R^2	Slope	Constant
9 MCD	PB	0.585	0.129	2.928
32 MCD	PL	0.571	0.154	3.167
32 CM	PB	0.568	0.145	15.258
31 CM	PI	0.565	0.027	11.999
20 CM	CI	0.563	0.06	11.108
19 CM	MBAR	0.562	0.078	6.962
2 CM	MBAR	0.562	0.168	3.484
30 CM	MBAR	0.559	0.065	7.671
30 MCD	ML	0.557	0.032	7.78

19 MCD	PL	0.549	0.094	5.858
11 MCD	CL	0.543	0.038	14.2
21 CM	CI	0.534	0.067	10.83
20 MCD	ML	0.531	0.039	9.969
3 CM	MBAR	0.529	0.152	4.738
22 CM	MBAR	0.523	0.065	3.085
16 CM	ML	0.508	0.057	13.496

Table 7. Simple linear regression models with R2 values greater than 0.5. In the regression analyses, various skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope, and constant are shown for each simple linear regression model.

Overall skull measurements were analyzed to determine their ability to be used as predictors of tooth sizes. Cranial measurements, including the cranial index, cranial breadth, and cranial length, were found to be highly correlated to the relative crown mass (CM) of teeth 31 and 32 (r = 0.7-0.8). Next, skull width was analyzed to see if it would be highly correlated to the width of front teeth. Skull width, namely palate length, was shown to be highly correlated to the mesiodistal crown diameter (MCD) of tooth 9 (r = 0.6). Similarly, various measurements of skull length and MCD were statistically analyzed. Measurements of skull length, including palate length and mandibular length, were found to be highly correlated to the MCD of side teeth, namely teeth 1-3, 5, 13-14, 16, 28 (r = 0.6-0.9).

Palate dimensions were analyzed to decide whether or not they could be used as predictors of tooth size. Palate dimensions, as represented by the palatal index, were found to be highly correlated to the CM of teeth 20, 29, and 32 and, therefore, could be potentially used as predictors of tooth sizes (r = 0.7-0.8).

Mandibular measurements were also analyzed and were found to be highly correlated with the CM and MCD of teeth 3, 5, 16, and 30 (r = 0.6-0.8). More specifically, the height of the ascending ramus (HAR) was highly correlated with the CM of teeth 16 and 30 (r = 0.7, 0.8). In addition, the mandibular length (ML) was found to be highly correlated to the CM of tooth 30 (r = 0.7). Lastly, the minimum breadth of the ascending ramus (MBAR) was highly correlated to the MCD of teeth 3 and 5 (r = 0.6).

Multiple regression analysis was also completed in order to determine the ability of multiple skull dimensions to predict tooth size. Multiple regression analysis was considered for variables that showed high statistical significance. Table 8 shows multiple regression models with R2 values greater than 0.8.

Table 8

Dependent Variable	Independent Variables	R^2	Slope	Constant
CM 32	PL	0.866	0.146	10.841
	PB		0.188	
CM 32	CB	0.825	0.064	16.285
	CL		0.001	
CM 30	MBAR	0.806	-0.029	7.746
	HAR		0.052	
CM 30	ML	0.806	0.001	7.734
	HAR		0.052	
	MBAR		-0.029	

Table 8. Multiple linear regression models with R2 values greater than 0.8. Multiple skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope for each independent variable, and constant are shown for each multiple linear regression model.

Tables 9, 10, and 11 present multiple regression models with R2 values greater than 0.7, 0.6, and 0.5 respectively.

Table 9

Dependent Variable	Independent Variables	R^2	Slope	Constant
CM 30	HAR	0.798	0.052	7.704
	ML		-0.012	
MCD 1	CL	0.754	0.032	8.746
	PL		0.105	
CM 20	PL	0.743	0.172	4.111
	PB		0.106	
CM 16	HAR	0.719	-0.096	14.516
	ML		0.007	

CM 31	CB	0.713	0.032	11.231
	CL		0.01	
CM 30	ML	0.712	0.051	6.919
	MBAR		-0.031	

Table 9. Multiple linear regression models with R2 values greater than 0.7. Multiple skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope for each independent variable, and constant are shown for each multiple linear regression model.

Table 10

Dependent Variable	**Independent Variables**	**R^2**	**Slope**	**Constant**
CM 29	PL	0.653	0.131	6.756
	PB		0.135	
CM 10	ML	0.644	-0.017	0.924
	MBAR		0.152	
CM 8	ML	0.629	-0.003	1.153
	MBAR		0.152	
MCD 9	PB	0.603	0.188	3.562
	BB		-0.025	
MCD 9	CB	0.603	3.542	3.542
	PB		0.188	
	BB		0.025	

Table 10. Multiple linear regression models with R2 values greater than 0.6. Multiple skull dimensions were used as independent variables, and tooth measurements were used as dependent variables. The R2 value, slope for each independent variable, and constant are shown for each multiple linear regression model.

Table 11

Dependent Variable	Independent Variables	R^2	Slope	Constant
MCD 9	CB	0.588	0.007	3.243
	PB		0.141	
CM 31	PL	0.567	0.064	9.514
	PB		0.07	
CM 19	MBAR	0.567	0.065	6.959
	HAR		0.008	
CM 22	ML	0.564	-0.022	3.511
	MBAR		0.106	
CM 2	ML	0.563	0.008	3.336
	MBAR		0.154	
CM 20	CB	0.552	0.041	8.266
	CL		0.02	
CM 21	CB	0.533	-0.05	8.716
	CL		0.019	
CM 3	ML	0.53	0.006	4.616
	MBAR		0.14	
CM 17	MBAR	0.524	0.069	5.306
	HAR		0.021	

The dimensions of the overall skull, palate, and mandible were all highly correlated with either the CM or MCD of certain teeth. The highest correlations ($R > 0.8$) were between palate length and cranial breadth and dimensions of the third molars (wisdom teeth), namely teeth 16 and 32.

Discussion

It was found that tooth size was highly correlated to various skull dimensions. More specifically, overall skull dimensions, palatal dimensions, and mandibular dimensions were highly correlated to the crown module (CM) and mesiodistal diameter (MCD) of various teeth. These results support the initial hypothesis that teeth sizes and skull dimensions are highly correlated. In addition, these correla-

tions may suggest that the dimensions of teeth could be predicted based on known predictions of skull size.

Results showing correlations among tooth and skull dimensions agree with previous studies. One study that suggested a correlation between tooth size and mandibular dimensions was supported by the findings of this research.[12] More specifically, mandibular dimensions were found to be highly correlated to the CM and MCD of teeth 3, 5, 16, and 30 (r = 0.6-0.8). Another study developed the Molar Tooth Basis method, which relies on the existence of a high correlation between molar tooth size and mandibular dimensions[13]; other studies also found a correlation between molar size and dimensions of the mandible.[14] This current research showed similar findings, namely for teeth 3, 16, and 30 (r = 0.6-0.8). Other studies searched for the relationship between overall face dimensions and teeth sizes.[15] Their findings that face size and shape are essential to determining teeth sizes parallel the results of this study. This is most evident in that cranial dimensions were found to be highly correlated to the CM of certain teeth, namely teeth 31 and 32 (r = 0.7-0.8).

In future studies, a larger sample size would be acquired to ensure that the results are representative of the greater population. The prediction models from this study would be used to further investigate the possibility of cranial, palatal, and mandibular dimensions as predictors of tooth size. In addition, since third molars, namely teeth 16 and 32, showed the highest correlations to skull dimensions, more measurements, such as crown length and root length, of these named teeth could be taken. Also, further studies investigating how these correlations change throughout development could contribute to more thorough prediction models.

Through this study and future studies, skull dimensions could be used to predict all the dimensions of every tooth. With the currently present models used to determine skull size from a young age, skull dimensions could be used to determine teeth sizes. The hope for these studies is that all of the models could be programed into a computer software that would automatically calculate tooth dimensions based on skull dimensions. The skull dimensions would be entered into the computer via a machine that scans the child's head. The computer software would then use the skull dimensions to create a picture of the size and placement of each tooth, as they would come to exist in the fully developed mouth of the patient.

[12] See Ref., 8.

[13] See Ref., 7.

[14] See Ref., 9.

[15] See Ref., 7.

This study would have potential applications in various areas of dental and medical care. Recording the skull dimensions from a young age would allow for the creation of more thorough health records. This information could be used in various medical and dental areas, including preparation for cleft palate and cleft lip surgeries. In addition, the models created to determine the future appearance of the fully developed mouth could be used in numerous areas of dentistry. Most notably, the model could be used in orthodontics. For example, teeth that will grow in crooked could be adjusted prior to their eruption by the placement of spacers or other appliances. Another application of the model in orthodontics could be in the prediction of overcrowding; this could be avoided by the extraction of certain teeth before the overcrowding causes other teeth to come in crooked. This model could also be utilized in general dentistry, especially in preventive care. For example, if teeth are too close together, the likelihood of dental caries greatly increases. If the model shows teeth coming in too close to one another, cavities may be avoided by inserting a smaller version of spacers to create more space in between teeth. Through the creation of a tooth prediction model, many applications such as those stated could be implicated. This study presents useful information in proceeding in the advancement of the dental field.

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About the Author

Maria Botros (Class of 2013) earned a BS in Natural Sciences with a minor in French. She graduated with honors and as a member of Phi Beta Kappa, Alpha Sigma Nu, Alpha Epsilon Delta, and Mortar Board. In August 2013, Maria will enter the Ohio State University College of Dentistry. “Variability of Teeth and Skull Size in Sub-Adult and Adult Humans” was sponsored by Dr. William Anyonge, Associate Professor of Biology.

The Effect of Foreign-Born Workers on Wages in the Long Term Care Industry

Charlotte Delaney

According to the Administration of Aging, the percentage of Americans 65 years of age or older is projected to rise from 12.5% in 2000 to 19% in 2030.[1] The aging population of the United States increases the current and future demand for long-term elder care. However, the U.S. Department of Health and Human Services predicts the increased demand will be met with a deepened shortage of frontline workers to fill the needs of the aging population.[2] To satisfy increasing demand, policy may be designed to create a pathway for immigration to increase the supply of labor.

In this study, I consider how immigration policy could affect wages in health care. Specifically, I analyze the relationship between the percentage of foreign-born workers in health care and the wages of long-term care paraprofessionals. Under-

[1] See References, 1.

[2] See Ref., 2.

standing this relationship can help inform policy decisions regarding immigration as a means for fulfilling the needs of the aging population.

In the following section, I review the factors affecting the long-term care industry including high turnover and low wages. I also explain some of the characteristics of foreign-born paraprofessionals and review research in this field of study. In the Methodology section, I describe the rationale for the explanatory variables included in my regression analysis as well as cite the sources from which I obtained the data. I provide the empirical specification as well as the results in the subsequent section followed by a discussion of the results.

Background and Literature Review

The U.S. Department of Health and Human Services confirmed that a shortage of labor currently exists in the long-term care industry.[3] One reason for the shortage is that turnover in the long-term care industry is high. National studies cite turnover rates in nursing homes between 45% and 100%.[4] Turnover is often due to job dissatisfaction related to low wages, lack of opportunities for career advancement, lack of benefits, and a negative opinion of the type of job.[5] In addition to the struggle to retain workers, the pool of labor that traditionally supplies the market (women ages 25–50) is diminishing relative to the aging population.[6]

One way the shortage of labor could be eased is if wages increase, but there are reasons to believe wages in this market are sticky. Despite the projected rising demand for low-skilled health care workers, it is possible that wages in long-term care may stay low.[7] Wages of paraprofessionals are partly determined by the reimbursement policies of Medicare and Medicaid. Medicare and Medicaid account for roughly three-fifths of expenditures.[8] This leaves employers with little flexibility to control wages because the reimbursement policies determine "the amount of money public agencies and private insurers are willing to pay."[9] If changes are not

[3] Ibid.

[4] See Ref., 8.

[5] Ibid.

[6] See Ref., 2.

[7] See Ref., 8.

[8] Ibid.

[9] Ibid.

made to Medicare and Medicaid to increase reimbursements, wages of paraprofessionals may not rise. Thus, as demand rises, the shortage could actually worsen if wages do not adjust.

Another route to handling the shortage of labor would be to increase the labor pool through immigration. United States healthcare providers have begun expressing interest in such policy to increase the supply of paraprofessionals.[10] Countries such as Japan, Italy, and Germany have initiated immigration strategies for increasing the supply of labor in each country's health care industry.[11] For instance, Italy recruits migrant paraprofessionals from Peru.[12] However, the US currently has no policy for recruiting migrant care workers for the long-term care industry.[13]

Foreign-born workers comprised 24 percent of personal and home care aides and 20% of nursing, psychology, and home health aides from 2003–2007.[14] These workers migrate primarily from the Caribbean and Atlantic Islands and Mexico and Central America. The average age of foreign-born direct care workers is 45 years, and most of them have been in the country for longer than the national average of foreign-born people (40%). Specifically, only 27% of foreign-born direct care workers arrived in the US in the prior ten years.[15]

The reasons for immigration of paraprofessionals can be understood in terms of push and pull factors. Push factors lead an individual to leave the home country. Some push factors that likely motivate workers to leave countries in the Caribbean and Atlantic Islands and Mexico and Central America include fewer job opportunities, dissatisfaction with the home government, and lower wages. Pull factors encourage migration to the host country because of the perceived benefits available in the host country. For migrant workers who enter the long-term care industry, pull factors include job opportunities (available because of increasing demand and shortage of native labor) and higher wages relative to wages in the home country. The ability to work directly with the elderly may also motivate foreign-born workers to migrate. 72% of employers reported that immigrant work-

[10] Ibid.

[11] Ibid.

[12] See Ref., 7.

[13] See Ref., 6.

[14] See Ref., 5.

[15] Ibid.

ers are advantageous because they are "committed to caring and respectful to older clients."[16]

Martin et al. find evidence that foreign-born workers actually earn higher wages in low-skilled, long-term care positions.[17] In a web survey, 55% of nursing home/assisted residential care employers strongly disagreed that foreign-born workers were advantageous for the reason that they accept lower wages than native workers. In fact, from 2003–2007, foreign-born nursing, psychiatric, and home health aides earned an average of $533 weekly compared to native earnings of $432.[18] A similar discrepancy exists among personal and home care aides. It is possible that there are actually two labor markets in the long-term care industry: a high-quality and a low-quality market. Foreign-born workers may fall primarily in the high-quality market.[19] My analysis differs from that of Martin et al. in that I consider the effect of the foreign-born workers on the overall wages in the industry by state rather than looking separately at the wages of foreign-born and native workers.[20] My analysis does not account for the possibility of distinct high-quality and low-quality markets in the industry.

Should the US pursue policy to recruit migrant workers, an increasing percentage of immigrants may enter the long-term care industry.[21] I am interested in how this increasing share of foreign-born workers could affect wages in the field. I analyze recent state-level data to consider this relationship with the intuition that any current effects could be magnified if immigration policy is adopted. If foreign-born workers are willing to accept lower wages than native workers, there should be a negative relationship between the percentage of foreign-born paraprofessionals and wages in these health care roles holding all else constant. While I was unable to locate any previous research specifically in terms of long-term, low-skilled healthcare workers, Kaestner and Kaushal performed a similar analysis on the relationship between the percentage of foreign-born registered nurses on overall wages of registered nurses.[22] Kaestner and Kaushal use regression analysis, and I base my empirical model on the one used by these researchers.[23]

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[16] Ibid.

[17] Ibid.

[18] Ibid.

[19] Ibid.

[20] Ibid.

[21] See Ref., 3.

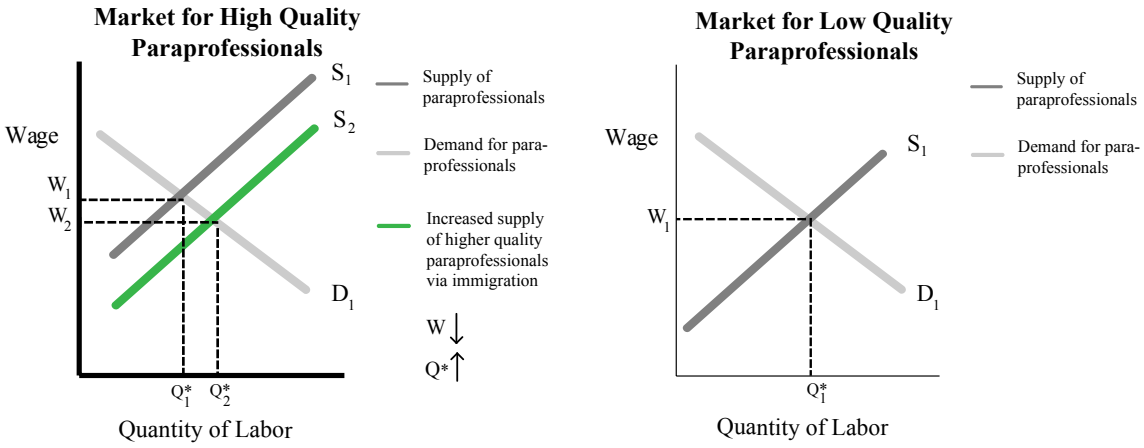
[22] See Ref., 4.

[23] Ibid.

Methodology

Economic Model

The wages of frontline workers in the long-term care industry should be affected by both supply and demand factors. As the supply of workers increases, basic economic theory predicts that wages will decrease. On the contrary, as demand for workers increases, wages should increase. The dependent variable in my analysis is the wage of frontline workers without distinction between high- and low-quality workers.



Charts 1 & 2: There may be two labor markets for health care paraprofessionals. There are reasons to believe that foreign-born workers fall primarily in the high-quality labor market.[24] An increase in the supply of high-quality workers will cause wages to fall in that market but a weighted average of the two wages could increase due to a larger amount of workers earning the high-quality wage.

As the amount of employed frontline workers increases, wages should decrease due to the larger supply. I measure the supply of frontline workers by taking the amount of home health aides and nursing aides as a percentage of the state population. As this increases, it is anticipated that wages will decrease. Looking to the foreign-born supply of frontline workers, I consider the percentage of foreign-born people in each state with a high school degree or less. It is expected that wages will

[24] See Ref., 5.

decrease with a larger amount of low-skilled foreign-born workers. This is because frontline positions traditionally do not require college education, and low-skilled foreign-born workers increase the overall supply of low-skilled workers.

On the demand side, I measure the proportion of the population that is 65 years of age or older. When demand for long-term care is high, we expect a higher price of labor. In this way, an increase in the older population should increase demand and therefore lead to increasing wages. The BLS identifies an independent living difficulty as a common characteristic of patients needing long-term care.[25] A more precise estimate of demand for health paraprofessionals is the percentage of the population at least 65 years of age with difficulties in independent living. An increase in this percentage should increase wages.

The explanatory variable I am most interested in is the percentage of frontline workers that is foreign-born. If these workers are willing to accept lower wages, an increase in this percentage may decrease median wages. However, if these workers are valued more highly by employers for reasons including longer tenure, there could, in fact, be two markets for health paraprofessionals. An increase in the percentage foreign-born of all paraprofessionals should cause wages in the high-quality market to decrease due to the shift out in supply. However, this could also increase the weighted average of wages in the two markets by increasing the amount of workers earning higher wages.

Data

In my analysis, I focus on the low-skilled health care positions in long-term care. Two occupations commonly identified as low-skilled health care positions are 1) Home Health Aides and 2) Nursing Aides, Orderlies, and Attendants. These occupations are representative of frontline positions in long-term health care not requiring a bachelor's degree.[26] I obtained the wage data from the Occupational Employment Statistics from the Bureau of Labor Statistics. The average of the two median hourly wages over the 4 year period is $10.95. I control for regional variation in consumer prices by dividing each median wage by the annual CPI by region (obtained from the BLS) for each year: 2008–2011. I used the average of these wages adjusted for inflation as the response variable in my regression analysis. A major shortcoming of my analysis is that I do not account for quality distinctions

[25] See Ref., 2.

[26] Ibid.

within the low-skilled healthcare field. While my economic model assumes the existence of two markets for frontline workers, my data does not capture this distinction.

Table 1: Summary Statistics

	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
DEPENDENT VARIABLE					
Average Hourly Wage: Home health aides and nursing aides	191	10.95	1.36	8.44	15.48
EXPLANATORY VARIABLES					
Total state population	191	6,285,510.94	6,788,698.04	522,833	37,330,448
Percentage foreign-born of all 25+ with high school degree or less	191	13.941	10.696	0.787	51.423
Percentage foreign-born of all workers in health services industry	191	8.821	6.349	1.920	28.560
Median HH Income	191	51513.084	8496.524	37034	71294
Percentage of population in occupations: home health aides and nursing assts	191	0.805	0.232	0.337	1.397
Proportion of population 65+	191	12.685	1.578	7.004	17.076
Proportion of 65+ with independent living difficulty	191	2.699	0.492	1.494	3.969

Several variables that should affect supply of frontline workers include the percentage of low-skilled people that is foreign-born and the ratio of workers in educational services, and health care and social assistance over the population. I use data from the American Community Survey to obtain the percentage of foreign-born by state as well as the educational attainment of foreign-born residents. Specifically I use state level data from the table titled Selected Characteristics of the native and foreign-born populations, 3–year estimates for 2008, 2009, 2010, and 2011. I categorize less-skilled foreign-born residents as the percentage of all people 25 years or older with a high school degree or less that is foreign-born.

The variables I use as measures of demand are the proportion of the population that is at least 65 years old and the percentage of these individuals with a difficulty in independent living. I obtained data on both of these explanatory variables

from the ACS 2008–2011. The average percentage of Americans 65 years or older is 12.65 percent which is consistent with the Administration of Aging's finding that this number was 13.1 percent in 2011. The average percentage of these citizens with an independent living difficulty is 2.7 percent.

The explanatory variable of most interest in my research is the percentage foreign-born of all workers in long-term care. Unfortunately, I was unable to locate data at the occupational level, so I use data on the industry level. Home health and nursing aides are in the industry called Educational services, health care and social assistance. Census data from the American Community Survey provides the information necessary for calculating the percentage of employees in the industry Educational services, health care and social assistance that is foreign-born. I find an average of 8.8 percent of workers in this industry being foreign-born. However, this is likely an underestimate of the true value. Martin et al. finds the average to be approximately 20% while the BLS Current Population Survey March Supplement shows the percent to be between 12% and 35%.[27] Even the maximum value in my data (28.6%) does not capture the range reported in the March Supplement. Unfortunately, I could not access this data neither from the March supplement nor the ACS, so this is certainly a limitation of my analysis.

Empirical Model and Results

Using a log-log regression, I analyze the determinants of wages (adjusted by regional CPI) of home health aides and nursing aides. I use dummy variables to account for regional differences (i) and year differences (t). As previously mentioned, I base my model on the model that Kaestner and Kaushal use to examine the relationship between the percentage of foreign-born nurses on overall wages of nurses.[28]

$$Wages_{it} = \alpha + \beta_1 (\%\ foreign\text{-}born\ of\ all\ paraprofessionals)_{it} + \beta_2 (total\ state\ population)it + \beta_3 (median\ household\ income)_{it} + \beta_4 (\%\ foreign\text{-}born\ of\ all\ HS\ degree\ or\ less)_{it} + \beta_5 (\%\ of\ population:\ home\ health\ and\ nursing\ aides)_{it} + \beta_6 (\%\ of\ population\ 65+)_{it} + \beta_7 (\%\ of\ 65+with\ difficulty\ in\ independent\ living)_{itx`}$$

[27] See Ref., 5.

[28] See Ref., 4.

If foreign-born paraprofessionals are willing to accept a lower wage than are native workers, I expect a negative relationship between the percentage foreign-born of all paraprofessionals and wages. However, previous research indicates foreign-born workers in the direct care earn higher wages.[29] If my analysis supports this finding, I expect a positive relationship.

Table 2: Empirical Results of Log-Log Regression Analysis

Estimates of the association between the (log) wages of paraprofessionals and the (log) % of foreign-born paraprofessionals.

Log Explanatory Variables	All Variables	Without Demand Variables
Percentage foreign-born of all 25+ with high school degree or less	-0.0362 **	-0.0492 ***
	-0.014	-0.018
Percentage foreign-born of all workers in health services industry	0.0955 ***	0.1249 ***
	-0.022	-0.022
Percentage of population in occupations: home health aides and nursing assts	0.010	-0.003
	-0.022	-0.031
Median HH Income	0.3094 ***	
	-0.061	
Total population	-0.0337 ***	
	-0.006	
Proportion of 65+ in total state data	0.064	
	-0.049	
Proportion of 65 years+ with independent living difficulty in total state data	-0.1101 **	
	-0.016	
Adjusted R^2	0.71	0.41

[29] See Ref., 5.

Notes: Figures in each column are based on a single regression with the (log) average wage of home health aides and nursing aides adjusted by regional CPI as the dependent variable. The regression controls for year and regional effects (estimates not shown).
* 0.05<p=<0.1. ** 0.01 < p = <0.05. *** p = <0.01

I observe a statistically significant and positive relationship between the percentage foreign-born of all paraprofessionals. While the effect is small (β 1=0.1), it is highly statistically significant at the .01 level. My analysis does not differentiate between the two labor markets based on labor quality making it unclear exactly how to interpret the positive coefficient. Consistent with Martin et al.'s finding that foreign-born paraprofessionals earn higher wages than their native colleagues, the positive coefficient could reflect higher wages of only foreign-born workers.[30] On the other hand, it is possible that the direction of the relationship between wages and percentage foreign-born is reversed. Perhaps the positive relationship indicates the tendency of foreign-born workers to live in states with higher wages. Further research should be conducted to enhance knowledge of the effect of the percentage of foreign-born caregivers on wages.

Log-log regression analysis of my data reveals a negative relationship between demand and wages. My primary demand variable is the percentage of citizens 65 years of age or older with an independent living difficulty. The coefficient on this variable is -.11 indicating that a 1 percent increase in demand corresponds with a .11 percent decrease in wages. This is counterintuitive because wages should increase as demand increase. One reason for this result could be related to the fact that wages are determined in part by Medicare and Medicaid reimbursement policies. A limitation of my analysis is that, while I use dummy variables to control for regional differences, I do not account for state-level variations in reimbursement policies. Thus I fail to capture the effects of differing state rates on wages.

Another possible explanation is that the negative relationship between demand and wages is actually reflective of the role of median household income on wages. My regression output reveals a significant positive relationship (β3 = .31) between wages and median income. Thus wages of paraprofessionals tend to be higher in states with higher median incomes. Furthermore, I find a moderate, negative correlation (r = -.535) between the percentage of citizens 65 years of age or older with an independent living difficulty and median household income. This suggests that states with lower median incomes are more likely to have higher demand for long-term care but also have lower wages.

[30] Ibid.

Discussion

This research shows a positive relationship between the share of foreign-born workers in direct long-term care and wages in the industry. A shortcoming of my analysis is that the distinction between two labor markets is not considered. Because I do not differentiate wages of foreign-born workers versus native workers, the positive relationship I find can be interpreted in a few ways. Foreign-born workers in this field earn, on average, higher wages than their native counterparts.[31] This suggests there are two labor markets for paraprofessional, and foreign-born workers fall in the high-quality market. Employers in the industry listed personality and attitude toward the elderly, strong work ethic, and longer than average tenure as the main advantages of foreign-born paraprofessionals.[32] Perhaps the most explicit understanding of the higher wages earned by foreign-born paraprofessionals is their longer than average tenure. In a field with high turnover, anticipated long tenure is likely valued by employers. Turnover is costly to employers. In fact, Zahrt estimated the average cost of replacing a home care worker to be $3,362.[33] Employers may be willing to pay a premium to hire workers they believe will stay in the role longer. In this way, foreign-born workers may be perceived as high-quality and thus receive higher wages.

To the extent there are two labor markets, the positive relationship I find implies overall higher wages due to a larger number of the workers receiving the high-quality wage. Using this interpretation, my results suggest that immigration policy designed to increase the supply of paraprofessionals could actually lead to increasing wages. An argument could then be made in favor of adopting this type of policy for increasing supply of labor as well as increasing overall wages.

However, it is not entirely clear as how to interpret the positive relationship between the percentage foreign-born of all workers and the overall wages in the field. It could be that foreign-born workers are drawn disproportionately to states with higher wages in the long-term care industry. This suggests the possibility of reverse causality in that wages could be the explanatory variable and the percent foreign-born of frontline workers in the response variable. If the positive relationship is explained by reverse causality, my results cannot be used to support an argument for increasing wages through immigration policy. Instead, my data may merely reflect the tendency for immigrant paraprofessionals to live in states with

[31] Ibid.

[32] Ibid.

[33] See Ref., 9.

higher wages in the field. This is consistent with the pull factor of immigration that suggests that migrant workers are drawn to higher wages than they can achieve in their home countries.

When explanatory variables are highly correlated, the predictive power of an individual explanatory variable may be distorted. This is referred to as multicollinearity. In order to verify the reliability of my regression analysis, I tested for multicollinearity to examine the correlations between each of my explanatory variables. I find a high correlation between the percentage foreign-born of all 25 years of age or older with a high school degree or less and my primary explanatory variable: the percentage foreign-born of all workers in the health care assistance industry. The correlation coefficient between the two variables is .92. This indicates that the percentage of foreign-born workers in the long-term care industry is highly explained by the amount of low-skilled, foreign-born people in the state. Because multicollinearity can distort the individual predictive powers of the explanatory variables, I ran regressions including the percentage foreign-born of all less educated individuals 25 years of age or older and excluding it. My results maintain consistency with and without the variable of less-educated foreign-born people. The adjusted R2s remain similar (.71 and .70, respectively).

Table 3: Testing for Multicollinearity between Explanatory Variables

	Total population	*Percentage foreign-born of all 25+ with high school degree or less*	*Percentage foreign-born of all workers in health services industry*	*Percentage population in occupations: home health aides and nursing aides*	*Proportion of total in state data 65+*	*Proportion of 65 years+ with independent living difficulty in total state data*	*Median Income*
Total population	1						
Percentage foreign-born of all 25+ with high school degree or less	0.624	1					
Percentage foreign-born of all workers in health services industry	0.626	0.922	1				

Percentage of population in occupations: home health aides and nursing aides	-0.091	-0.323	-0.210	1			
Proportion of total in state data 65+	-0.102	-0.225	-0.057	0.351	1		
Proportion of 65 years+ with independent living difficulty in total state data	0.141	-0.149	-0.049	-0.044	0.525	1	
Median Income	0.108	0.515	0.626	-0.102	-0.329	-0.535	1

Table 3: Multicollinearity tested between explanatory variables. Note that correlation between the percentage foreign-born of all 25 years of age or older with a high school degree or less and the percentage foreign-born of all workers in the health care assistance industry is .9215.

Table 4: Empirical Results of Log-Log Regression Analysis

Estimates of the association between the (log) wages of paraprofessionals and the (log) % of foreign-born paraprofessionals while examining possible effects due to multicollinearity.

	Including % foreign-born with HS or less		*Excluding % foreign-born with HS or less*	
Log Explanatory Variables	All Variables	Without Demand Variables	All Variables	Without Demand Variables
Percentage foreign-born of all 25+ with high school degree or less	-0.0362 **	-0.0492 ***		
	-0.014	-0.018		
Percentage foreign-born of all workers in health services industry	0.0955 ***	0.1249 ***	0.0493 ***	0.0701 ***
	-0.022	-0.022	-0.013	-0.010
Percentage of population in occupations: home health aides and nursing assts	0.010	-0.003	0.01	-0.004
	-0.022	-0.031	-0.023	-0.031

Median HH Income	0.3094 ***		0.3609 ***	
	-0.061		-0.058	
Total population	-0.0337 ***		-0.0343 ***	
	-0.006		-0.006	
Proportion of 65+ in total state data	0.064		0.0922 *	
	-0.049		-0.049	
Proportion of 65 years+ with independent living difficulty in total state data	-0.1101 **		-0.0832 *	
	-0.016		-0.045	
Adjusted R^2	0.71	0.41	0.7	0.39

Notes: Figures in each column are based on a single regression with the (log) average wage of home health aides and nursing aides adjusted by regional CPI as the dependent variable. Each regression controls for year and regional effects (estimates not shown). Results remain consistent with and without the percent foreign-born with HS degree or less explanatory variable.
* 0.05<p=<0.1. ** 0.01 < p = <0.05. *** p = <0.01

To test for robustness, I also ran each of the tests without the demand variables. This caused the adjusted R2 in each of the regressions to fall by nearly 50%. This suggests the predictive power of the demand variables is strong. Without the demand variables, I observe results consistent with the regressions including all the explanatory variables. This implies that my analysis is robust.

A shortcoming of my analysis is that I was unable to locate data on the characteristics of workers on the occupational level. I used the percentage-foreign-born of all workers in the industry Educational, health and social services as an estimate of that percentage in the occupations of 1) Home Health Aides and 2) Nursing Aides, Orderlies, and Attendants. The average in my data is 8.8% which underestimates the percentage in these specific occupations. Additionally, I do not control for variance in Medicare and Medicaid rates among states. These rates likely affect wages because approximately 60% of expenditures in long-term care are accounted for by Medicare and Medicaid. As mentioned, these policies determine how much insurers and public agencies are willing to pay for long-term care. In future research, these rates should be included to better account for the predictive power of the percentage foreign-born on wages.

Through regression analysis, I find a positive relationship between the percentage foreign-born of workers in the Education, health and social industry and the wages of direct care workers. This relationship is important because the long-term care industry is experiencing and will continue to experience increasing demand for labor. The U.S. Department of Health and Human Services confirmed that there currently exists a shortage of labor in this field.[34] The shortage is often attributed to low wages and high turnover due to job dissatisfaction. One way to address the increasing demand for labor is to design policy that encourages immigration of workers for the field. A higher percentage of foreign-born workers may mean more stability in the labor market by increasing the average tenure and reducing the costs associated with turnover. In this way, my results suggest the possibility that immigration policy could actually lead to increasing wages in the field. Further research should account for the quality distinctions in the low-skilled long-term care industry. This will provide opportunity for a more accurate analysis of the relationship between the percent foreign-born of frontline workers on the wages of all frontline workers.

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Evaluation of Antibiotic Resistance Emerging from Use of Antibiotics in CAFOs

Daniel Hellmann, Nick Pease, and Marcie Costello

Abstract

Concentrated animal feeding operations (CAFOs) administer sub-therapeutic levels of in-feed veterinary antibiotics for growth promotion and infection prevention, a practice which has been shown to impact environmental antibiotic resistance. The goals of our study were to confirm the dissemination of antibiotic resistance from CAFOs into the environment in Ohio and to identify the means by which environmental bacteria acquire antibiotic resistance. Water and soil samples were taken from four high density (HD) and three low-density (LD) CAFO sites in midwestern Ohio. Samples were plated on selective eosin methylene blue (EMB) agar and colonies were suspended in two-fold serially diluted concentrations of chlortetracycline. Colonies were considered resistant if there was visible growth at or above CLSI resistance points. Overall, significantly higher frequencies of antibiotic resistance among bacteria isolated from HD sites than from LD sites suggest antibiotic resistance is disseminating from CAFOs into the environment where water plays a pivotal role in its propagation. The greater resistances in the soil and non-fecal subcategories of samples suggest that horizontal gene transfer is an important factor in the dissemination of antibiotic resistance.

Introduction

Antibiotic resistance is recognized by the World Health Organization as the single greatest threat to the treatment of infectious disease, a problem that has been a major cause of death worldwide.[1] Domestically, in an effort to preserve the efficacy of current antibiotic treatments, the government has developed a protocol that emphasizes the surveillance of resistance.[2] It has been well established that antibiotic resistance arising in nosocomial, or hospital, environments poses a serious threat to human health, but attempts to dispel concerns for the similar threat posed by the use of antibiotics for veterinary purposes indicate a need for continued and comprehensive evidence of the threat to human health originating from the use of antibiotics for veterinary purposes.[3]

Currently, more than 22,000 metric tons of antibiotics are used in the United States annually, about half of which are used for veterinary purposes.[4] The use of in-feed antibiotics for non-therapeutic purposes in concentrated animal feeding operations (CAFOs) is especially concerning, as it may be highly conducive to the emergence and spread of antibiotic resistance.[5] These conditions include close living quarters that may increase the transmission of antibiotic resistant bacteria from one animal to the next due to the number of animals in the same facility, ranging from 1,000 cattle to 1,000,000 chickens for large CAFOS. Classification as a CAFO depends on the type and number of animals, determined by the EPA.[6] Elevated resistance levels have been documented in the feces of animals given in-feed antibiotics.[7] Furthermore, greater antibiotic resistance detected down gradient from CAFOs suggests that this resistance is disseminating into the environment.[8] However, it is unclear how antibiotic resistance disseminates through the environment, being attributed to both mobile genetic elements[9] and selective pressure from

[1] See References, 7.

[2] See Ref., 6.

[3] See Ref., 12.

[4] See Ref., 8.

[5] See Ref., 15.

[6] See Ref., 4.

[7] See Ref., 2.

[8] See Ref., 14.

[9] See Ref., 5.

elevated concentrations of antibiotics.[10] The transmission of environmental antibiotic resistant bacteria to humans might be effectively reduced if the propagation of antibiotic resistance within the environment is better understood.

The goal of our study was to confirm the dissemination of antibiotic resistance from CAFOs into the environment and to identify the means by which environmental bacteria acquire antibiotic resistance. This was done by isolating bacteria from soil and water samples taken from areas of high and low CAFO densities and comparing resistance frequencies among the types of bacteria, samples and sites.

Materials and Methods

Sample Collection and Preparation

To obtain environmental bacteria, water and soil samples were collected in sterile 50 mL tubes in the fall of, 2012, in Darke County, Ohio, where the ambient temperature was about 14°C. Samples were taken from sites that were highly populated with CAFOs and minimally populated with CAFOs so that the samples would contain bacterial species that were either highly or minimally exposed to CAFO contaminants. Four samples in close CAFO proximity were taken and designated high density samples (HD) and three samples sufficiently distanced from CAFOs were taken and designated low density samples (LD). Water samples consisted of low volume steady flow surface water from streams at HD and LD sites and soil samples were taken from the exposed topsoil within a meter of the stream surface. Water samples were plated onto selective and differential eosin methylene blue (EMB) agar in 1x and 1/10x dilutions with LB broth, while 5 g of each soil sample were placed in 50 mL LB broth. Serial dilutions of 1/10x and 1/100x concentrations were plated on EMB agar, all within 12 hours of obtaining the samples. These plates were then incubated for 48 hours at 36°C and subsequently stored at 40°C.

[10] See Ref., 3.

Bacterial Enumerations

After incubation, the gram negative bacteria on the EMB plates were classified as either fecal or non-fecal. Fecal colonies were identified as darker pigmented colonies because of their ability to metabolize lactose, and non-fecal colonies were identified as a lighter in color, often clear, because of their inability to metabolize lactose.[11] Colonies of both types were counted, and their respective ratios were compared to determine whether a specific type of colony was indicative of CAFO contamination.

Antibiotic Susceptibility Testing

Antibiotic resistance was measured using the techniques described in the broth microdilution method in the CLSI M07-A08.[12] Briefly, chlortetracycline acquired from Sigma Aldrich with a potency of 920 μg/mg was prepared at 20x the resistance break point established in CLSI M100-S17 using sterile water that had been filtered with 0.45 μm syringe filters.[13] These solutions were then diluted in 9 parts LB broth and 1 part stock solution in a 96 well plate and serially diluted by a factor of 2 until 1/8X the antibiotic resistant break point was obtained. Fecal and non-fecal colonies from both HD and LD sites were then scraped from the plates into 1 mL of LB broth and vortexed. 10 μL of bacterial solutions were placed into each concentration of antibiotic and a control well containing only LB broth. This process was repeated with a quality control of Enterococcus faecalis to ensure chlortetracycline remained active during testing and displayed expected growth inhibition of sensitive bacteria. 96 well plates were then incubated for 20 hours. Bacteria with growth at or above the resistance break point were deemed resistant, growth at or above the sensitive break point signified intermediate resistance, and growth below the sensitive break point signified antibiotic sensitivity. Growth results were only considered valid if control wells without antibiotics displayed growth.

[11] See Ref., 9 and 10.

[12] See Ref., 16.

[13] See Ref., 17.

Statistical Analysis

This study aimed to identify the relative number and resistance frequencies of fecal and non-fecal colonies among HD and LD samples as well as identify a possible means of antibiotic resistance transmission. A difference in the number of colonies was considered significant with a P value of <0.05 using Student's T test. A difference in the resistance frequency was considered significant with a P value of <0.05 by bootstrapping, a technique that makes use of empirically generated values and compares them to observed values.

Results

With attention paid to the emergence of antibiotic resistance and its persistence in the environment, all findings between samples taken from areas with a high density of CAFOs (HD) and areas with a low density of CAFOs were compared (LD) (Figure 1). The type of bacteria found in each sample were classified so that they could serve as an indicator of CAFO contamination in addition to resistance frequency, improving the resolution of the environmental impact of CAFOs. For this reason, the numbers of colonies of each type were compared between HD and LD sites. Resistance frequencies were then measured and compared between HD and LD sites for each sample type and colony type.

Figure 1. Locations of CAFOs and sampling sites. Sites were chosen based on their proximity to CAFOs and designated areas of high CAFO density (HD) or low CAFO density (LD) as shown above. Samples were taken from four HD sites and three LD sites in Darke County, Ohio.

Bacterial Enumeration

The bacteria collected from the HD and LD sites were subcategorized into their sample type and bacteria type. To standardize the frequency of the type of bacteria between water and soil samples, the ratios of fecal to non-fecal bacteria were used rather than bacteria per unit of sample. The bacteria collected from water samples tended to be more numerous in HD samples than LD samples (64% HD and 66% HD) while the bacteria from soil samples were more numerous in the LD samples than HD samples (65% LD and 78% LD) (Figure 2). There was no significant change in the distribution of fecal and non-fecal bacteria observed between LD and HD sites ($P = 0.7$ by Student's t test).

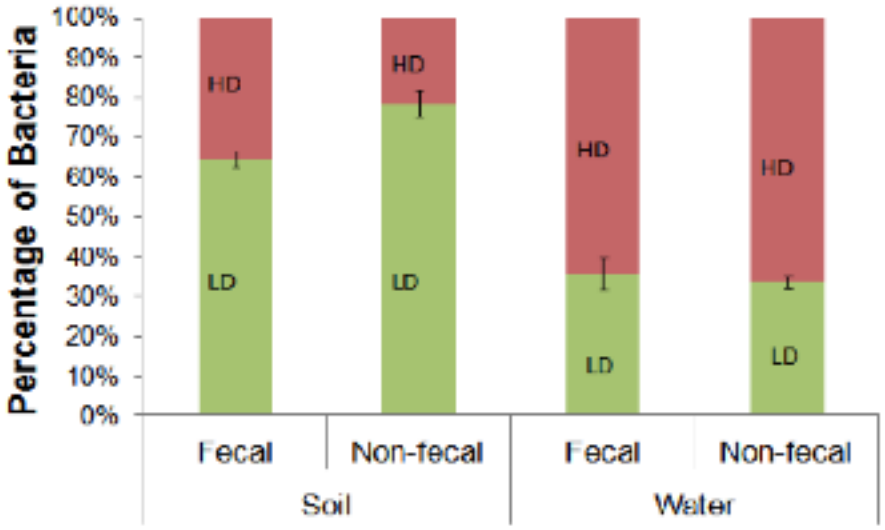

Figure 2. Locations of CAFOs and sampling sites. Sites were chosen based on their proximity to CAFOs and designated areas of high CAFO density (HD) or low CAFO density (LD) as shown above. Samples were taken from four HD sites and three LD sites in Darke County, Ohio.

Antibiotic Resistance Frequencies

Overall, there was a greater resistance frequency observed in HD samples than LD samples (Figure 3). This change in resistance frequency was consistent

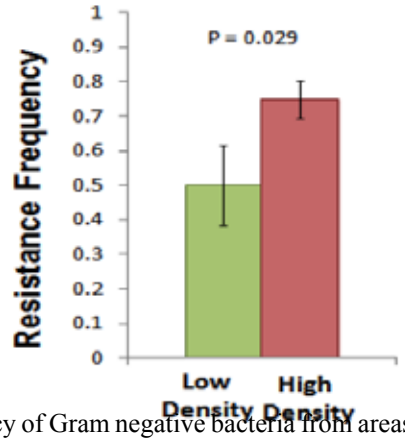

Figure 3. Resistance frequency of Gram negative bacteria from areas of high and low CAFO density. High density CAFO sites had a significantly greater antibiotic resistance frequency than low CAFO density sites (p=0.029). Error bars are standard error of the mean (0.16% and 0.078%).

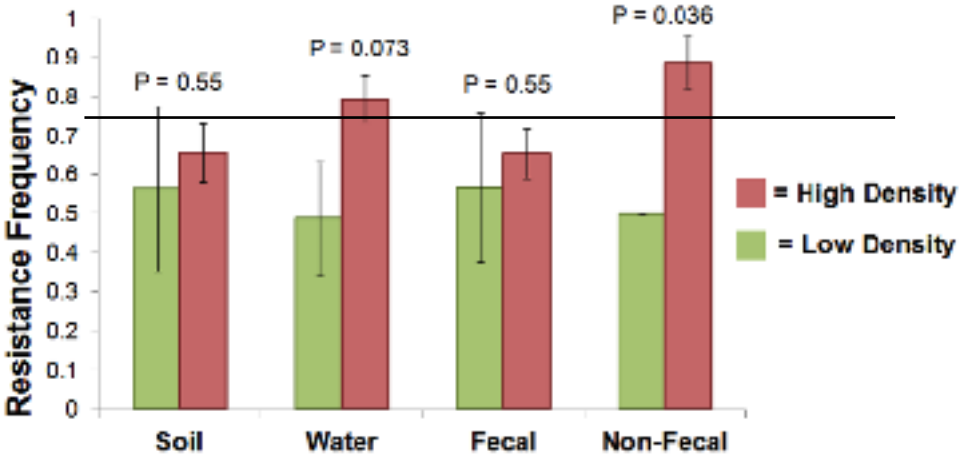

Figure 4. Resistance frequency of sub selections of Gram negative bacteria from areas of high and low CAFO density. The non-fecal gram negative sub-selection had a significantly greater resistance frequency between the high and low CAFO density sites (p=0.036) while soil, water and fecal sub-selections did not have a significant difference (p=0.55, p=0.073 and 0.55). Error bars are standard error of the mean (from left to right 0.21%, 0.075%, 0.14%, 0.059%, 0.18%, 0.066%, 0% and 0.066%).

for both sample type and bacteria type where non-fecal bacteria showed the most significant increase in resistance frequency from LD to HD samples, followed by water samples, and finally by soil samples and fecal bacteria (Figure 4). Significance of resistance frequencies was confirmed by bootstrapping statistical analysis. Resistance was further examined as a function of density of CAFOs in a 5.5 mile radius of each sampling site. There was no correlation between resistance and density when only spatial density was considered; disregarding the water gradiency, that was also considered in the designation of HD and LD sites (Figure 5).

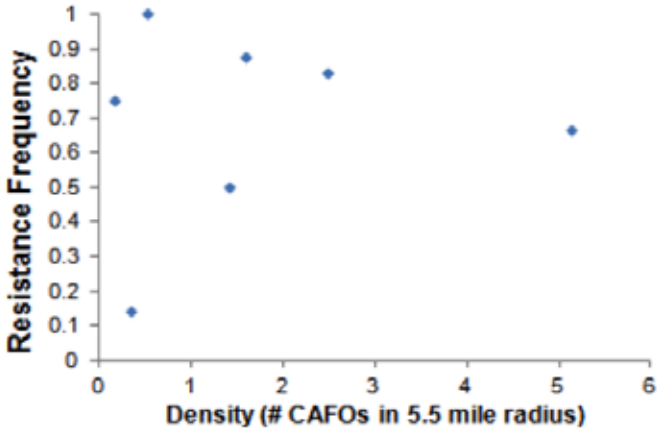

Figure 5. Resistance frequency vs. density of CAFOs. Density was measured as the number of CAFOs in a 5.5 mile radius of sampling site. There was no correlation between antibiotic resistance and spatial distribution of CAFOs.

Discussion

The results of our study indicate that there is significantly higher resistance in HD areas of CAFOs than LD areas. This suggests that CAFOs are indeed a contributing source to environmental antibiotic resistance. Because there was only a slight increase in fecal coliform frequency from LD to HD sites, the large increase in antibitotic resistance from LD to HD sites is most likely due to a factor outside of the bacteria, such as a mobile gene or persistence of antibiotics in the environment, although previous studies have found CAFOs have much greater impact on fecal coliforms by increasing frequencies in surrounding watershed, a disparity that

could be attributed to sample size or fluctuations in watershed.[14] Finally, resistance frequencies in water and soil samples suggest that horizontal gene transfer may be a primary factor in the dissemination of antibiotic resistance into the environment.

Water samples from the HD sites contained more bacteria than the LD sites, and the soil samples from the LD sites contained more bacteria than the HD sites. However, there was no significant difference in the distribution of fecal and non-fecal bacteria between HD and LD sites. Studies comparing bacteria found in water and soil samples to CAFO density are lacking, but previous studies have found fecal bacteria at a higher frequency down gradient from CAFOs.[15] This increase in fecal indicator bacteria is attributed to contamination from the large amount of waste that is produced by CAFOs. Because our results did not show any difference in fecal indicator bacteria between HD and LD sites, it may be the case that there is not a large amount of manure contamination disseminating into the environment. The consistency in the distribution of fecal and non-fecal bacteria between HD and LD sites in water and soil samples indicates that CAFO density had a greater impact on bacteria found in sample types than bacteria type did. This suggests that the CAFOs' impact on the microbial community is nonspecific is not limited to one type of bacteria, be it pathogenic or non-pathogenic.

Antibiotic resistance frequencies were significantly higher in bacteria from HD sites than LD sites, and resistance frequency did not correlate to the spatial density of the CAFOs. These results support previous findings that CAFOs are a source of environmental antibiotic resistance and that watershed is an important factor in its distribution.[16] Future quantification of environmental antibiotic resistance due to point source contamination may benefit from watershed indicators such as mobile genes or antibiotic concentration.

Furthermore, the difference in resistance frequencies observed in sample type and bacteria type give additional insight as to how this antibiotic resistance is being spread into the environment. Water samples had greater resistances in HD sites than soil samples, and a greater difference in resistances between HD and LD sites than the soil samples. This suggests that CAFO contamination has the greatest impact on bacterial resistance in the water, while soil remains a reservoir for antibiotic resistance that remains consistent despite fluctuations in watershed.[17]

[14] See Ref., 14.

[15] See Ref., 14.

[16] See Ref., 11.

[17] See Ref., 13.

While direct measurement of antibiotic concentration was not made, characteristics of tetracyclines give further insight on how antibiotic resistance from CAFOs is entering the environment. Tetracyclines have been shown have high adsorption rates in soil and to persist longer in solid phases than liquid ones, which may result in greater selective pressure on bacteria in the soil compared to bacteria in the water.[18] For this reason, if selective pressure was the primary means of environmental dissemination of antibiotic resistance, it would be expected that resistance frequencies would be higher in terrestrial bacteria than in aquatic bacteria. However, the greater resistance frequencies observed in the aquatic bacteria suggests that this is not the case. If fecal bacteria are initially gaining antibiotic resistance,[19] and selective pressure is not the cause of increased antibiotic resistance in the environment as previously deduced, then horizontal gene transfer likely plays an important role in the dissemination of antibiotic resistance into the environment.

In conclusion, our results suggest that CAFOs in Ohio are contributing to the emergence of antibiotic resistance in the environment. Horizontal gene transfer plays a key role in this process, and non-fecal water samples show the greatest change in resistance due to CAFO density. Watershed is suspected to be an important factor in environmental dissemination, and attention should be paid to quantification of indicators of CAFO contamination and their relation to levels of antibiotic resistance. This information would be beneficial for evaluating the health threat created by the emergence of antibiotic resistance from CAFOs.

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Acknowledgements

We would like to give an enormous thank you to all of the following for making this project possible:

Dr. Jennifer Robbins: for providing invaluable project advising
Dr. Dorothy Engle: for assisting with instrumental operation
Dr. Gary Lewandowski: for additional assistance with instrumental operation
Dr. Mollie McIntosh: for advising on water sampling technique
Dr. Stanley Hadeen: for additional sampling technique advice
BIOL 497 students: for providing the great peer feedback

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Every Song Tells a Story:
Music, Society, and the War of 1812

Edward Herbers

When people reflect on the wars that have occurred throughout American history, the focus is typically on the details of combat: the battles, the important figures, the victories and the losses. These facts are important for understanding historical events, but historians often fail to take into account the role of popular culture during the time period. Primary sources are incredibly useful for this purpose, because they offer a first-person look into the experiences of peoples' lives at the time. While the most common historical primary sources are newspapers and personal journals, there is a wealth of cultural information that can be found in an often-overlooked medium: songs. In colonial times and, more specifically, the War of 1812, popular music had a strong influence. During the war, songs were used for more than just entertainment; songs motivated citizens and soldiers, strengthened social bonds, and most importantly, gave people a venue for sharing their own stories. While many of the songs' authors are unknown, the songs of the War of 1812 serve as important primary sources and provide us a window into the experiences

of the past. These songs are far more than simple cultural artifacts; they are an important source of information about the events of the war, and provide a closer look into the experiences of Americans, Canadians, and the British during the War of 1812.

Background

The decision to go to war was not one to be taken lightly, especially for a young and unprepared nation. In the years following the American Revolution, the United States struggled to pull itself together. A nation comprised of diverse and isolated groups from various cultures, the United States lacked a sense of national unity. In fact, the British believed that the United States would inevitably collapse, and that it was only a matter of time before internal political struggle tore it apart.[1] The state of American politics seemed to corroborate this belief, as the nation was sharply divided as war approached. President James Madison, a Republican, clashed with his Federalist opponents over the war, and the contention between parties impeded the country's wartime preparations.[2] As a result, the United States entered into the war with factious social and political support and a vastly underprepared military.

Although these details portray America's situation as bleak at the onset of the war, the social reality may have been quite the opposite. According to historian Nicole Eustace, the war spurred a romantic spirit in the United States, and it ushered in an "era of good feelings."[3] While going to war is not usually a desirable course of action, the people of America were able to transform it into an acceptable outcome. Despite being only indirectly involved, most Americans were excited to be at war. This positive sentiment Eustace describes suggests that beneath the political turmoil and partisan differences, there existed a unifying element: a strong sense of nationalism. Historian David Waldstreicher writes that the media of the time (newspapers, broadsides, and ballads), "did more than spread nationalism;

[1] Alan Taylor, "From the American Revolution to the War of 1812" *The War of 1812* (Virginia Beach: Donning Co., 2012).

[2] Andrew Burstein & Nancy Isenberg, "Madison, Party Politics, and the War of 1812" *The War of 1812* (Virginia Beach: Donning Co., 2012).

[3] Nicole Eustace, "1812: War and the Passions of Patriotism" (Philadelphia: The University of Pennsylvania Press, 2012), xv.

they constituted a widespread national culture."[4] Even though many Americans did not align themselves with the war effort, they were still influenced by the spread of popular songs. During the years leading up to the War of 1812, printed works gained more popularity and permeated into society. As nationalism spread, individuals lived the war vicariously through newspaper stories, poetry, and most importantly, through song.

French-Canadians, Music, and the War

The spread of nationalism was not confined to the United States; Canada also felt its effects during the war. At the beginning of the War of 1812, Canada was not actually a country. Its fractious population was made up of diverse groups of people, which included French-Canadians, "Late Loyalists," who were American-born emigrants to Upper Canada, and British settlers, among others. These groups had no affiliation with one another other than the fact that they were living in territory under British rule, and lacked any real feelings of nationalism. The British attempted to instill these values in the Canadian territories by promoting Canada's identity as being a part of the benevolent British Empire, and emphasized its stark contrast to the American republic.[5] However, Upper Canada was not nearly as developed as the United States, and with poor infrastructure and isolated farms and communities, it was difficult to communicate broadly.[6]

As a result of these factors, the War of 1812 was not initially a cause around which people rallied in Canada. Many inhabitants wanted no part in such a conflict, and despite pressure from the British, a large number of French-Canadians refused to fight. British General Isaac Brock, who had been placed in charge of governing the Canadian territory, was alarmed at the lack of support he found from his constituents. In his diary, he commented that his fears of the coming war were, "not from anything the enemy can do, but from the disposition of the people [of Canada]."[7] His remark was no understatement, because in July of 1812, a riot broke out at Lachine (in Quebec). The riot was a response from rural Canadian

[4] David Waldstreicher, "In the Midst of Perpetual Fetes: The Making of American Nationalism, 1776-1820" (Chapel Hill: University of North Carolina Press, 1997), 12.

[5] Taylor, "The Civil War of 1812," 24.

[6] Ibid., 61.

[7] Cited in Wilson, William R. "Brock at the Outbreak of War: Part 1" (2004).

communities who did not wish to participate in the Canadian militia, and was an outward expression of the dissatisfaction Canadians felt toward the war.[8] British leaders made proclamations mandating enlistment and declaring that deserters would face punishment, but they did little to garner support for the war in Canada.

During this period, Americans frequently used song as a means of spreading a spirit of nationalism. However, most of the popular songs that originated in Canada at this time revolved around peoples' reluctance to join the war. One song, "The Song of the Canadian Voltigeurs," reflects this sentiment in its lyrics. Translated from the French, the lyrics are:

We have a Major
Who has the devil in him
He'll be the death of us.
There's no devil nor tiger
As hardy as this one;
Not under the sun
There's not one like this one.

In order to understand its meaning, it is important to look at the historical context of this song. The Canadian Voltigeurs were a provincial militia commissioned by Sir George Prevost in 1812 to fortify Lower Canada. The Voltigeurs were led by Major Charles de Salaberry, a strict and meticulous commander. He governed his men with severe discipline; however, many of them lacked formal military training, and his leadership was often met with disdain.[9] The lyrics of this song offer a glimpse of what soldiers thought of their commander, and given what we know about the general French-Canadian attitude toward the war, this song appears to reflect the views of the larger populace.

Although French-Canadians generally warmed to the War of 1812 after military victories in 1813, British military recruiters initially faced the difficult task of discouraging deserters and encouraging enlistment. "The Bold Canadian" was a recruitment song for the Canadian militia, believed to have been written by Cornelius Flummerfelt in 1812. While multiple different versions have circulated through history, the general theme of the song is a description of the engagement with General Hull at Detroit. The lyrics play up the role of the Canadian militia in the skirmish

[8] Sean Mills, "French Canadians and the Beginning of the War of 1812: Revisiting the Lachine Riot." (Histoire Sociale/Social History 38, 2005).

[9] Michelle Guitard, "Biography of Charles de Salaberry" (The University of Toronto, 2000).

and what was essentially a British-Indian victory is described as though it were entirely a Canadian volunteer victory:[10]

Our troops then marched over
Our artillery we did land
And marched straight upon their town
Like an undaunted band.
…
The Yankee boys began to fear
And their blood to run cold
To see us marching forward
So courageous and bold
…
Success unto the volunteers
Who thus their rights maintain
Likewise their bold commander
Sir Isaac Brock by name.

Though its details are slightly exaggerated, the intention of the song is clear: to persuade French-Canadians to join the militia. One cannot help but wonder as to the effectiveness of this song. It places undue emphasis on the role of volunteer soldiers in the military and exaggerates the details of these engagements; it perpetuates the militia myth, insinuating that there was, in fact, a sense of unity among those living in Canada at the time.

The Spread of Popular Song

While oral transmission accounted for much of the spread of many songs, broadsides were an important medium for communicating news and songs during this time. An artifact of early print culture, broadsides were large sheets of paper that were printed on one side and hung in public places for all to see. They were relatively inexpensive, and the printing press made it easier to mass-produce these works and distribute them widely. James Moreira, a professor of anthropology, writes that "audiences were drawn to [broadsides] because the narratives addressed modern situations, processes, concerns, tensions, and relationships that were in-

[10] Donald Hickey, "Don't Give Up The Ship! Myths of the War of 1812" (University of Illinois Press 2006), 352.

forming life in small communities."[11] Broadsides were a captivating source of information about current events, especially in rural communities where the news of national events did not travel as quickly. The "broadside ballad" blossomed as a genre of music during the War of 1812 and surrounding years; song lyrics were frequently published on broadsides, which employed commonly-known melodies and told stories of the war. The War of 1812 created a contagious emotional atmosphere, and broadsides played a key role in increasing the influence of song among the population.[12]

Another form of music publishing that was prominent in the early 19th century was the songster. Songsters were pocket songbooks, containing three or more secular poems which were intended to be sung. The songster did not contain musical notation, nor did it contain songs with religious themes.[13] Rather, the lyrics noted the tune to which the song should be sung, which was usually the melody of another popular song. Songsters were published and distributed by individual printers both in America and in England, and were often given simple titles like, *The American Songster* or *A Choice Collection of Admired Songs*. For historians today, songsters are an excellent resource; they serve as comprehensive catalogues of the songs of the era and provide a glimpse of the collective attitudes and events of the time in England and America. For instance, in 1788, John Freeth and Thomas Pearson published a songster titled *The Political Songster: A Touch on the Times*, which catalogued around 100 popular English political songs. Freeth prefaced his work saying, "My hobby-horse and practice for nearly thirty years past have been, to write songs upon the occurrence of remarkable events…My songs are principally adapted to the times in which they were written." Although he acknowledges that the songs he wrote are often colored by his own biased opinions, he asserts that he did his best to give the objective details and record events in song so as to ensure their survival into the future.[14] Songsters faded away with the passage of time, and by the 20th century, the term "songster" referred more to minstrelsy than to published songs. However, during the peak of their production, songsters accounted for much of the spread of popular song, and helped peoples' stories of events survive in the form of lyrics.

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[11] James Moreira, "Fictional Landscapes and Social Relations in Nineteenth-Century Broadside Ballads" (*Ethnologies*. 30. no. 2, 2008): 93-113.

[12] Eustace, "1812: War and the Passions," 28.

[13] Irving Lowens, "The Songster and the Scholar" (American Antiquarian Society, Proceedings, n.s.:76:1, 1966), 61.

[14] John Freeth, "The Political Songster, or A Touch on the Times" (Birmingham: Pearson and Rollason 1788), A2.

Music in America, Pre-1812

Around the early 1800s, several popular songs permeated through American society. The first was "Hail, Columbia," a song that bore great significance for the young United States. The lyrics were written by Joseph Hopkinson in 1798, set to the tune of Philip Phile's "The President's March," which was composed for George Washington's inauguration. At the turn of the eighteenth century, conflict was brewing between England and France, and many Americans were divided over which side to support. According to Hopkinson, "Hail, Columbia" was meant to draw people away from wanting to support either side, and instead "get up an American spirit which should be independent of the interests…of both belligerents…[and bring] a feeling of unity to a nation still divided into separate states."[15] The song's lyrics praised the American military for its victories during the Revolution:

Hail, Columbia, happy land!
Hail, ye heroes! Heav'n-born band!
Who fought and bled in Freedom's cause
And when the storm of war was gone,
Enjoyed the peace your valor won.

"Hail, Columbia" provided a significant boost of morale for soldiers, and it was a song that most Americans would have known at the start of the war. Songs like this were performed at public gatherings and in soldier camps and roused the patriotic spirit of the American people.[16] "Hail, Columbia" was essentially the nation's unofficial national anthem, and its ability to stir the passions of the people set the stage for the strong nationalist influence that would soon pervade the country.

"Yankee Doodle" was another song holding a prominent place in American minds at the start of the War of 1812. It originated during the Revolutionary War as a song sung by the British soldiers to put down Americans. It was quickly claimed by the Americans, who adapted its lyrics to be anti-British.[17] Like "Hail, Columbia," this song spread in popularity, and its melody was used for many other

[15] Tyrell, William, Charles Smith, and Wallace House, *War of 1812* (New York: Folkaways Records and Service Corp., 1954).

[16] David Waldstreicher, "In the Midst of Perpetual Fetes: The Making of American Nationalism, 1776-1820" (Chapel Hill: University of North Carolina Press, 1997), 220.

[17] Library of Congress. "Yankee Doodle - Lyrical Legacy" (2005).

songs during the time period. Many broadside ballads were composed to the tune of "Yankee Doodle," which kept the public informed of goings-on in the war. The following section examines a selection of broadside ballads from the War of 1812 that utilized the melody of "Yankee Doodle."

As tensions rose between the United States and England on the high seas, in 1807, President Thomas Jefferson enacted an embargo against England. This embargo quickly became a popular topic for broadside ballads. Nathaniel Coverly, Jr. printed a ballad in Boston titled "The Embargo, A New Song." His song tells of the embargo from a merchant's perspective, describing the frantic attempt to get ships out to sea before the trade embargo took effect:[18]

Attention pay, ye bonny lads,
And listen to my Far'go
About a nation deuced thing,
Which people call Embargo,

In Boston town, the other day,
The people all were blust'ring,
And Sailors too, as thick as hail,
Away to sea were must'ring

The lyrics of this song provide a different perspective on the embargo than is usually recorded in history texts. From a sailor or merchant's point of view, the embargo was not a welcome policy; it threatened their livelihood and ability to support themselves. This song took on a satirical quality, as it subtly criticized the embargo:

I've got a vessel at the wharf,
Well laded with a cargo,
And want a few more hands to help,
To clear the Curs'd Embargo

Another rendition of this song was published in the *Hampshire Federalist* in 1808, composed by an unnamed sailor who experienced the effects of the embargo first-hand.[19] The lyrics of his rendition are even more vivid:

[18] Kate Van Winkle Keller, *Music of the War of 1812 in America* (Annapolis: The Colonial Music Institute 2011), 43.

[19] Ibid., 44.

With legs as small as marlin spikes,
I'm wasted to a scare-crow;
No meat to eat, no grog to drink—
All by this damn'd embargo.

The additional verses of the song describe the economic hardships that the embargo imposed upon this sailor and his friends and family, serving as an anonymous but descriptive primary source of information about life during the embargo.

When the embargo was lifted in 1809, another broadside ballad was published to the melody of "Yankee Doodle," titled "The Death of the Embargo." This song reveled in the wake of the embargo's passing, and its chorus reflected the sailors' delight:

Yankee Doodle, let us sing,
And toss about the Brandy,
The Embargo was a deuced thing,
It never was the dandy.

By using the same common melody, these songs would have resonated with the people and given them a vehicle for telling their stories. Many other songs were published during this time to the melody of "Yankee Doodle," such as "The Battle of Baltimore" in 1814, and "For the Fourth of July" (composed to stir up America's patriotic spirit in 1812).[20]

Music in the Military

In the eighteenth century, music played a key role in British and American military life. Most military companies had a simple band, which usually consisted of at least one snare drum, fife, and bugle. These bands specialized in field music, which directed the daily activities of soldiers on and off of the battle field. Specific melodies meant different orders for soldiers. "Reveille" was a tune used to rouse soldiers in the morning; "Tattoo" was a melody that signaled it was time to retire for the night. Other melodies alerted troops of mealtimes, emergencies, and most importantly, gave directions on the battlefield.[21]

[20] Ibid., 79.

[21] The Fort McHenry Guard, "Field Music" (2011).

In the din of battle, a general's orders would not be heard by his troops. The shrill noise of a fife or bugle, on the other hand, would ring out over the sounds of the fighting. Calls signaled retreats and advances and were essential to the execution of military maneuvers.[22] The practice of using music in the military dates back as far as thirteenth century Europe. In the 1600s, the British army developed specific calls for drums, fife and trumpet, which all soldiers were expected to be able to recognize in combat. By the War of 1812, these melodies had become commonplace among soldiers and were used by both British and American military units.[23]

For the British and the Americans, the band was an indispensible piece of the military; particularly in America, this continued to be the case even up through the Civil War. In fact, many companies had back-up musicians in case one might be wounded in combat.[24] In accounts of battles, soldiers on both sides wrote of the prizes they claimed after victories; in many instances, those writing made special notes regarding the acquisition of musical instruments. In his personal journal, Thomas Verchéres de Boucherville, a French-Canadian, recorded his experience of General Hull's failed campaign at Detroit at the very beginning of the war. He wrote of the seizure of one of Hull's boats, saying, "this vessel carried all the musical instruments of Hull's army, besides much of the personal baggage of his men. This was the first prize of the war and it was taken by a young French-Canadian."[25] Acquiring the cargo of instruments was a significant event for the British, because they were fairly valuable and would likely be put to use by the British military. Another British soldier wrote of the music played by the British as they marched on Washington in 1814

> Full-throated buglers and synchronized drummers filled the air with stirring notes from Handel's much-loved opera Judas Maccabeus. The long lines of aroused soldiers needed no further prompting. A chorus of masculine voices took up the defiant words in lusty unison as they sang like a triumphant army: 'See the conquering hero comes / Sound the trumpet, beat the drums.'[26]

[22] The Kentish Guards, "A History of Fife and Drum Music and ofthe Kentish Guards Fife and Drum Corps."

[23] E. Lawrence Abel, "Rattle, Toot, Tweet." *Civil War Times Illustrated* 40, no. 5 (2001).

[24] Ibid.

[25] Milo Quaife, *War on the Detroit: The Chronicles of Thomas Verchéres de Boucherville* (Chicago: The Lakeside Press: R.R. Donnelly & Sons Co., 1940).

[26] Pitch, Anthony. *The Burning of Washington: The British Invasion of 1814*, (Annapolis: US Naval Institute Press, 1998), 34.

At the Battle of Baltimore, one American soldier in Ft. McHenry wrote, "jubilant artillerymen cheered and hollered, their spirits lifted even higher when musicians piped out the jaunty tune of 'Yankee Doodle.'"[27] These first-hand accounts demonstrate the importance of music in military contexts; for British and Americans alike, the music performed by these bands galvanized soldiers, boosted their courage, and drove them onward in battle.

Off the battlefield, music took on a very different role for soldiers. Faced with lots of downtime and long marches, soldiers found ways to incorporate music into their daily routine. During marches, the playing of songs by the band could keep the soldiers moving at a steady pace, as well as take their minds off of their arduous trek. Idle time spent in camp left soldiers time to drink and socialize.[28] While merry-making was not permitted in strategic camps or among strictly-disciplined companies, less-disciplined military bands often used downtime to play music. Using the melodies of well-known songs, soldiers developed their own original lyrics to tell their experiences in the war. Soldiers rarely sang of losses and tended to focus solely on positive subjects. They sang about their companies, their military victories, and their lives as soldiers. Music was a powerful unifying force for soldiers, as it enabled them to share their experiences and form a common bond both in battle and in camp.

Celebrating Naval Victories

One of the significant outcomes of the War of 1812 was the development of the American Navy. At the onset of war, the British had a large naval force; the United States, on the other hand, was not so ready. It did have a navy, but it was much smaller than Britain's. As a result, the War of 1812 served as a proving ground for the American Navy. Historian Donald Hickey writes, "American victories were unexpected and served notice on the world that the new nation was a rising naval power."[29] American successes on the water were significant contributors to the "good feelings" of nationalism and boosted the morale of Americans.

The positive effects of American naval victories meant that a great number of songs were composed to celebrate them. "Decatur and the Navy," composed in 1814 by publisher Ishmael Spicer, praised the triumph of the American Navy under the com-

[27] Ibid., 206.

[28] Taylor, "The Civil War of 1812," 342-343.

[29] Donald Hickey, "Don't Give Up The Ship! Myths of the War of 1812" (University of Illinois Press, 2006), 96.

mand of Stephen Decatur. The lyrics describe his engagement with the HMS Macedonian:

The fierce Macedonian soon yields to her foe
She yields to the gallant and brave;
Success to our sailors wherever they go,
And in death, sweet peace to their grave.

Huzza to the brave that triumphantly ride,
And traverse the boisterous sea,
Columbia's glory, her honor and pride,
And Freedom's fair bulwark shall be

Like other songs of the war, the lyrics of "Decatur and the Navy" were intended to glorify American military prowess and stir up a strong sense of national pride.[30] Some songs extolled praise more broadly, outlining multiple naval victories at once. "Charge the Can Cheerily," written around 1812 by an unknown author, tells the story of several engagements at once:

Now coil up your nonsense 'bout England's great Navy,
And take in your slack about oak-hearted tars;
For frigates as stout, and as gallant crews have we,
Or how came her Macedon deck'd with our stars?
Yes how came her Guerriere, her Peacock, and Java,
All sent broken ribb'd to Old Davy of late?

With a tongue-in-cheek delivery, the song alludes to multiple British ships that were either sunk or claimed by Americans in battle. Another similar song was "Ye Parliament of England." Like "Charge the Can Cheerily," this song referenced multiple American naval victories, and seemed to be written progressively; as America emerged victorious in subsequent battles, new verses were added to account for them:[31]

There's Rodgers, in the President, will burn, sink, and destroy,
The Congress, on the Brazil coast, your commerce will annoy.

[30] Van Winkle Keller, *Music of the War,* 135.

[31] Tyrell, Smith, and House. *War of 1812*.

The Essex in the South Seas will put out all your lights,
The Flag she waves at ha' mast-head "Free Trade and Sailors' Rights"

For Americans, soldiers and civilians alike, these songs would have provided a morale booster and strengthened bonds between them. They reaffirmed the strength of the country, emphasized the positive outcomes of the war, and provided a means by which stories of military action could be shared.

Music and Society

For most common people, the War of 1812 was not experienced first-hand. Newspapers and broadsides provided much of their information about the war, though the details were not always entirely accurate. Despite the war's negative connotation, the general population seemed to take a great deal of pleasure in this conflict. Nicole Eustace posits that during this time, passionate ideals of marriage and sexuality prospered in the United States and were reflected in popular songs. One example of such a song was "How to Nail 'Em," published in 1814. The lyrics praise American military prowess but contain a strong sexual undertone:

The Bachelor's a hob nail.
He rusts for want of use sir,
The misers they've no nails at all,
They're all a pack of screws sir;
The Englishmen will get some clouts,
If here they chance to roam, sir,
For Americans like hammers, will
Be sure to drive them home, sirs.

The song very openly suggests that a soldier's sexuality, allowed to fully develop in marriage, enhances his abilities on the battlefield as well. This reinforces Eustace's claim that Americans were inclined to turn the war into something positive, emphasizing values of courage and marriage as fulfillment of one's patriotic duty.[32]

Social dances were a prominent feature of American life during the colonial period. Derived from European origins, Americans engaged in dancing as a social activity, often called "country dances." During the War of 1812, a large number

[32] Eustace, "1812: War and the Passions," 51.

of dance tunes were composed, from marches and minuets to hornpipes and jigs. While lacking the element of storytelling found in lyrical pieces, these marches were usually given titles that reflected important places and figures. In 1815, Irish-American composer Walter Jackson wrote a dance tune called "Jackson's Welcome Home," to honor Andrew Jackson after his victory in the Battle of New Orleans. Another composer, Frederick Wagler, composed a hornpipe (a lively style of song and dance) to commemorate the 1811 Battle of Tippecanoe. After Isaac Hull's naval successes aboard the U.S.S. Constitution in 1812, broadsides quickly started printing songs of praise, including a march titled "Hull's Victory." These pieces (and the countless others composed at the time) added a strong social component to the war experience and presented the war in a more positive light.[33]

The Star Spangled Banner

Of all the songs composed during the War of 1812, perhaps the most well-known of these is "The Star Spangled Banner." Composed during the Battle of Baltimore by Francis Scott Key, the song describing his experience of the battle has become our national anthem.[34] However, it may come as a surprise to some that this song bore very little significance during the war; although it was published as a broadside in 1814, it did not become the official national anthem until 1931 under President Herbert Hoover.[35] Like so many other songs published during the war, "The Star Spangled Banner" was merely a new set of lyrics set to a familiar tune. In this case, the melody was "To Anacreon in Heaven" (or "The Anacreonotic Song"), which was the theme song of the English social club, the Anacreonotic Society. Historian David Hildebrand points out that our beloved national anthem is essentially the same melody as a popular British drinking song, which seems to rattle its austerity.[36] Also, in 1817, composer James Hewitt adapted the lyrics of Key's song to an entirely new melody, in the style of a British march. It failed to attain widespread popularity, but reinforces the fact that despite the revered status it maintains today, "The Star Spangled Banner" was not always held in such high esteem.[37]

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[33] Van Winkle Keller, *Music of the War*, 208.

[34] Tyrell, Smith, House, *War of 1812*, 1954.

[35] National Museum of American History. "Star Spangled Banner and the War of 1812."

[36] David Hildebrand, "The Music of the War of 1812" Performed 10/6/11, C-Span.

[37] Van Winkle Keller, *Music of the War of 1812,* 122.

Francis Scott Key is typically only known for writing "The Star Spangled Banner," but it is important to note that he had composed and published a song in 1805 that also utilized the melody of "Anacreon in Heaven." This song, "When the Warrior Returns," contained the same strong patriotic lyrics as his later work:

> *In the conflict resistless, each toil they endured*
> *'Till their foes fled dismayed from the war's desolation;*
> *And pale beamed the Crescent, its splendor obscured*
> *By the light of the Star Spangled flag of our nation*

This song even hinted at Key's later work with its inclusion of the "Star Spangled" phrase. However, "The Star Spangled Banner" only enjoyed moderate popularity over the course of the 19th century. It was sung by both sides during the Civil War, and many variations of the tune were published, including a waltz and Spanish dance version. But the country was content with "Hail, Columbia" as a national anthem until the early 20th century, when a movement was put in motion to have Key's song established instead.[38]

Legacy

It is a wonder that of the innumerable songs written during the War of 1812, "The Star Spangled Banner" is really the only one that lives on today. Like the war itself, most of the songs of the War of 1812 have largely faded from American memory. And yet, when examined closely, these songs are important primary sources that provide a remarkable vision of life at the time. Granted, the information they contain may not be entirely accurate: the songs only present one side of the story, exaggerate details, and tend to focus only on positive events. While this may be a criticism of the use of these songs as historical fact, the same argument can be made of primary sources in general; they are frequently colored by their authors' biases and perceptions of events. But these inaccuracies are an essential part of the process of reconstructing history. The battles and figures are important, but in order to see the full picture, we must incorporate cultural history; in this case, the songs of the era. Every song tells a story, and by looking at these stories in their appropriate historical context, we can begin to see the War of 1812 in greater depth.

[38] Ibid., 114.

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About the Author

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The Madwoman in the Attic:
Historiographic Metafiction and a Socially Constructed Society in *Wide Sargasso Sea*

Sarah Roveda

In his text, *Culture and Imperialism*, Edward Said writes, "We must therefore read the great canonical texts…with an effort to draw out, extend, give emphasis and voice to what is silent or marginally present or ideologically represented."[1] Jean Rhys' *Wide Sargasso Sea* aims to reevaluate just such a work, namely Charlotte Brontë's *Jane Eyre*, through the eyes of the madwoman in the attic. Set against a backdrop of British imperialism, *Wide Sargasso Sea* offers important insights into the intersectionality of race, class, and gender in the relationship between Britain and her colonies. Rhys demonstrates the social construction of these elements in Britain's Caribbean colonies, specifically Jamaica and Dominica, by using three metafictional techniques—intertextuality, multiple narrators, and quixotism. Through these elements, Rhys is able to portray the history of a marginalized population in these British colonies in the Caribbean that had previously been left on

[1] Edward W. Said, *Culture and Imperialism* (New York: Knopf, 1993), 66.

the periphery of the great canonical works of British literature—the white Creole heiresses. Many scholars commenting on Rhys' work emphasize either the metafictional techniques or the roles of race, class, and gender in the piece. However, this paper will contribute to the scholarly conversation surrounding *Wide Sargasso Sea* by more explicitly connecting the two elements, demonstrating that the use of historiographic metafiction by Rhys is what allows her to display the social construction of race, class, and gender so strongly in *Wide Sargasso Sea*. This paper will first describe the metafictional elements present in the novel, including its categorization as historiographic metafiction, and will then integrate them together to portray the social constructions of society, particularly as they pertain to the white Creole heiresses.

More than just employing the aforementioned metafictional techniques, Rhys' work can be classified as historiographic metafiction, which in essence is a blending of history and fiction. Linda Hutcheon expounds upon this blend in her work, "Historiographic Metafiction: 'The Pastime of Past Time,'" arguing that "Both history and fiction are cultural sign systems, ideological constructions whose ideology includes their appearance of being autonomous and self-contained."[2] However, these two types of narratives only appear to operate independently of each other. In actuality, both "derive their force more from verisimilitude than from any objective truth," are "linguistic constructs, highly conventionalized in their narrative forms, and not at all transparent either in terms of language or structure," and "appear to be equally intertextual, deploying the texts of the past within their own complex textuality."[3] In this way, history and fiction closely resemble each other more than many critics who think of history as factually correct would like to admit.

The elements Hutcheon describes are not only characteristic of both fiction and history, but they are also elements integral to historiographic metafiction. Hutcheon argues, "this kind of novel asks us to recall that history and fiction are themselves historical terms and that their definitions and interrelations are historically determined and vary with time."[4] The social construction of the terms "history" and "fiction" requires readers to question the accuracy of the "historical" information presented as factual in more traditional historical fiction. Rhys' text

[2] Linda Hutcheon, "Historiographic Metafiction: 'The Pastime of Past Time" *A Poetics of Postmodernism: History, Theory, Fiction* (New York: Routledge, 1988), 112.

[3] Ibid., 105.

[4] Ibid.

examines the marginalized figure of the Creole heiress within the historical context of British imperialism through the use of metafictional elements, specifically its intertextuality with *Jane Eyre* and its subjectivity through the presentation of the story by multiple narrators. By writing *Wide Sargasso Sea* as historiographic metafiction, Rhys is able to question the perception of the white Creole heiress that Brontë includes in *Jane Eyre*. Additionally, *Wide Sargasso Sea*, by its nature of being a rewrite of *Jane Eyre*, automatically questions the "historical" information presented in Brontë's text. This author believes that Rhys' work might not have as explicitly demonstrated the effects of British colonialism on the Caribbean islands were it not for her use of historiographic metafictional techniques.

This questioning of what constitutes factual history or fictional narration mentioned above is not the only integral element of historiographic metafiction. "Subjectivity, intertextuality, reference, [and] ideology" are also elements important to understanding the relationship between history and fiction.[5] Rhys includes all of these elements in *Wide Sargasso Sea* through her use of multiple metafictional techniques. As previously mentioned, the subjective element is found in the text through the presence of the multiple narrators. The intertextual element is apparent in the text as a rewrite: Rhys takes the character of Bertha Rochester from *Jane Eyre* and writes Bertha's history, explaining her life before she became Mrs. Rochester. Rhys also recreates the scene from *Jane Eyre* in which Bertha burns down Thornfield Hall. *Wide Sargasso Sea*, as historiographic metafiction, also references the events occurring during the 1830s in British colonies as a result of the emancipation of the slaves. The final element of ideology is revealed most clearly through Mr. Rochester's narrative voice, where the reader is privy to insight into how the colonizers viewed the Creole heiresses in the islands. Through this combination of metafictional techniques, Rhys reveals the social construction and intersectionality of race, class, and gender in the Caribbean islands during the 1830s as a result of British imperialism.

Between the elements of intertextuality and subjectivity (through multiple narrators) described above, the intertextuality of the novel is the most apparent technique of the two. As previously mentioned, Rhys bases her character Antoinette Cosway on Bertha Rochester from *Jane Eyre*. In her article "The Caribbean *Jane Eyre*: The West Indies and England," Teresa O'Connor cites an interview with Jean Rhys during which Rhys discusses why she wrote *Wide Sargasso Sea*: "When I read *Jane Eyre* as a child, I thought, why should she think Creole women are lu-

[5] Ibid.,121.

natics and all that? What a shame to make Rochester's first wife, Bertha, the awful madwoman, and I immediately thought I'd write the story as it might really have been."[6] Rhys utilized the opportunity to question—and even more, to write—what really happened to Bertha before she was locked in the attic.

O'Connor believes that Rhys took this opportunity to write Bertha's history a step further than simply showing what Bertha's life might have been before moving to England. O'Connor writes, "In many respects, Rhys's 'sequel' to *Jane Eyre* constitutes not only an explanation and defense of Bertha Rochester but provides an opposition to many of the givens of Brontë's novel."[7] By evoking characters from a canonical work of British literature, Rhys juxtaposes both texts, forcing readers to examine the character of Antoinette/Bertha through two different lenses in an attempt to understand the truth of what occurred during that time period. From the perspective of the Englishman, "the right to colonial possessions helps directly to establish social order and moral priorities at home."[8] However, in an effort to understand the marginalized people in the colonies—like Antoinette and the other white Creole heiresses—"We must therefore read the great canonical texts…with an effort to draw out, extend, give emphasis and voice to what is silent or marginally present or ideologically represented."[9] The fact that readers are unable to trust the historical accuracy of the narrative causes readers to question which is more accurate: the perspective provided in canonical texts or Rhys' portrayal of Antoinette. To reference Hutcheon's article again, "Both historians and novelists constitute their subjects as possible objects of narrative representation."[10] This construction of subjects as an element of narrative representation demonstrates the social construction of society, allowing readers to question what elements of a history different authors did not include.

The other major intertextual element of *Wide Sargasso Sea* is found in the final part of the text, where Rhys repeats the scene in which Bertha burns down Thornfield Hall. In *Jane Eyre*, Bertha appears to have known about Jane and Rochester's relationship: "[she] made her way to the chamber that had been the governess's—(she was like as if she knew somehow how matters had gone on, and had a spite at her)—and she kindled the bed there; but there was nobody sleeping in it

[6] Teresa F. O'Connor, *Jean Rhys: The West Indian Novels* (New York: W. W. Norton & Company, Inc., 1966) quoted on 144.

[7] Ibid., 145.

[8] Said, *Culture and Imperialism*, 62.

[9] Ibid., 66.

[10] Ibid., 111.

fortunately."[11] However, Antoinette narrates the same scene in *Wide Sargasso Sea*. She seemingly does not know Jane or her connection to Rochester; Antoinette neither directly nor indirectly mentions Jane. Additionally, the scene is presented as a dream. When Antoinette awakens, she thinks to herself, "Now at last I know why I was brought here and what I have to do."[12] However, the novel ends before the readers know whether or not she actually started the fire she had seen in her dream. Even though she admits that she knows her role, readers never see Antoinette complete the act.

Regardless of whether or not Antoinette actually sets the house on fire, Rhys does not portray this act as one of revenge against Jane. Instead, the scene is portrayed as one in which Antoinette tries to escape her own image: "It was then that I saw her—the ghost. The woman with streaming hair. She was surrounded by a gilt frame but I knew her. I dropped the candle I was carrying and it caught the end of a tablecloth and I saw flames shoot up."[13] Antoinette describes herself as an alien figure—one she recognizes but speaks of as if she is not the same person. Despite the dehumanizing aspect of labeling oneself a "ghost," the audience is still able to sympathize with Antoinette who, through her marriage to Rochester and move to England, has lost her identity and is no longer able to identify with herself as a result of the abuse she has suffered the hands of her husband.

In addition to intertextuality, subjectivity is the other major component of historiographic metafiction that Rhys employs in *Wide Sargasso Sea*, which she does through the use of multiple narrators. Rhys divides the novel into three parts with the first and third narrated by Antoinette, and the second part narrated by Rochester. By using multiple narrators in the novel, Rhys is able to account for each character's different perspective of this history. For example, readers are able to see Antoinette's childhood through her own eyes. They are also able to see the scene with the house fire borrowed from *Jane Eyre* through Antoinette's eyes. Allowing Antoinette to have a voice (through her narration) in this text humanizes her, whereas in *Jane Eyre* she is described in a bestial manner: "The clothed hyena rose up, and stood tall on its hind feet."[14] In addition to this dehumanization, Bertha does not even retain her gender; instead, she is described using the gender-neutral pronoun "it." By portraying her in this manner, Brontë dehumanizes her further, making it impossible for readers to connect or sympathize with her.

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[11] Charlotte Brontë, *Jane Eyre* (New York: W. W. Norton & Company, Inc., 2001) 364.

[12] Jean Rhys, *Wide Sargasso Sea* (New York: W. W. Norton & Company, Inc., 1966) 171.

[13] Ibid., 169-70.

[14] Brontë, *Jane Eyre*, 250.

Rhys, however, takes the opposite approach and focuses on maintaining Antoinette's humanity throughout the text. For example, at the end of part three, Grace Poole questions how much Antoinette remembers from the day when she attacked her brother. When Ms. Poole relays the story of what happened that day to Antoinette, she explains, "'I was in the room but I didn't hear all he said except,' 'I cannot interfere legally between yourself and your husband.' 'It was when he said "legally" that you flew at him and when he twisted the knife out of your hand you bit him.'"[15] By making "legally" the word that elicits Antoinette's reaction, Rhys preserves Antoinette's humanity, showing that she recognizes what has happened to her life as a result of her marriage.[16] Antoinette is not simply lashing out at her brother; rather she is reacting to the mention of her marriage contract, showing that she understands that it was her marriage that caused her to go insane.

The second part of Rhys' novel, which is narrated by Rochester, more explicitly demonstrates the poor treatment of the white Creole heiresses at the hands of British colonizers. However, Rhys does include in this section some parts that allow readers to gather sympathy for Rochester. Gayatri Spivak explains, "Rhys makes it clear that he is a victim of the patriarchal inheritance law of entailment… Rochester's situation is clearly that of a younger son dispatched to the colonies to buy an heiress."[17] In this regard, it becomes easier to understand how trapped Rochester feels in his marriage (as shown in *Jane Eyre*). In a letter to his father that he never posts, Rochester writes, "All is well and has gone according to your plans and wishes."[18] Rochester's marriage to Antoinette is neither a romantic nor companionate marriage, but rather it is a marriage convenienient for his family.

Moira Ferguson offers an analysis of Rochester's situation: "Duty bound to the law of the father, younger son Edward Rochester journeys to Spanish Town as a potential speculator in order to expropriate through marriage the inheritance of an unknown woman."[19] Rochester's duty is to make money for his family by marrying well, a duty shared by many younger sons of British heritage. Christophine, Antoinette's servant and confidant, recognizes Rochester's motives and accuses him of using Antoinette: "She don't come to your house in this place England they

[15] Rhys, *Wide Sargasso Sea*, 165.

[16] Gayatri C. Spivak "Three Woman's Texts and a Critique of Imperialism," *Critical Inquiry* 12, no. 1 (1985): 250.

[17] Ibid., 251.

[18] Rhys, *Wide Sargasso Sea*, 68.

[19] Moira Ferguson, "Sending the Younger Sons Across the Wide Sargasso Sea: The New Colonizer Arrives" Colonialism and Gender Relations from Mary Wollstonecraft to Jamaica Kincaid: East Carribbean Connections (New York: Columbia University Press, 1993), 92.

tell me about, she don't come to your beautiful house to beg you to marry with her. No it's you come all the long way to her house—it's you beg her to marry."[20] Christophine knows that Rochester and his family—described by Ferguson as "a well-connected British family, contemptuous of a meretricious plantocracy but not above exploiting its vulnerable heiresses"—are only interested in his marriage to Antoinette insomuch as he gets all of her money.[21]

Rochester's remarks about the island and his marriage show his disingenuous attitude towards them both: "It was all very brightly coloured, very strange, but it meant nothing to me. Nor did she, the girl I was to marry."[22] When Antoinette refuses to marry him, his pride is offended, not his heart: "I did not relish going back to England in the role of rejected suitor jilted by this Creole girl."[23] Not only is Rochester not interested in Antoinette, but he also dehumanizes her throughout the remainder of the second part of the novel. Although readers might have initially held a sympathetic attitude towards Rochester, his disdain for the islands and his poor treatment of Antoinette force readers to recognize the mistreatment of these white Creole heiresses, as exemplified through Antoinette and Rochester's relationship.

Rochester dehumanizes and subordinates Antoinette in two main ways: renaming of her and referring to her as an inanimate object. In a couple of scenes within this section, Rochester calls Antoinette, "Bertha." The following conversation between Antoinette and Rochester portrays his refusal to acknowledge her real identity and her submission, despite her frustration at his refusal to use her name:

> 'Yes,' she said, 'of course, but will you come in and say goodnight to me?'
> 'Certainly I will, my dear Bertha.'
> 'Not Bertha tonight,' she said.
> 'Of course, on this of all nights, you must be Bertha.'
> 'As you wish,' she said.[24]

Even though she does not like being called Bertha, she still submits to him. Antoinette tells Rochester, "'Bertha is not my name. You are trying to make me into

[20] Rhys, *Wide Sargasso Sea*, 143.

[21] Ferguson, "Sending the Younger Sons," 92.

[22] Rhys, *Wide Sargasso Sea*, 69.

[23] Ibid., 70.

[24] Ibid., 123.

someone else, calling me by another name."[25] A renaming in literature often signifies a loss of identity, and it is after this point in the text that readers begin to notice the deterioration of Antoinette's mind. These scenes in which he calls her Bertha occur closer to the end of section two, and section three is where readers see Antoinette as a madwoman.

Rochester's dehumanization of Antoinette does not only occur with her renaming. He also compares her to dolls, stripping her of any agency and marking her as a toy with which he can play at his leisure: "I could see Antoinette stretched on the bed quite still. Like a doll. Even when she threatened me with the bottle she had a marionette quality."[26] Even when Antoinette tries to fight against her oppressor, he still views her as a toy—specifically a puppet that can be manipulated easily by pulling the strings. In a conversation with Rochester, Christophine accuses him of calling Antoinette a doll.[27] He agrees that he did and then makes mental comparisons between her name and variations of marionette: "(Marionette, Antoinette, Marionetta, Antoinetta)."[28] He only sees her as something to be manipulated and used. Even though Rhys allows her readers initially to feel sympathetic towards Rochester for being forced into marriage by his father, in actuality, she uses him to show the dehumanization of these women who were bought and sold into marriage.

Rochester's dehumanizing treatment of Antoinette ultimately aids her mental breakdown and quixotic behavior. Quixotism, as used here, describes a character's inability to differentiate between reality and fiction, despite being informed by other characters what constitutes reality. This metafictional technique appears in the text in conjunction with Antoinette's perception of England. In his article "Historicizing Quixote and the Scandal of Quixotism," Scott Paul Gordon explains, "Isolation and solitude, then seem to simultaneously be both cause and consequence of quixotism: separation from others produces quixotic minds that, once formed, isolate quixotes from their communities and the beliefs and perceptions others (supposedly) share in common."[29] This element of isolation and division is evident in a conversation between Christophine and Antoinette about England. Christophine questions the existence of England; she states: "I know what I see with my eyes and

[25] Ibid., 133.

[26] Ibid., 135-36.

[27] Ibid., 139.

[28] Ibid., 140.

[29] Scott P. Gordon, "Historicizing Quixote and the Scandal of Quixotism," *The Practice of Quixotism: Postmodern Theory and Eighteenth-Century Women's Writing* (New York: Palgrave MacMillan, 2006): 31.

I never see it."[30] Her refusal to acknowledge the existence of that nation symbolizes her refusal to acknowledge England as holding any power over her. Antoinette, on the other hand, is willing to simply "believe" that England exists, symbolically succumbing to the power structures in place in that country and executed by her English husband.[31]

Gordon also identifies quixotes as "figures whose perceptions have been shaped by the fictions they have consumed but who, unaware of these mediations, are naively confident that they perceive the 'real' itself."[32] Readers are aware that Antoinette accumulates her information on England from some text that outlines the imports and exports of the country.[33] She also gleans information from a letter from another Creole heiress who was married off to an Englishman, claiming "'London is like a cold dark dream sometimes. I want to wake up.'"[34] Her friend wants to wake up from this dark dream, and yet, Antoinette still yearns to go to London. Her quixotic view of England, though, is best exemplified in a passage by Rochester:

> She often questioned me about England and listened attentively to my answers, but I was certain that nothing I said would make much difference. Her mind was already made up. Some romantic novel, a stray remark never forgotten, a sketch, a picture, a song, a waltz, some note of music, and her ideas were fixed…I could not change them and probably nothing would. Reality might disconcert her, bewilder her, hurt her, but it would not be reality. It would be only a mistake, a misfortune, a wrong path taken, her fixed ideas would never change.[35]

This portrayal of Antoinette as someone who refuses to accept reality is a fundamental quixotic trait. Readers see her refusal to accept the truth in the third part of the text: "They tell me I am in England but I don't believe them. We lost our way to England. When? Where? I don't remember, but we lost it."[36] Even when Grace Poole tells her that they are in England, she refuses to believe it. She thought England was going to bring happiness: "I have been too unhappy…I will be a dif-

[30] Rhys, *Wide Sargasso Sea*, 101.

[31] Ibid.

[32] Gordon, *Historicizing Quixote*, 15.

[33] Rhys, *Wide Sargasso Sea*, 101.

[34] Ibid., 73.

[35] Rhys, *Wide Sargasso Sea*, 85.

[36] Ibid., 162.

ferent person when I live in England and different things will happen to me."[37] However, it does not bring happiness. It only brings more misery.

Rhys uses her character Antoinette to exemplify the treatment of the Creole heiresses during this era of British imperialism. Carmen Wickramagamage writes of the intersectionality between race, class, and gender: "The history that Rhys provides for Antoinette/Bertha foregrounds the racial, class and gendered dimensions to the subject-positions that she assumes, or is assigned, in the complex socio-economic and cultural space of the West Indies and which determine in turn her options and eventual fate in both novels."[38] An understanding of this intersectionality occurs by examining the perspectives of the British colonizers and the freed slaves. The colonizers looked at these heiresses as Creole and not English, identifying race as a focal point. Rochester describes Antoinette (and therefore the heiresses like her) as, "Creole of pure English descent she may be, [but her eyes] are not English or European either."[39] When he sees her, he notices the features of her figure that do not identify her as English. In her piece "Race, Creole, and National Identities in Rhys' *Wide Sargasso Sea* and Phillips's *Cambridge*," Vivian Nun Halloran addresses the idea of "Englishness," arguing that *Wide Sargasso Sea* "prolematize[s] Englishness as a national and cultural identity that may or may not be dependent upon race and also reject[s] the Creole as an identity subordinate in status to that of European," thus identifying the intersection between race and class.[40] These women's race—English or Creole—is not solely linked to bloodlines, but it also categorizes them by class. Halloran suggests, "Social demarcations between English and Creole cultural identities are artificial because they ultimately depend on chance—on the geographical accident of a given person's or character's place of birth."[41] Through the combination of the metafictional techniques identified and examined above, Rhys reveals the social construction and intersectionality of race and class for these Creole heiresses in the Caribbean islands during the 1830s as a result of British imperialism.

While the Englishmen focused on the racial identity of these women, the freed slaves predominantly ignored the element of race when looking at these women and focused instead on their class as dictated by the amount of money they

[37] Ibid., 100.

[38] Carmen Wickramagamage, "An/other Side to Antoinette/Bertha: Reading 'Race' into *Wide Sargasso Sea*" *Journal of Commonwealth Literature* 35 no. 1 (2000): 28.

[39] Rhys, *Wide Sargasso Sea*, 61.

[40] Vivian N. Holloran, "Race, Creole, and National Identities in Rhys's *Wide Sargasso Sea* and Phillip's *Cambridge*" *Small Axe: A Caribbean Journal of Criticism* 21 (2006): 87.

[41] Ibid.

retained after the plantations failed. Tia best describes the status of the heiresses after the emancipation: "Plenty white people in Jamaica. Real white people, they got gold money. They didn't look at us, nobody see them come near us. Old time white people nothing but white nigger now, and black nigger better than white nigger."[42] In this quote, Tia acknowledges that the lack of money marks someone as a "nigger," not just his/her skin color. Halloran writes, "Textual instances where the term 'nigger' functions as the rhetorical signifier of the poverty and loss of cultural capital of white Creole inhabitants of the Caribbean islands are not unheard of."[43] This terminology is one method of categorizing people based on their class. These women remain in the same position—between their colonizers and those natives they enslaved, simultaneously belonging to both and neither population as natives born in the Caribbean islands but with English blood.

The colonies were "a crucial part of the cultural representation of England to the English," making them an important aspect of Brontë's portrayal of British society.[44] Edward Said looks at the role of colonial plantations in Jane Austen's 1814 novel *Mansfield Park* by explaining their relationship to Sir Thomas Bertram: "They give him his wealth, occasion his absences, fix his social status at home and abroad, and make possible his values."[45] By describing the use of the plantations this way, Said again identifies the use of the colonial plantations to further the position of the Englishmen who hold them. In a similar way, Spivak argues:

> In this fictive England, [Bertha] must play out her role…so that Jane Eyre can become the feminist individualist heroine of British fiction. I must read this as an allegory of the general epistemic violence of imperialism, the construction of a self-immolating colonial subject for the glorification of the social mission of the colonizer.[46]

For Spivak, the character of Bertha—who can be viewed as a personified representation of Said's colonial plantations—is written in order to assist or inhibit Jane's mobility throughout the text. She only exists to inhibit Jane from marrying Rochester or to finally, through her death, allow Jane to find happiness. Both of these critics argue that the colonies and the property associated with them (which would include Bertha) exist only to serve the needs of the English.

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[42] Rhys, *Wide Sargasso Sea*, 22.

[43] Halloran, "Race, Creole and National Identities," 90.

[44] Spivak, "Three Women's Texts," 243.

[45] Said, *Culture and Imperialism*, 62.

[46] Spivak, "Three Women's Texts," 251.

The role of gender appears in Antoinette's portrayal as property to be moved from estate to convent and from island to island by her stepfather, stepbrother, and husband as they please. Heiresses like Antoinette were seen as property to be bought through the contract of marriage and were dehumanized by their husbands. Christophine exposes Rochester as a fortune hunter when she tells him, "'Everybody know that you marry her for her money and you take it all.'"[47] Aunt Cora is also aware of the intention of Rochester's family to exploit Antoinette's money as an heiress. Her understanding of the situation is revealed in a conversation she has with Richard (Antoinette's stepbrother) where she argues, "You [Richard] are handing over everything the child owns to a perfect stranger…She should be protected legally."[48] Aunt Cora sees that Richard is only looking for someone who will buy her; he is ready to sell. He responds, "She is damn lucky to get him, all things considered."[49] Richard's retort shows his view of Antoinette: "To her stepbrother she is dispensable property that can be bartered for a respectable lineage, something resident plantocrats rarely possessed but always craved."[50] Rochester, too, demonstrates a fear of her mixed blood: "For a moment she looked very much like Amélie. Perhaps they are related, I thought. It's possible, it's even probable in this damned place."[51] Richard wants to buy better bloodlines, while Rochester needs the money from the plantation to increase his wealth. As a result, Rhys' portrayal of Antoinette as property to be sold—"A legally free woman is bought because she owns property"—illuminates the problems of the marginalized heiresses, who were bought and sold in marriage contracts that were meant to make Englishmen rich.[52]

Through the broad genre of historiographic metafiction, Jean Rhys is able to address, through metafictional elements, the injustices she believes were done to the white Creole heiresses kept at the margins of canonical British literature. Carmen Wickramagamage epitomizes Rhys' argument, writing "If Antoinette appears victimized by others in the present historical moment of the narrative, it is as a result of her social inscriptions as a white Creole woman in the post-Emancipation West Indies."[53] By showing the intertextuality between *Jane Eyre* and *Wide Sargasso Sea*, the use of multiple narrators, and the portrayal of Antoinette as a quixote, Rhys

[47] Rhys, *Wide Sargasso Sea*, 138.

[48] Ibid., 104.

[49] Ibid.

[50] Ferguson "Sending the Younger Sons," 94.

[51] Rhys, *Wide Sargasson Sea*, 115.

[52] Ferguson, "Sending the Younger Sons," 94.

[53] Rhys, *Wide Sargasson Sea*, 29.

is able to demonstrate the social construction of race, class, and gender as a result of British imperialism in the 1830s. Rhys conveys the intersectionality of those three social constructs through the subordination, objectification, and dehumanization of Antoinette, who serves to exemplify the mistreatment of the white Creole heiresses of that era. By expounding upon the life of a character who exists in the margins of an imperialistic society, Rhys shows the exploitation of these women and the wrongs they suffered at the hands of the colonizers.

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Exploring the Divides of Black Political Discourse:

Charles Chesnutt's *The Marrow of Tradition and the Black Middle Class*

Joshua Sabo

Introduction

Despite the novelist's lofty intentions to craft a work that would inspire specific political action or prescribe particular reforms, many scholars have recognized that Charles Chesnutt's *The Marrow of Tradition* functions more as a political or historical exposé. Most scholars choose to focus on the questions of racial identity and racial violence in *The Marrow of Tradition*. These questions of racial violence are vital to Chesnutt's larger exposé of the difficulties facing African Americans in the South during the period. Interestingly, Chesnutt's depiction of a growing black middle class in Dr. Miller and his family allows him to bridge the gap between the anti-lynching movement and the broader anti-segregation movement, two political agendas traditionally separated. A middle class identity failed to insulate African Americans from threats of racial violence, but it also simultaneously justified their having greater political equality based on this financial success. I will analyze how Chesnutt's ambivalence regarding the black community's response to race violence

was precedented in relation to other works of the period. Further, I will consider how unusual Chesnutt's depiction of a black middle class was among other literature at the turn of the twentieth century. For example, I will illustrate his strange willingness to comment on both anti-lynching and larger issues of segregation was for the period. My purpose is to identify the origins of and suggest some influences on Chesnutt's major themes about the black middle class and racial violence.

This paper is largely a synthesis of recent scholarship on Chesnutt's novel, reconsidering it in light of the intellectual context in which it was written, referencing *The Atlantic Monthly*, *Harper's Magazine*, and other sources. First, we consider *The Marrow of Tradition*'s position within the debate between famous African American thinkers such as W.E.B. Du Bois and Booker T. Washington regarding the best possible paths to black enfranchisement and equality. Next, we move to the novel's place in the divide between activists concerned about African American advancement and the anti-segregation fight more broadly (with the NAACP, Du Bois, and Washington among them) and the anti-lynching crusader Ida B. Wells, whose primary concern was the fight against lynching in the South. I analyze popular depictions of the South from the period, comparing them to Chesnutt's description, focusing on the socioeconomic issues of the region, but most particularly on the small black middle class potentially forming during this time. Finally, I examine Chesnutt's short stories published in the years before the release of *The Marrow of Tradition*, trying to describe the trajectory of his themes. Through these arguments, I contend that Chesnutt's themes in *The Marrow of Tradition* are a clear product of their historical context, but to say that Chesnutt simply reproduces common themes of the intellectual discourse of black political thinkers during the period would be a severe understatement. Rather, Chesnutt blends these themes, crafting a novel that functions to transcend barriers within the black community of the period, to comment on both lynching and African American advancement in general, and to present an accurate depiction of postbellum Southern life that demands sweeping political and societal change.

In the novel, Chesnutt provides two characters that each embody one side of the political debate that would continue to divide the African American community for decades in the early twentieth century. On one side, Dr. William Miller represents W.E.B. Du Bois's "Talented Tenth" while Josh Green and a slew of other characters more clearly represent the views of Booker T. Washington. While W.E.B. Du Bois had not yet articulated his idea as the promotion of "The Talented Tenth" (the ten percent of the African American population whose talent and intelligence would provide them the success necessary to pull up the rest of the African American community from inequality and poverty with them), his ideas were already de-

veloping in his writings in *The Atlantic Monthly*, as were Booker T. Washington's ideas already established in the Atlanta Compromise in 1895.

Du Bois recounts in his "A Negro Schoolmaster in the New South" that one of his students "with a cultured parentage and a social caste to uphold him, he might have made a venturesome merchant or a west point cadet." Booker T. Washington would have already opposed the value that Du Bois placed in this student's potential. In his 1896 essay "The Awakening of the Negro," Washington responds to claims that the African American community should nurture this Talented Tenth, writing that "Some one may be tempted to ask, Has not the negro boy or girl as good a right to study a French grammar and instrumental music as the white youth? I answer, Yes, but in the present condition of the negro race in this country there is need of something more." Instead, Washington argues for "industrial education," that would provide for the most basic needs of living and teach "how to bring [one's] knowledge of mathematics and the sciences into farming, carpentry, forging, foundry work; how to dispense with the old form of ante-bellum labor" Washington echoes this sentiment in "The Case of the Negro," writing:

> But I may be asked, would you confine the Negro to agriculture, mechanics, the domestic arts, etc.? Not at all; but just now and for a number of years the stress should be laid along the lines I have mentioned. We shall need and must have many teachers and ministers, some doctors and lawyers and statesman, but these professional men will have a constituency or a foundation from which to draw support just in proportion as the race prospers along the economic lines I have pointed out.

Put another way, Washington sought to cultivate a "spirit of independence" within the black community by having African Americans successfully advance in labor-intensive positions, following the tradition of the basic education promised to African Americans in the Atlanta Compromise.

It is from this political background that Chesnutt drew his complex characters. On the surface, they seem to represent the binary embodied in the Washington-Du Bois debate. As Josh Green says to Dr. Miller, "I don' wan' nothin' but w'at I wo'k fer, but I wants all er dat,"[1] summarizing the simple desires of political protection and a good job that Washington articulated. Conversely, scholar Richard Yarborough summarizes Chesnutt's characterization of Dr. Miller, describing

[1] Charles W. Chesnutt. *The Marrow of Tradition* Norton Critical Edition Series (New York: Norton, 2012), 71.

him as an "educated, handsome light-skinned black protagonist" who "is a skilled, impeccably trained physician."[2] Thus, it seems apparent that Miller fits the mold of Du Bois's "Talented Tenth" and Josh Green more readily fits Washington's vision of the black laborer, although Green's aggressive behavior complicates this description.

However, interpreting these characters in such a simple way misses a large portion of the moral and political complexity the novel provides them. These characters are more complicated than this binary, as if Chesnutt wants to communicate that the situation is more complicated than Washington and Du Bois suggest. As Yarborough writes, "Chesnutt's black characters embody all of the major contending forces in African American society at the turn of the century."[3] thus they are not simply products of Du Bois and Washington, but rather of larger debates and movements within the black community. Miller defies Du Bois in that he is intensely apolitical and seemingly uninterested in leading his local black community. This fact is exemplified by the confrontation at the riot's outset, when Josh Green asks Dr. Miller to lead the black mob, saying "We'll git de arms, an' we'll git de courage, ef you'll come an' lead us."[4] Miller declines this leadership role, saying "My advice is not heroic, but I think it is wise..... Our time will come." In this quotation, it seems that Miller even channels some aspects of Washington's call for patience—the African American community will rise in time. It is further exemplified by the description of Dr. Miller as "a very good sort of negro, [who] doesn't meddle with politics, nor tread on any one else's toes." Green's characterization is complicated by Chesnutt's description of him as a "spokesman" "a general" and a "commander."[5]

Green's family has been the victim of race violence, which transforms Josh into an aggressive leader of black laborers, making him an individual who greatly differs from the more submissive or deliberate man Washington would prefer him to be. Thus in the face of racial violence, these characters act completely differently and also defy a simple economic understanding, suggesting a greater complexity exists in Chesnutt's depiction of the South. In a way, Chesnutt's characters are a hybrid of the two views. Dr. Miller is a member of Du Bois's "Talented Tenth," but has the submissiveness of the African American community Washington sought.

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[2] Richard, Yarborough. "Violence, Manhood, and Black Heroism: The Wilmington Riot in Two Turn-of the-Century African American Novels," *The Marrow of Tradition*, ed. Werner Sollors (New York: Norton, 2012), 320.

[3] Ibid.

[4] Chesnutt. *The Marrow of Tradition,* 168.

[5] Ibid., 151, 169, 179.

Discussing Racial Violence

This hybridization further complicates the commentary on racial violence that Chesnutt's novel offers. As scholar John Cyril Barton argues, "Chesnutt does more than expose the lynching plot as a contrived story and political conspiracy" in *The Marrow of Tradition*, "he uses it to organize the work as a whole. Indeed, one could say that the lynching plot is central to the novel. It unfolds at the structural center of the work, thus bringing to a climax a series of comparatively minor racial conflicts."[6] In this focus on racial violence, Chesnutt leaves the realm of Booker T. Washington and W.E.B. Du Bois and enters a conversation with activists such as Ida Wells, Frederick Douglas, and T. Thomas Fortune. A reading of Du Bois and Washington's publications in *The Atlantic Monthly* reveals a pair of thinkers only somewhat concerned with race violence, with passing mentions of "southern outrages" and "the terrors of the Ku Klux Klan" Du Bois mentions racial violence in his essay "The Freedman's Bureau" only to understand the delicate political situation of the South. These men speak of racial violence and lynching as a condition of the South, not as one of the primary obstacles for black advancement, as Chesnutt understood it.

Chesnutt's concern with racial violence, mob violence, and lynching would certainly have had its source in more than just his knowledge of the Wilmington Race Riot of 1898, around which his historical novel is based. The noted and well-traveled Ida B. Wells was outspoken on these issues of racial violence and lynching for nearly a decade before *The Marrow of Tradition*'s publication. Like Wells, Chesnutt understood lynching as a central obstacle to African American advancement in the South. While Chesnutt may not have been directly influenced by Wells, scholar John Cyril Barton considers how fully they shared the same understanding of lynching. Both Wells and Chesnutt's interest in lynching may have started with more personal experiences or local examples (Wells's on the outskirts of Memphis and Chesnutt's in his understanding of the Wilmington Insurrection); they understood these events as part of larger regional or national issues. As Barton describes:

> Anti-lynching legislation draws attention to how Chesnutt's novel, traditionally read as an indictment of Southern racism, is national in scope. Much of the historical criticism on *The Marrow of Tradition* has, for obvious reasons, focused on the book in relation to the 1898 Wilmington race riot, the novel's ostensible historical

[6] John Cyril Barton."'The Necessity of an Example': Chesnutt's *The Marrow Of Tradition* & The Ohio Anti-Lynching Campaign." *Arizona Quarterly: A Journal Of American Literature, Culture, And Theory* 67, no. 4 (Winter 2011): 30. MLA International Bibliography. Web.

> referent. While this scholarship is crucial for understanding the work's moment of representation, it neglects the fact that Chesnutt wrote the novel while living in Ohio, where from 1892–1900 the most significant state movement for anti-lynching legislation took place.

Barton identifies rhetorical similarities between Wells and Chesnutt, pointing out their use of irony as the primary overlap between their strategies. Barton describes Chesnutt's "pervasive sarcasm and use of satiric irony, strategies clearly influenced by Ida B. Wells' ironic critique of lynch logic, which had reached a national audience by the time Chesnutt began writing his novel.[7] The title of *Marrow*'s twenty-second chapter, "How Not to Prevent a Lynching," mirrors Wells' use of irony in her pamphlet and speeches titled *Southern Horrors: Lynch Law in All its Phases*. This famous example of Wells' attack on the "logic" of the Southern lynch mob illustrates the biting tongue with which Wells spoke:

> The miscegenation laws of the South only operate against the legitimate union of the races; they leave the white man free to seduce all the colored girls he can, but it is death to the colored man who yields to the force and advances of a similar attraction in white women. White men lynch the offending Afro-American, not because he is a despoiler of virtue, but because he succumbs to the smiles of white women.

The centrality of lynching in Chesnutt's work alongside and above the displays of other issues of racial significance suggests Chesnutt held this issue much more importantly than the mainstream black activists of the period.

Perhaps nothing exemplifies this division between Wells and other more historically famous activists than one of the first conferences of the National Association for the Advancement of Colored People (NAACP) in 1909. Although this event was nearly eight years after the publication of *The Marrow of Tradition*, the fact that Du Bois "spoke about the relationship of black disenfranchisement to cheap surplus labor in the South" and Wells-Barnett "began her talk by enumerating the 3,284 men, women, and children who had been lynched since Reconstruction" illustrates the divide in the black community that traces back to the period before the novel's release.[8] In a way, Chesnutt anticipates this divide in the black community, as the NAACP's original focus on fighting lynching quickly tailed off.[9] The inability of the NAACP to focus on lynching was perhaps foretold in the inabil-

[7] Barton."The Necessity of an Example," 29.

[8] Paula J. Giddings, *Ida: A Sword Among Lions: Ida B. Wells and the Campaign Against Lynching* (New York: HarperCollins, 2008), 474.

[9] Ibid., 500-501.

ity of mainstream activists to consider lynching as a primary part of their political agenda.

I have illustrated a divide between the anti-lynching crusaders and more mainstream African American activists of this period immediately before the turn of the twentieth century. These arguments have shown that Chesnutt's *The Marrow of Tradition* transcends this divide and comments on both arguments to communicate the complexity of the South at the time of the Wilmington race riot. Many questions remain unanswered, however. I will investigate how Chesnutt accomplished this task of commenting on both anti-lynching and broader issues of African American equality. Further, I will consider how accurate his portrait of Southern life was vis-á-vis other popular portraits at the time. Finally, I will explore where *The Marrow of Tradition* fits within the themes of Chesnutt's other works.

A Broader Political Agenda

Chesnutt accomplishes this difficult connection between the anti-lynching campaign and a broader African American political agenda in two ways. First, reviewing the arguments of Bryan Wagner, I will suggest that Chesnutt presents the riot as a response to a growing black middle class. However, deviating from Wagner's thesis, I argue that Chesnutt does this not to present an accurate depiction of the entire South of the period, but because it served what Richard Yarborough called Chesnutt's "extraliterary agenda," that is, the desire to connect these two separate political movements.[10] Another way that Chesnutt connects these movements is through his ambivalence to endorse a certain answer or policy to the moral and political questions his novel raises. In the dilemma of Dr. Miller and Josh Green, neither character's outcome is particularly positive. Literary critic Jae H. Roe most aptly describes Chesnutt's mindful avoidance of an endorsement as a "tightrope act throughout the novel, trying at the same time to appease and to challenge."[11] On the topic of racial violence, he does not espouse a particular policy solution. Instead he ironically shows what not to do in his chapter "How Not to Prevent Lynching." Through this ambivalence and the depiction of a black middle class, Chesnutt unites these two previously separate agendas.

In his article, Wagner contends that Chesnutt "presents the Wilmington riot as a response to the rising African American middle class, which had re-configured the visual field of Wilmington by initiating changes in local architecture, neighbor-

[10] Yarborough, "Violence, Manhood," 319.

[11] Roe, Jae H., "Keeping an 'Old Wound' Alive: *The Marrow of Tradition* and the Legacy of Wilmington," *African American Review* 33, no. 2 (1999): 240.

hood demographics, and sidewalk etiquette." The secondary and primary sources that Wagner cites in his article suggest that this growing black middle class is historically accurate to Wilmington when it was on the brink of insurrection. Wagner suggests that this "Negro Domination," as it is called by the white characters in *The Marrow of Tradition*, provokes an epistemological crisis that is simultaneously a crisis of white identity and "that racial violence in the South can be understood as an attempt to repair the damaged epistemology of white supremacy" While this may be an accurate assessment of the causes of the Wilmington Riot, the rise of a black middle class was not apparently a problem on the minds of the South at the time of the riot.

In two essays published in *The Atlantic Monthly* in 1897, W.P. Trent discussed the "Dominant Forces in Southern Life" and "Tendencies of Higher Life in the South," with the goal of providing an accurate picture of life in the South at the time. Trent understands the black population in the South as a force, not as a group of individuals. He also identifies lower class blacks as the primary source of conflict in the South, describing that "Slavery no longer exists, and labor is no longer considered disgraceful; but the negro, though politically free, is still socially and economically servile, and still affects his white employer disastrously in many ways" He confirms other aspects of Chesnutt's description, such as when he references a white middle class developing in the increasingly populated urban centers of the post-Reconstruction South that is displacing the traditional aristocrats from their positions of unquestioned wealth and power. Still, Trent's portrait of the South at the time of the Wilmington Race Riot does not illustrate the widespread development of a black middle class that would justify Chesnutt's portrayal in the novel. As Barton describes in his article, Chesnutt's purpose in the novel was more broad than simply analyzing the causes of the Wilmington Riot. Instead, he was writing for a much more national audience about issues that affected the South and the nation as a whole. Thus, it seems inconsistent for him to use a middle class that affected only small localities in the South and was not characteristic of the entire South.

Instead, it may be suggested that Chesnutt used this middle class as a vehicle to talk about a larger variety of issues; not only the causes of a single but significant case of race violence. Another set of issues that this middle class vehicle enabled were the various moral responses to violence available to both Chesnutt's characters and to actual African Americans in the South at the time. Despite previous writings where Chesnutt had endorsed a particular response to violence, usually more in line with that taken by Dr. Miller in *The Marrow of Tradition*, Chesnutt endorses neither Dr. Miller or Josh Green's position as any more admirable or desirable in the novel. Remnants of Chesnutt's previous endorsement of the Dr. Miller thread of nonviolence can be seen in his earlier fiction. Chesnutt's initial characterization of

Josh Green—"down by the trough, drank long and deep, and lunging his head into the water, shook himself like a wet dog"— also suggests the animalistic basis for Green's aggressive behavior may be a remnant of Chesnutt's previous stance on the issue of race violence in the South.[12]

As P. Jay Delmar argues in "The Moral Dilemma in Charles W. Chesnutt's *The Marrow of Tradition*," "Chesnutt presents a tale of racial enmity and its bloody consequences, but he cannot decide what an appropriate response to racial enmity might be. Is violence the answer? Is calm, patient forbearance the answer? Is any answer possible?"[13] Dr. Miller's child is killed as a result of mob violence, suggesting that any person, no matter how purposely uninvolved in issues of race violence, is a potential victim of it. Josh Green's death is depicted as heroic and courageous, but it achieves little in the grand scheme of fighting race violence. Thus, neither Miller or Green's position is particularly favored and Chesnutt leaves his reader to debate the morality of the two options.

Unlike Delmar, however, I would suggest that Chesnutt's lack of a definitive answer is not an effect of "the limitations of his vision, and more significantly the limitations of culture in which he functioned," but rather functions to allow Chesnutt to present a more accurate image of the South, where there is no clear answer to the slew of dilemmas facing black society.[14] Similarly, I would disagree with Barton's view that "Chesnutt's penchant for resisting closure" functions "as a way to burden the reader with the problem of the color-line."[15] Rather, this resistance is an example of Chesnutt's desire to comment on the seemingly unconquerable realities of life in the South for African Americans.

Chesnutt's Other Stories

During the period from July 1898 to November 1899, Chesnutt had three short stories published in *The Atlantic Monthly*. All three stories are set in the postbellum South, but not all of them are as explicitly about the themes that Chesnutt touches on in *The Marrow of Tradition*. Among the themes that clearly remained present from his previous writings into the novel were the ideas of the courage or loyalty of members of the black community and the problems encountered by "old money" families of the antebellum South. For example, a theme of *The Wife of His*

[12] Chesnutt. *The Marrow of Tradition,* 39.

[13] Delmar, P. Jay P Delmar, "The Moral Dilemma in Charles W. Chesnutt's *The Marrow of Tradition*," *American Literary Realism, 1870-1910* 14, no. 2 (1981): 269.

[14] Ibid., 272.

[15] Barton."The Necessity of an Example," 42.

Youth is a loyalty to old relationships or a commitment to other people of color. It shows a concern towards biracialism that persisted into the novel as well. *Hot-Foot Hannibal* continues the themes regarding race and relationships that Chesnutt began in *The Wife of His Youth*, showing how post-Civil War relationships in the black community seem set up to fail, while white relationships persist. *The Bouquet* endorses the courage of the character Sophy and depicts the new position of the former Southern aristocracy in the post Reconstruction South. Josh Green's courage and loyalty, then, appear to be remnants of the themes of Chesnutt's previous works.

The best illustration of the largest inconsistency in tone and theme in moving from Chesnutt's collections of short stories (*The Conjure Woman, and Other Conjure Tales* and *The Wife of His Youth and Other Stories of the Color-Line*, both published in 1899) is the reaction of famed writer and editor William Dean Howells, seen in the change in Howells's response to Chesnutt's writing over time. Howells published in May of 1900 an incredibly positive review of these recently published collections of Chesnutt's work Howells lauded Chesnutt for his seeing people of color "very clearly, very justly, and he shows them as he sees them, leaving the reader to divine the depth of his feeling for them. He touches all the stops, and with equal delicacy in stories of real tragedy and comedy and pathos."[16]

As scholar, Joseph McElrath Jr. discusses in his essay "W.D. Howells and Race: Charles W. Chesnutt's Disappointment of the Dean," this delicacy would not last.[17] Howells had commended Chesnutt for his charm and quaintness in depicting black characters, but "Howells appears to have been caught by surprise, even startled, by Chesnutt, whom he had not previously thought of as a man with a chip on his shoulder."[18] McElrath writes that upon reading Chesnutt's novel "Howells discovered in it something worse than a rendering of the 'ludicrous side' and 'absurdities' of whites."[19] Howells was an advocate of Chesnutt's previous works, shown through his publication of them in *The Atlantic* and his promotion of Chesnutt's short stories in his own editorials. However, he found that *The Marrow of Tradition* struck an entirely different tone. Thus while some remnants of Chesnutt's previous themes can be seen in his 1901 novel, the work broke away from his previous, more understated writings on the topic of race violence in the South.

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[16] W.D. Howells,"Mr. Charles Chesnutt's Stories," *The Atlantic Monthly* 0085, no. 511 (May 1900): 700, Cornell University Library. Web.

[17] McElrath, Joseph R. Jr., "W.D. Howells and Race: Charles W. Chesnutt's Disappointment of the Dean," *Nineteenth-Century Literature* 51 no. 4 (1997): 474-499.

[18] Ibid., 484.

[19] Ibid., 496.

Historical Novel Tradition

Chesnutt's novel was also part of a historical novel tradition within American literature that was a topic of discussion during the period, exemplified by Paul Leicester Ford's "The American Historical Novel," an essay that appeared in *The Atlantic* in December 1897. As a historical novel, it may not be surprising that *The Marrow of Tradition* shares so many themes with histories written around the time of its publication. William Garrott Brown's May 1901 article on "The Ku Klux Movement" perhaps most strongly paints the same picture of the complexities of Southern life as does Chesnutt.[20] Brown understood the Klan, lynching, and racial violence generally as an "historical development," with origins in both postbellum politics and economics.[21] Another similarity between the writer of the historical novel and the historian of the period, Brown and Chesnutt avoid offering solutions to the problems that they identify.

Chesnutt's *The Marrow of Tradition* has the task of a historical novel, which according to Ford is:

> That it must reflect a point of view either of a contemporary party, or else of a succeeding generation, upon some subject which has at one time been a matter of controversy, if not conflict. Second, that some one or more characters in the novel must be true expressions of the period with which the book deals, or must approximate to the contemporary belief of what the people of that period were like.

In many ways, my arguments have shown that Chesnutt's novel fits these requirements. As a historical novel, Chesnutt's work can certainly be described as a type of exposé, but because it is a fictionalized account of a real event, it can explore larger issues with greater ease, allowing the novelist to explore a broad range of topics. Even further, Chesnutt's novel is one of political history in that it synthesized, critiqued, and was intended to enter the debate regarding a variety of issues affecting African Americans at the time of its publication. Chesnutt, too, seemed aware of the broad commentary that his book produced, with its view on African American advancement and the anti-lynching movement through the vehicle of the black middle class and his complex characterizations of Dr. Miller and Josh Green. Upon its publication, he sent a letter to Booker T. Washington explaining his

[20] Brown, William Garrott, "The Ku Klux Movement," *The Atlantic Monthly* 0087, no. 523 (May 1901): 634-645, Cornell University Library. Web.

[21] Ibid. 635.

intent in writing the work.[22] In addition, he sent a copy of the text to Ida B. Wells, symbolizing the political arguments that his work was navigating and demonstrating his demand for broad-sweeping reform in the South. Thus, through *The Marrow of Tradition*, Chesnutt attempts the unprecedented step of synthesizing these separate, even antagonistic, sects of African American politics at the beginning of the twentieth century. He comments not only on the debates between Du Bois and Washington regarding achieving economic prosperity for African Americans, but also the often overlooked debate regarding racial violence that continued to afflict African Americans nationwide during the early twentieth century.

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[22] Yarborough, "Violence, Manhood," 336.

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From River Town to Queen City:
Frances Trollope and Cincinnati's Urban Transformation

Joshua Sabo

Introduction and Methods

During the early nineteenth century, several European travelers visited the United States. Historians have used the journals, diaries, and narratives these travelers left behind as primary sources that illuminate early American cities and the development of a uniquely American character, famously discussed by Alexis de Tocqueville. While these primary works are often referenced in historical scholarship, the impact of these works themselves on American cities has rarely been explored. The case of upperclass Englishwoman Frances Trollope, who came to America in search of economic opportunity, and her time in Cincinnati presents an interesting example of how these European travelers' writings had strong influence on the development of American cities.

This paper will explore the way European travelers wrote about Cincinnati in the early nineteenth century, particularly Frances Trollope's *Domestic Manners of the Americans*. The similarity between this work and those of other European

travelers' commentaries illustrates the validity of Trollope's observations. Interestingly, sometime around 1841, these Europeans' observations changed dramatically. Around the time of Trollope's visit, European observers identified Cincinnati as similar to its downriver analogues, mainly New Orleans. However, Charles Dickens' 1841 visit, recorded in his *American Notes*, describes a Cincinnati much changed since Trollope's time in the city (1828-1830). This dramatic shift raises the question of how perceptions may have changed regarding Cincinnati. Or, more simply, what caused Cincinnati to change? To answer this question, one must consider the variety of factors that influenced Cincinnati's cultural transformation and institutional growth in the period following Trollope's brief residence in Cincinnati. Exploring these factors, which include Cincinnati's unique cultural geography and the development of infrastructure that connected Cincinnati more readily eastward, reveals that a combination of these factors allowed Frances Trollope's work to influence Cincinnati's development in the early-to-mid nineteenth century. This influence played a role in transforming Cincinnati from a frontier, river town to the place known as the Queen City of the West.

While numerous European travelers identified Cincinnati with New Orleans and other frontier American cities, Cincinnatians viewed themselves more in line with eastern and northern American cities. Not only was Cincinnati geographically closer to eastern American cities, but these cities also inspired Cincinnati's design. Urban planner and surveyor Israel Ludlow patterned Cincinnati's street layout after that of Philadelphia. Cincinnati's legal code was also derived from that of eastern cities. When asked during an interview with Alexis de Tocqueville, a Mr. Walker, a lawyer and resident of Cincinnati, believed that the "local government system of Pennsylvania" offered the best comparison for Cincinnati's laws.[1] Even further, future Supreme Court Chief Justice Salmon P. Chase, when asked the same question, agreed that Cincinnati's "system is more like that of Pennsylvania."[2] However, while Cincinnati took its legal and civil cues from the east, it took its cultural ones from the south. Popular history would seemingly suggest that Cincinnati and New Orleans were very different in their developments. While Cincinnati was home to a growing population of free blacks during the early nineteenth century, New Orleans' economy was intensely reliant on slave labor. It seems unlikely that the increasingly industrial "Porkopolis" could share many similarities with the relative void of industry that was nineteenth century New Orleans.

[1] Alexis de Tocqueville, *Journey to America* (London, 1831-1831), 84.

[2] Ibid., 84.

But travel journals of this period tell a different story. The writings of Alexis de Tocqueville, Frances Trollope, and Harriet Martineau, an English sociologist who also commented on American manners, suggest that Cincinnati and New Orleans were incredibly similar, at least in the eyes of these European travelers. With all three of these observers visiting both cities during the 1820s and 1830s, their writings illuminate the nineteenth century connection of Cincinnati and New Orleans. Even further, Cincinnatian Daniel Drake, who was interviewed by Harriet Martineau during the early 1830s, appeared aware of this downiver connection, speaking of a "perpetual union between West and South" that was "connected by nature in the great valley" of the Mississippi and Ohio Rivers.[3] Further, Drake believed that the "relations between the upper and lower Mississippi States, established by the collective waters of the whole valley, must forever continue unchanged."[4] Drake's remarkable cognizance of this connection suggets that travelers who visited frontier America during the early nineteenth century may also have recognized this connection, though they may not have explicitly identified it.

These travelers' characterizations suggest and often presuppose Cincinnati and New Orleans' similarity during the early nineteenth century. Even further, they suggest these cities' uniqueness compared with other American cities during this brief period of frontier history. While some aspects of these travelers' observations are contradictory, a few central themes become apparent with diligent study. These observations, while often resulting from relatively brief visits, reveal important perceptions European travelers had of both Cincinnati and New Orleans during this period. A study of relevant travel journals reveals that travelers believed that New Orleans and Cincinnati shared similar racial compositions, similar structural appearance, and fascinating identities as frontier commercial centers. These perceptions may explain why European travelers viewed Cincinnati as a frontier, river town similar to New Orleans. Further, a scholarly exploration of these perceptions reveals their underlying source in the cultural history of these frontier towns.

Frances Trollope in Cincinnati: Her Observations and Critique

For travelers like Frances Trollope, the western America they observed was quite startling. Unlike other travelers, Trollope's visit to America began in

[3] Harriet Martineau, *Retrospect of Western Travel* (New York, 1838), 81-83.

[4] Ibid., 226.

New Orleans before proceeding up the Mississippi and Ohio Rivers to Cincinnati and heading east to cities like Philadelphia and Washington D.C. Thus, Trollope did not have the opportunity to grow accustomed to the fledgling American nation and its developing infrastructure. Most European visitors to America followed the route set out by Alexis de Tocqueville, landing in New York and then proceeding west to tour America's major cities. This route allowed them to slowly adjust to the developing American nation and its increasingly pastoral setting as a traveler moved west. Conversely, Trollope's unique route immersed her immediately in western America, providing her with a different perspective on the state of Cincinnati in the early nineteenth century.

Trollope's descriptions of Cincinnati and New Orleans, perhaps a result of this unique route in touring America, align remarkably well. In one of Frances Trollope's first observations of America, she compares New Orleans to a French *ville de province*, a French idiomatic term roughly equivalent to "country town."[5] This term is usually used pejoratively, to describe both a location and a people as technologically, socially, and culturally backwards. While Trollope's brief stay in New Orleans did not provide her the opportunity to expand on this analysis, her use of this pejorative term suggests a great deal about her experience in and opinion of the city.

Trollope's writings about her time in Cincinnati support the idea that she viewed Cincinnati as a ville de province, in line with New Orleans. She writes that "we speedily found that [Cincinnati] was devoid of nearly all the accommodation that Europeans conceive necessary to decency and comfort."[6] Trollope adds that in Cincinnati she "was in no degree aware of the many pleasurable sensations derived from the little elegancies and refinements enjoyed by the middle classes in Europe."[7] Trollope identified numerous European amenities as missing in Cincinnati, incluidng: "No pump, no cistern, no drain of any kind, no dustman's cart, or any other visible means of getting rid of the rubbish."[8] As a result of this lack of public sanitation, in Trollope's view, "we heard of much sickness around us" and she describes Cincinnati as "far from healthy."[9] Harriet Martineau, in addition, discusses her shock at the rampant disease that characterized Cincinnati and west-

[5] Frances Trollope, *Domestic Manners of the Americans* (Gutenberg Project, 1838), 4.

[6] Ibid., 17.

[7] Ibid., 20.

[8] Ibid., 17.

[9] Ibid.

ern America at this time.[10] This description of the public health situation in Cincinnati represents only the surface of Trollope's observations comparing Cincinnati to a *ville de province*.

In Trollope's most immediate comments about Cincinnati, she describes the city as "fresh risen from the bosom of the wilderness."[11] Similarly, Trollope comments on her experience walking in New Orleans in "the eternal forests of the western world."[12] Thus, it may have surprised Trollope to encounter such bustling economic activity. In one of her earliest observations of Cincinnati, Trollope writes, "I have seen fifteen steam-boats lying [at Cincinnati's docks] at once, and still half the wharf was unoccupied."[13] It seems almost paradoxical that these important centers of commerce were so isolated on the frontier, but this uncommon combination may explain why Cincinnati and New Orleans were viewed as similar by Frances Trollope.

In addition, Trollope describes the lack of institutions she encounters in Cincinnati. In a chapter subtitled "absence of public and private amusements," Trollope writes that she "never saw any people who appeared to live so much without amusement as the Cincinnatians."[14] While Trollope observes surprisingly strong and influential religious institutions, cultural and social institutions remained absent in Cincinnati. Trollope elaborates that,

> Billiards are forbidden by law, so are cards. To sell a pack of cards in Ohio subjects the seller to a penalty of fifty dollars. They have no public balls, excepting, I think, six, during the Christmas holidays. They have no concerts. They have no dinner parties. They have a theatre, which is, in fact, the only public amusement of this triste little town; but they seem to care little about it, and either from economy or distaste, it is very poorly attended.[15]

Historian Louis Leonard Tucker summarizes Trollope's sentiment, writing that "by [Trollope's] standards, the cultural and intellectual tone of the city was depressingly dull."[16] De Tocqueville, too, comments, although not explicitly, on the lack of leisure institutions in Cincinnati: "In Ohio everyone has come to make money. No

[10] Martineau, *Retrospect of Western Travel*, 217-218.

[11] Trollope, *Domestic Manners,* 17.

[12] Ibid., 4.

[13] Ibid., 15-16.

[14] Ibid., 30-31.

[15] Ibid.

[16] Louis Leonard Tucker. "Cincinnati: Athens of the West, 1830-1861" *Ohio History* 75, no. 1 (1977): 12.

one has been born there; no one wants to stay there; there is not a single, absolutely not a single man of leisure, not a single speculative mind. Even rules of behavior still seem uncertain there; no one has had the time to gain a position, a political or social standing there; the people escape from all influences."[17] In this way, de Tocqueville and Trollope's description of Cincinnati matches what one would expect a *ville de province*, a term Trollope readily applies to New Orleans, to entail its lack of sanitation, good health, substantial and energetic institutions, and the amenities of civil society they would have been experienced in Europe.

Another aspect of this comparison is Trollope's description of Cincinnati and New Orleans' physical structures. Trollope describes Cincinnati as an "uninteresting mass of buildings", a city "without even an attempt at beauty in any of its edifices."[18] Trollope writes that Cincinnati "is by no means a city of striking appearance; it wants domes, towers, and steeples."[19] Similarly, de Tocqueville describes Cincinnati as characterized by "large buildings, huts, streets blocked by rubble, houses under construction; no names to the streets, no numbers on the houses, no external luxury."[20] He also describes New Orleans in this *ville de province* motif, writing in his journal, "Huts. Muddy, unpaved streets. Spanish architecture: flat roofs; English; bricks, little doors; French: massive carriage entrance."[21] Even historian Lenora Hobbs admits,"Yes, there were substantial homes in [Cincinnati], but the place had no interesting architecture at all, even though fourteen hundred houses had been built the year before [Trollope] arrived."[22] Thus, the basic idea that travelers thought of Cincinnati and New Orleans together because they looked similar structurally seems plausible, if not likely, based on descriptions from both primary sources and those provided by modern historical scholarship.

While most travelers did not have the luxury of living in Cincinnati like Frances Trollope, they still spent sufficient time in Cincinnati and New Orleans to provide accurate insights. To a traveler, the most apparent similarity between early nineteenth century New Orleans and Cincinnati may have been their racial make-up. To Alexis de Tocqueville, the unusual racial composition of New Orleans was quite clear, as he records in his *Democracy in America*: "Ball of the quadroons. Strange sight: all the men white, all the women colored or at least with African

[17] de Tocqueville, *Democracy in America*, 285.

[18] Trollope, *Domestic Manners*, 17.

[19] Ibid., 15.

[20] de Tocqueville, *Democracy in America*, 180.

[21] Ibid., 185.

[22] Lenora Hobbs, "Sizing up the Queen City; Frances Trollope and Harriet Martineau." *Timeline* 21, no. 3 (2004): 18.

blood."[23] Further, he adds "Language French, English, Spanish, Creole. General French. Population just as mixed. Faces with every shade of color."[24] Harriet Martineau comments that in New Orleans' churches, "kneeling on the pavement may be seen a multitude, of every shade of complexion, from the fair Scothwoman or German to the jet-black pure African."[25] In addition, historian Nathalie Dessens confirms that New Orleans "possessed a very unusual group of free people of color of uncommon dynamism."[26] Travelers to Cincinnati and New Orleans would certainly have recognized the similarities between the racial make-ups of these two cities, as "What is most striking about Cincinnati... in the nineteenth century is the number of foreigners who settled there."[27] Exemplifying this idea, Harriet Martineau discusses the "Welsh, Irish, English, German, and Yankee patients" that her friend Dr. Drake treats in his Cincinnati practice.[28] Although Trollope does not explicitly discuss the racial composition of Cincinnati, it is noteworthy that her abolitionist view is most pronounced in her *Domestic Manners of the Americans*, written during her time in Cincinnati, suggesting that Trollope's abolitionist beliefs were irritated in Cincinnati, where the contrast between black slaves and freed blacks would have been readily apparent. The racial compositions of New Orleans and Cincinnati, characterized by considerable black populations, including quadroons, mulattos, and high numbers of foreign immigrants, make these cities incredibly rare in early nineteenth century America. This uniqueness may have warranted the view that New Orleans and Cincinnati were similar.

Another shared observation of these travelers was their being consistently struck by the zeal with which American people went about their business. Trollope, referring to Cincinnati and its workers, commented that "every bee in the hive is actively employed in search of that honey of Hybla."[29] De Tocqueville wrote that "Cincinnati presents an odd spectacle. A town which seems to want to get built too quickly to have things done in order, but a picture of industry and work that strikes

[23] de Tocqueville, *Democracy in America*, 165.

[24] Ibid., 165.

[25] Martineau, *Retrospect of Western Travel*, 159.

[26] Nathalie Dessens, "Louis Charles Roudanez, a Creole of Color of Saint-Domingue Descent: Atlantic Reinterpretations of Nineteenth-Century New Orleans" *South Atlantic Review* 73, no. 2 (2008): 27.

[27] Nikki Taylor, *Frontiers of Freedom: Cincinnati's Black Community* 1802-1868 (Athens: Ohio University Press, 2005), 21.

[28] Martineau, *Retrospect of Western Travel*, 224.

[29] Trollope, *Domestic Manners of the Americans*, 19.

one at every step."[30] Of New Orleans, similarly, Alexis de Tocqueville writes, "we felt we were in France; noisy, blustering, bustling, gossiping, and a thousand leagues from the United States."[31] This description takes de Tocqueville's view of Cincinnati and New Orleans in an entirely new direction. De Tocqueville suggests that these western cities seemed remarkably unlike their eastern counterparts or even other parts of the world entirely. He writes that Cincinnati is a "social state, so different than our own."[32] This sentiment is apparent in numerous other travel journals as well. For example, Harriet Martineau writes in her Retrospect of Western Travel that frontier America "was very new, very foreign in its aspect."[33] Similarly, Trollope writes,"everything in Cincinnati had this newness" about it.[34] These travelers' perceptions of something new in the development of frontier American cities is another example of their similar commentaries about American frontier cities during the early nineteenth century. In addition, all of these travelers shared a similar surprise at the state of western America during this time, especially when compared to Europe and the east coast of America. Interestingly, Frances Trollope appears particularly stunned by the conditions of the American frontier.

Corroborating Trollope's Claims and Analyzing Their Influence

More importantly, as William Seat argues in "A Rebuttal to Mrs. Trollope: Harriet Martineau in Cincinnati," other travelers' works fail to overturn many of the central observations of Trollope's writing, especially those that do not relate directly to the topic of American manners.[35] However, it appears that Trollope wrote with a sharper tongue and more negative tone, as Lenora Hobbs argues in her "Sizing up the Queen City: Frances Trollope and Harriet Martineau."[36] Perhaps Trollope's negative tone is explainable, however. She visited a country that was approximately fifty years removed from her native England, but found English influence in shockingly scare supply. Obviously, Spanish, French, and Creole influence still played a significant role in New Orleanian culture. Upriver, the former French territory of

[30] de Tocqueville, *Democracy in America*, 280.

[31] Ibid., 165.

[32] Ibid., 280.

[33] Martineau, *Retrospect of Western Travel*, 256.

[34] Trollope, *Domestic Manners*, 21.

[35] William R. Seat, "A Rebuttal to Mrs. Trollope: Harriet Martineau in Cincinnati" *Ohio Historical Quarterly* 68, no. 3 (1959): 276.

[36] Hobbs, "Sizing up the Queen City," 14-27.

Ohio was marked by a similar lack of English influence. While English influence could be found, it certainly was not as apparent as it was in eastern American cities. Other travelers, too, were likely surprised by the lack of English influence in western America, having observed considerable English influence in the large cities on America's east coast. Not only did these cities not look English in their architecture, but their populace did not look English either. While Frances Trollope's writings seem particularly incendiary, her *Domestic Manners of the Americans* mostly communicates common, accurate observations of early nineteenth century Cincinnati, though these observations were probably affected by her personal surprise at the state of western America, as well as a variety of other factors discussed later in this paper. Certainly, Trollope's strange, upriver route must be taken into account when considering her initial comments about the state of Cincinnati.

This New Orleanian period of Cincinnati's history was relatively short lived, however, lasting from approximately 1811, when steamboat use increased considerably, to around 1841, when the completion of the Ohio and Erie Canal and the growth of railroads ended Cincinnati's relative isolation from the eastern United States. David Stradling argues that "by 1840, the city's growth was astonishing, representing the dramatic rise of the West and promising a remaking of the nation as a whole," a nation now more connected to its western frontier.[37] This connection lifted Cincinnati out of its New Orleanian infancy, shifting its development back in line with the giants of the American east coast. During this time, Daniel Aaron points out, "Culture became an exploitable commodity, and Cincinnati's cultural investments soon paid golden dividends. Her numerous private and public libraries and reading rooms, her various literary and scientific institutions" combined to make Cincinnati a cultural giant in its region.[38] While Trollope and de Tocqueville blamed the purely financial motivations of Cincinnatians for the weakness of its institutions, scholars suggest a far different explanation. Nikki Taylor, for example, argues: "Cincinnati's distinct geographical location and sociopolitical and racial-economic conditions created an urban culture that profoundly affected the process of community-building."[39] While Taylor means this statement to specifically refer to the African American community in Cincinnati, it holds true of Cincinnati in its entirety. The racial diversity of Cincinnati presented a considerable obstacle to institution building.

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[37] David Stradling, *Cincinnati: From River City to Highway* (Arcadia Publishing, 2003), 20.

[38] Daniel Aaron, *Cincinnati, Queen City of the West: 1819-1838* (Columbus: Ohio State University Press, 1992), 232.

[39] Taylor, *Frontiers of Freedom*, 5.

However, eastern influence slowly eroded the barriers that impeded Cincinnati's cultural growth, allowing Cincinnati's institutions to flourish. The existence of these new, more powerful institutions and the impact of the stronger connection with eastern American cities can be observed in the primary account of Charles Dickens, who visited Cincinnati in 1842. Dickens writes of Cincinnati's "clean houses of red and white, its well-paved roads, and foot-ways of bright tile," also referring to these homes as "pretty villas."[40] Further, Dickens writes that Cincinnati does not "become less prepossessing on a closer acquaintance. The streets are broad and airy, the shops extremely good, the private residences remarkable for their elegance and neatness. There is something of invention and fancy in the varying styles of these latter erections."[41] Dickens also observes that "the society with which I mingled, was intelligent, courteous, and agreeable. The inhabitants of Cincinnati are proud of their city as one of the most interesting in America: and with good reason: for beautiful and thriving as it is now, and containing, as it does, a population of fifty thousand souls."[42] Dickens describes an intellectual and institutional Cincinnati that seems in stark contrast to the city possessing "not a single speculative mind," that Frances Trollope wrote about just over a decade before.[43] In addition, he describes numerous visually satisfying structures that seemed missing from Trollope's Cincinnati. Thus, around the time of Dickens' visit, this brief period of New Orleanian urbanity in Cincinnati seems to have come to a conclusion, but many questions about this period of Cincinnati's history persist.

While it seems that railroads and canals ended this brief era of Cincinnati-New Orleans exclusivity, this explanation may not tell the entire story. Cincinnati was so strongly identified with New Orleans in these primary sources that it would require more than readily available eastern transportation to weaken the New Orleanian flavor of Cincinnati. Despite its eastern desires, Cincinnati had remained similar to New Orleans for decades in the early nineteenth century. Yet in the period of less than five years between the visits of Harriet Martineau, whose observations are largely comparable to Trollope and de Tocqueville's 1836 analyses and Charles Dickens's in 1841, Cincinnati appears remarkably changed.

Even though a study of travel journals of early nineteenth century visitors reveals that Frances Trollope's analysis was not inaccurate, her work was devastatingly received in Cincinnati. A city that strived to be northern and eastern faced the

[40] Charles Dickens, *American Notes for General Circulation* (London: Chapman & Hall, 1842), 107.

[41] Ibid., 107.

[42] Ibid., 108.

[43] Trollope, *Domestic Manners*, 285.

startling reality that many of its observers identified it as southern and western. Historian Lenora Hobbs explains the impact of Trollope's opinion in her article "Sizing up the Queen City," writing that Trollope's "caustic observations of their customs, habits, language, dress, attitudes, and beliefs dealt Cincinnatians such a blow that their anger simmered for decades. Writing in 1950, Alvin Fay Harlow maintained in *The Serene Cincinnatians* that it burned to that day."[44] Even more descriptive of Cincinnati's fallout, Louis Leonard Tucker writes:

> Domestic Manners fell upon the world of letters with the impact of an H-bomb. It not only obliterated the modest reputation Cincinnati was developing in the early 1830s as a cultural and intellectual center of the West, but it also laid a cloud of radioactive fallout over the city in the form of the "Porkopolis" projection. For the next sixty years, those few researchers who were engaged in an examination of American cultural and intellectual history studiously avoided the southwest Ohio city.[45]

This quotation illustrates just how calamitous Trollope's writing appeared to be for nineteenth century Cincinnatians.

Many Cincinnatians viewed Trollope as unnecessarily critical, and perhaps rightfully so, as some argue "Mrs. Trollope's picture of Cincinnati was overdrawn to the point of caricature."[46] In addition, Trollope's "comparison of Cincinnati, a community thirty years out of its pioneer frontier days, to her centuries-old England with long-established customs" is certainly unfair.[47] Even further, Trollope fails to explicitly mention the "fact that Cincinnati was too close to its primitive origins" to possess many of the amenities she demanded.[48] Thus it seems as no surprise that in the wake of her work and the negative publicity it brought to Cincinnati, the people of Cincinnati vilified "Fanny" Trollope. As a result, however, the influence of her *Domestic Manners of the Americans* on Cincinnati's development appears to be quite substantial. Cincinnati resident and writer Charles Cist argues that these travel journals were "written by strangers, whose limited time, and still more limited op-

[44] Hobbs, "Sizing up the Queen City," 15.

[45] Tucker. "Cincinnati: Athens," 13.

[46] Ibid., 11.

[47] Roger J. Newstedt, "Mrs. Frances Trollope in Cincinnati: The Infernal Regions' and the Bizarre Bazaar, 1828-1830." *Queen City Heritage* 57, no. 4 (1999): 37-45.

[48] Linda Deatrick, "Cincinnati in the Time of Mrs. Trollope's Bazaar" *Nineteenth Century* 5, no. 1 (1979): 60.

portunities, precluded them from seeing any thing but what lay on the surface."[49] This quotation, scholars have speculated, is likely a direct response to Trollope. Cist's work directly addresses many of the amenities that Trollope viewed Cincinnati as lacking. For example, he lists the location of every pump and every cistern throughout the city, two amenities that Trollope did not observe as readily accessible in Cincinnati. This fact seems unlikely to be coincidental and thus illustrates just how insulting Trollope's comments were to Cincinnati's population.

Daniel Aaron suggests that in the time before Frances Trollope, Cincinnati's "businessmen were content to live in the Tyre of the West and made no strenuous efforts to change their city into an Athens."[50] Further, "Commerce had made Porkopolis great and wealthy," but its effects were limited by the fact that "Cincinnati leaders gave little thought to turning their city into a cultural center," and it showed in their lack of institutions.[51] However, after Trollope calls Cincinnati a place "with only just enough of the air of a city to make it noisy and bustling" a certain institutional fervor seems to have overtaken Cincinnati.[52] This zeal likely resulted in Charles Cist's *Cincinnati in 1841: Its Early Annals and Future Prospects*, which was likely a response to Frances Trollope's work. This work attempts to index the numerous social institutions that rose up after Trollope's visit—perhaps showing that Trollope's abrasive opinion about Cincinnati's lack of institutions resonated with its residents. In addition, Cist's work appears to validate Dickens' commentary about the changes Cincinnati underwent after Trollope's residence there. While Cist criticizes Trollope and other travelers for their remarks on Cincinnati, it appears that Trollope, though vilified for it, provided insight into the lack of cultural and social institutions in early nineteenth century Cincinnati. As the works of Stradling and Aaron show, historical scholarship joins primary sources in supporting Trollope's analysis about the unusually low level of institutions in Cincinnati during this time.

David Stradling remarks in his "Cincinnati: From River City to Highway" that "if Cincinnati still lacked culture in the 1830s, in the form of art and theatre, it clearly thrived as an economic center, one that would in time generate its own sophisticated urban culture."[53] In addition, he writes,"Trollope could not help but mention the city's strengths, its economic vitality and its relative equality, though

[49] Charles Cist, *Cincinnati in 1841: Its Early Annals and Future Prospects* (Cincinnati, 1841), v-vi.

[50] Aaron, *Cincinnati, Queen City*, 231.

[51] Ibid., 231.

[52] Trollope, *Domestic Manners*, 17.

[53] Stradling, *Cincinnati: From River City*, 26.

she disparaged the latter as unfortunate 'leveling'."[54] This economic success was critical in transforming Cincinnati from a river town to the Queen City. A variety of factors drove this economic success. The Jacksonian Era canal and railway systems constructed in the Ohio Valley played a crucial role in linking Cincinnati to eastern markets and influence. Charles Cist refers to these infrastructure improvements as the "Public Works of Inter-communication connecting Cincinnati with the adjoining country," recognizing the role they play in Cincinnati's new eastern development.[55] Nikki Taylor writes that "by 1848 Cincinati boasted serveral roads, canals, and railroads that linked the city to St. Louis, Memphis, Lake Erie, Indiana, Lexington, and Pittsburgh, facilitating commerce."[56] The decrease in trade with Great Britain following the War of 1812 made this inland trade increasingly vital in sustaining the American economy. Cincinnati's position along the Ohio River made its location extraordinarily valuable as the middle of the nineteenth century approached.

Other factors also played a role in Cincinnati's economic growth during the period during and after Frances Trollope's visit. Considerable immigration ballooned Cincinnati's population and economic output. From 1830 to 1840, Cincinnati's population nearly doubled, growing from 24,821 residents in 1830 to 46,338 in 1840.[57] As Nikki Taylor explains, "people seeking jobs and other economic opportunities left the Northeast and upper South and flocked to Cincinnati in this era of prosperity."[58] Free black, Irish, and German immigrants were the main source of this population increase. The free black and Irish immigrants provided, albeit unwillingly, inexpensive labor to fuel the growing industry of Cincinnati. This labor facilitated Cincinnati's development "as a force in manufacturing and became the national leader in pork packing and steamboat consruction in the mid-1820's."[59] German immigrants brought artisanal skill to Cincinnati, perhaps playing a crucial role in moving Cincinnati's rich towards the high society of eastern American cities. These population increases enabled "the pork industry, the steam industry, and the publishing houses and founderies that provided a financial basis for the aesthetic and cultural growth of the city" to become incredibly succesful.[60] Perhaps

[54] Ibid., 26.

[55] Cist, *Cincinnati in 1841*, 76.

[56] Taylor, *Frontiers of Freedom,* 4.

[57] United States Census Bureau.

[58] Taylor, *Frontiers of Freedom*, 1.

[59] Ibid., 1.

[60] Deatrick, "Cincinnati in the Time," 61.

even more importantly, however, Nikki Taylor writes, "these settlers brought values and instituions with them, contributing to the northern character of the city."[61] According to Taylor, one contemporary writing in 1848 observed, "In truth with the exception of Pittsburgh, there is no city in the West or the South that, in its manufacturing capabilitites, bears any approach to Cincinnati."[62] The seemingly exponential growth of Cincinnati over this brief period was so remarkable that it likely inspired and enabled Charles Cist to predict "that within one hundred years from this time, Cincinnati will be the greatest city in America; and by the year of our Lord two thousand, the greatest city in the world."[63]

However, the impact of Frances Trollope cannot be overlooked in this period of Cincinnati's history. So it may seem that the Cincinnati Trollope and these other European travelers visited during the early nineteenth century was growing incredibly quickly. Economic growth spurred the institutional growth as well as the physical growth of this river town, transforming it into the Queen City of the West. While many of the changes Cincinnati underwent during this time period can be explained by the connection of Cincinnati and eastern cities, these changes align incredibly with the failings Frances Trollope observed during her time in Cincinnati. The observations of Charles Dickens and the work of Charles Cist exemplify this anomoly. While the time period in which Trollope visited and wrote about Cincinnati may have enabled her be to influential, her writings clearly insulted Cincinnati's cultural, social, and intellectual communities so greatly that they responded by strengthening the organization of and multiplying the number of their institutions.

It seems that Frances Trollope was particularly influential in Cincinnati's transformation during the nineteenth century, but questions remain about why Trollope was so villified in the city. Certainly Trollope's tone played a role in this inconsistency, but the substance behind these tones, Trollope's observations of life in Cincinnati, finds support in other travel journals and in scholarship. Other scholarship about Frances Trollope, and the response her *Domestic Manners of the Americans* garnered, explain why she was more specifically disparaged. Roger Newstedt suggests that Cincinnatians' hatred of Trollope began as she arrived and her "bizarre bazaar" business venture left a physical reminder of Trollope's comments that loomed over Cincinnati. The structure that Trollope built to replace the blandess of Cincinnati with high culture and advanced architecture ended up being a complete

[61] Taylor, *Frontiers of Freedom*, 4.

[62] Ibid., 4.

[63] Cist, *Cincinnati in 1841*, 275.

business failure, whose legacy for many years, as Harriet Martineau described it, was as "the great deformity of the city."[64]

Historian Lenora Hobbs points out that Harriet Martineau, too, was vilfied to a lesser extent, arguing that perhaps Trollope's "gossipy" tone compared to Martineau's scholarly, removed perspective explains the differences in how these travel journals were received when published. Further, the goal of Trollope's book—to disparage American manners—made it difficult for Trollope's work to be received positively anywhere in America, let alone in the city where the majority of her anecdotes took place. In addition, Louis Leonard Tucker argues that Trollope's work "fashioned an image of ante-bellum Cincinnati that remained granatically fixed in American historiography for more than half a century."[65] This argument suggests that Cincinnati abhorred Trollope not only for her direct insults to all classes of Cincinnati but also for the way her writings affected American perception of the city. The fact that Trollope's work was printed four times in its first year in America supports the idea that Trollope's writings proved popular nationally, making it plausible that Trollope's *Domestic Manners of the Americans dramatically altered America's perception of Cincinnati*.[66] For, according to Louis Leonard Tucker, Trollope's work

> conjured up the vision of a city in which fat hogs waddled through the streets at will; of putrefactive streets and market stalls; of massive slaughter houses which emitted an effluvium that was a stench in the nostrils of all, except localities; of streams brimming with inedible slaughter house remains, their waters brought to a fiery red hue by frequent infusions of hog blood. No discussion of Mrs. Trollope's "Porkopolis" would be complete without a specimen of the 'old woman's' evocative literary style. [67]

Finally, while other European travelers left Cincinnati on an optimistic note, often praising the potential of the growing city, Trollope held nothing back about her negative experience in Cincinnati. Her parting shot to the city, written in March of 1830, reads:

> We quitted Cincinnati the beginning of March, 1830, and I believe there was not one of our party who did not experience a sensation of pleasure in leaving it. We had seen again and again all the queer varieties of its little world; had amused

[64] Martineau, *Retrospect of Western Travel*, 249.

[65] Tucker, "Cincinnati: Athens of the West," 11.

[66] Hobbs, "Sizing up the Queen City" 26.

[67] Tucker, "Cincinnati: Athens of the West," 11-12.

> ourselves with its consequence, it's taste, and it's ton, till they had ceased to be amusing. Not a hill was left unclimbed, nor a forest path unexplored; and, with the exception of two or three individuals, who bore heads and hearts peculiar to no clime, but which are found scattered through the world, as if to keep us everywhere in good humour with it, we left nought to regret at Cincinnati. The only regret was, that we had ever entered it; for we had wasted health, time, and money there. [68]

Trollope's tone, her long-lasting presence in Cincinnati, and her ungrateful valediction to Cincinnati are unique compared to the works of other European travelers. Together, these elements explan why Trollope's work was received as particlularly abrasive in Cincinnati, allowing her *Domestic Manners of the Americans* to have considerable influence in shaping the city in the wake of Trollope's short-lived residence there.

It is clear that the economic success Cincinnati encountered during and after Frances Trollope's visit allowed the city to transform out of the vision of Cincinnati projected in Trollope's *Domestic Manners of the Americans* into a more northern and eastern city. Trollope's perspective and personal experience, because she resided in Cincinnati, resulted in her work being more negatively received than other authors', and thus it became more influential.

However, do these explanations fully explain why Cincinnati was talked about in this way by Dickens' arrival in 1842? By returning to Cincinnati's geography, more specifically its downriver relationships, perhaps Trollope's impact can be more readily explained. Once again, Dr. Daniel Drake appears surprisingly aware of Cincinnati's unique position, saying that "the Ohio River forms the most interesting boundary among the republics of the West."[69] Nikki Taylor's work "Frontiers of Freedom" examines this cultural geography of Cincinnati, a city "located at the nexus of the North, the South, and the West" during the early nineteenth century.[70] Similarly, historian Henry Louis Taylor Jr. contends that "nineteenth-century Cincinnati had a 'dual personality'[:] a schizophrenic northern and southern personality occupying the same urban body.'"[71] Thus, one could argue that "in many ways a western identity was forged in Cincinnati."[72] In *Frontiers of Freedom*, Nikki Taylor discusses the impact that this cultural geography had on Cincinnati's black community during the nineteenth century. However, this unique geography impacted

[68] Trollope, *Domestic Manners*, 78.

[69] Martineau, *Retrospect of Western Travel*, 228.

[70] Taylor, *Frontiers of Freedom*, 1.

[71] Ibid., 3

[72] Ibid., 5.

every element of Cincinnati's existence during the nineteenth century, observable in many of the trends this paper has sought to identify.

As the inflection point between north and south and east and west, Cincinnati's cultural geography also allowed Trollope's influence to become more apparent. The cultural geography of Cincinnati remained so sensitive during the early nineteenth century that Trollope's unpleasant comments about Cincinnati's "southerness" may have pushed them back towards a more northern identity. With this in mind, David Stradling's statement that "by 1840, the city's growth was astonishing, representing the dramatic rise of the West and promising a remaking of the nation as a whole" takes on a new meaning.[73] Not only was Cincinnati's growth symbolic of the rise of the West, but in a few years it would become the Queen City of the Midwest, a title more becoming a Cincinnati of unique cultural geography and increasingly fitting as the frontier moved further west. Charles Cist seemed surprisingly aware of this notable position, writing that "Cincinnati is a central point, in the valley of the Ohio, to a great region of country."[74] This study not only has relevance for other analyses of the impacts of European travelers and their writings on the development of American cities, but it also has value for better understanding the formation of a clear Midwestern identity, dating back to the early nineteenth century.

The full role Frances Trollope played in this transformation cannot be entirely understood. However, it is plausible that her writing challenged Cincinnati's self identity so greatly that it accelerated the dramatic changes that occurred in the city before the middle of the nineteenth century. A lack of relevant primary material about Cincinnati immediately after Trollope makes it difficult to measure her impact in the city. However, Trollope's *Domestic Manners of the Americans*, alongside a seemingly perfect storm of other factors like Cincinnati's cultural geopgraphy, its tremendous economic growth, and completed infrastructure projects linking it to the East, transformed Cincinnati from river town to Queen City. Trollope's work reveals the importance of studying a document not only for its larger observations about the social conditions of the United States, but also for uncovering the real impact its publication had almost immediately on the development of America's Midwest.

[73] Stradling, *Cincinnati: From River City*, 20.

[74] Cist, *Cincinnati in 1841*, 76.

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Privacy in the *Iliad*

Kelly Schmidt

Public and private spaces offer different insights into the lives and cultural practices of the characters in the *Iliad*. Public scenes such as assemblies, battles, and funerals, contribute to the epic's overall progression and exhibit societal values such as honor and glory. Scenes within private spaces, however, provide a more intimate glimpse into the lives and emotions of the characters. What occurs within these private scenes not only exposes characters on a more personal level, but also reveals more about cultural practices, attitudes, and traditions of the time. Because of this, interactions within private settings are often the most poignant of the epic.

In the *Iliad*, noticeable splits appear between the types of private settings and scenarios that occur. Most personal interactions among the Greeks, for instance, occur within the tents and temporary shelters, since the Argive troops were displaced from their homelands. Because no womenfolk followed their husbands to battle, concubines such as Briseis and Chryseis are among the only women in the camp. As a result, most private interactions among the Greeks occur among men.

In Troy, however, where family units are still intact and soldiers can return home to their wives and children after battle, more mixed-gendered conversations take place. Therefore, scenes within the chambers of Trojan palaces provide more information about family dynamics and female domesticity than the tent negotiations of the Achaeans.

The scenes depicting Andromache and Helen within their palace chambers describe the role women play in a domestic realm while their men are at war. When Iris appears to Helen to encourage her to emerge into the public from her private chamber and join those assembling to watch the battle on the walls, she finds Helen weaving:

> τὴν δ᾽ εὗρ᾽ ἐν μεγάρῳ: ἡ δὲ μέγαν ἱστὸν ὕφαινε
> δίπλακα πορφυρέην, πολέας δ᾽ ἐνέπασσεν ἀέθλους
> Τρώων θ᾽ ἱπποδάμων καὶ Ἀχαιῶν χαλκοχιτώνων,
> οὕς ἑθεν εἵνεκ᾽ ἔπασχον ὑπ᾽ Ἄρηος παλαμάων (Hom. Il. 3.125-128).
>
> "She found her in a large chamber: she was weaving on a large loom
> a double-folded purple (cloth), she was weaving therein many con
> tests of the Trojans, breakers of horses, and the bronze-clad Achae-
> ans, which they were suffering on account of her by the hands of Ares."[1]

Andromache also weaves in a room of the palace when she learns of Hector's death: ἀλλ᾽ ἥ γ᾽ ἱστὸν ὕφαινε μυχῷ δόμου ὑψηλοῖο / δίπλακα πορφυρέην, ἐν δὲ θρόνα ποικίλ᾽ ἔπασσε (22.440-442) "But she was weaving at the loom in the innermost part of the high house a double-folded purple [cloth], she was weaving therein skillfully decorated ornamental figures."

The parallels between these passages are significant in that they point out practices typical of home life for women. They indicate that inner spaces of the home, here the μέγαρον, or "large chamber" for Helen and the μυχός δόμου, or "inner part of the room" for Andromache, are the domain of women. In these domestic rooms the women perform the same task, which Homer describes with nearly identical phrasing. Both weave (ὕφαινε (3.125; 22.440) "was weaving") δίπλακα πορφυρέην (3.126; 22.441) "double-folded purple" on a ἱστὸν (3.125; 22.440) "loom." From these lines, it can be interpreted that the practice of weaving was a routine task for women in the home. In fact, weaving was a primary household task carried out by women of all classes, including slaves and royalty, all of whom

[1] All translations are my own.

contributed to the home's self-sufficient production.[2] This transcendence of class is evident with Andromache, whom Hector bids, ἀλλ᾽ εἰς οἶκον ἰοῦσα τὰ σ᾽ αὐτῆς ἔργα κόμιζε / ἱστόν τ᾽ ἠλακάτην τε, καὶ ἀμφιπόλοισι κέλευεἔργον ἐποίχεσθαι (6.490-492). "But going into the house, attend to your works, the loom and the distaff, and command your handmaidens to attend to the work." In this instance, Andromache shares in the cloth-making labor with her servants.

The privacy of inner chambers also provided women a space where they were safe to express their sentiments. In a society where women's public roles and self-expression were limited, weaving within the home was not simply a household chore, but an outlet of creativity through which women could find their own voices, communicating their thoughts and releasing their emotions.[3] "Since looms were situated in the inner palace," Maria C. Pantelia writes, "weavers could isolate themselves and perform their art away from the public eye."[4] Helen and Andromache take advantage of their privacy and this opportunity for silent expression, subtly weaving concerns and fears into the tapestries that they otherwise have no opportunity or space to say out loud.[5]

This is especially noticeable in the tapestry of Helen, in which she depicts the battles ensuing between the Trojans and Achaians, οὕς ἑθεν εἵνεκ᾽ ἔπασχον ὑπ᾽ Ἄρηος παλαμάων (3.128). "[W]hich they were suffering on account of her by the hands of Ares." This statement suggests that Helen is well aware of her role in the strife occurring around her, and is possibly regretful of it. Though a version of the events according to her perspective is never told, Helen, according to Pantelia, can still find "relief and escape from her sad reality by depicting on her loom images which actually record history as she herself sees it…producing an artifact which will survive and 'tell her story'…to all future generations."[6]

Andromache, like Helen, also faces uncertainty about her current state and her future, but the depiction on her purple robe lacks the same degree of substance described on Helen's tapestry. On her fabric, Andromache was ἐν δὲ θρόνα ποικίλ᾽ ἔπασσε (22.440-442) "weaving therein skillfully decorated ornamental figures." This description is much more simplistic than the one attributed to Helen's

[2] Maria C. Pantelia, "Spinning and Weaving: Ideas of Domestic Order in Homer," *The American Journal of Philology* 114, no. 4 (1993): 493.

[3] Jane McIntosh Snyder, 1981. "The Web of Song: Weaving Imagery in Homer and the Lyric Poets," *The Classical Journal* 76, no. 3 (1981): 193.

[4] Pantelia, "Spinning and Weaving," 494.

[5] Ibid.

[6] Ibid., 495.

work. Pantelia argues that Andromache still expresses her feelings concerning the uncertainty of the future in her weaving. But since her future is dependent upon that of her husband, Hector, without whom she would lack identity, her embroidery reflects the more simple and direct focus of her concern.[7] Like the tapestry, which lacks identifying features, Andromache's future could be to fall into obscurity and lose identity after her husband's death, since she is so closely associated with him that even after his death men will look upon her and remember Hector (6.459-463).

Although the emotional messages conveyed within these tapestries are not easily identifiable to an observer, the weavings still serve as a personal form of emotional release and expression for the weaver, just as paintings, songs, sculptures, and other artistic creations have continued to do up to the present age. The ability to express through their handicraft gives women an opportunity for creative intellectual expression on par with a poet and his lyre,[8] but laboring in a private chamber rather than performing in a crowded hall provides them extra security from detection and scrutiny.

The lack of a public role does not necessarily indicate that women held inferior status to men. As Marylin B. Arthur argues, there is certainly a polarity between male and female, due to the 'heroic code' conception that men's duty is to fight on the battlefield while women are to remain at home managing the household; however, the epic does not disparage women through this distinction, but actually focuses positively on women's positions in their domains.[9] Arthur writes, "it emphasizes women's inclusion in society as a whole, rather than her exclusion from certain roles; it celebrates the importance of the functions that women do perform, instead of drawing attention to their handicaps or disabilities."[10] Although when women threaten to overstep their limits, as when Andromache makes suggestions about Hector's role in the battle, some negativity emerges (6.431-435). The traditional duties of women do not lack importance: women are expected to both provide for and solicit their husbands and children, as when Andromache pleads with Hector at the walls or orders a hot bath to be prepared for him, or when women

[7] Ibid., 495-496.

[8] Snyder, "The Web of Song," 193. Snyder makes an even closer connection between women's weaving and the musical creations of poets and bards. Though not mentioned in the passages described here, weaving scenes elsewhere in Homer's epics depict women singing while weaving, leading Snyder to believe that singing was a common habit while weaving, thus reinfocing the argument that working at the loom in the privacy of the home was a creative and communicative outlet for women.

[9] Marylin B. Arthur, "Early Greece: The Orgins of the Western Attitude toward Women," in *The Arethusa Papers* 1984, ed. John Peradotto and J.P. Sullivan (New York: SUNY Press, 1984), 13-14.

[10] Arthur, "Early Greece," 14.

are responsible for textile production through spinning and weaving, and hold an honored duty to perform certain religious rites to Athena, as Hecuba does.[11] Furthermore, women exhibit a level of authority within their sphere, holding command over the serving-women in their household. Andromache, for instance, bids her handmaidens to prepare a bath for Hector returning from battle (22.442-444). Even Hector, earlier in the epic, tells Andromache to go home and urge her handmaidens to take up their weaving with her (6.490-493). Later, Andromache, obedient to Hector's command, is not at the walls of Troy watching the battle between her husband and Achilles along with her fellow Trojans, but weaving and trying to cope with her fear of the prospect of losing her husband in battle.

Helen's interactions with Paris in the bedchamber indicate that when the spheres of men and women come into contact within the privacy of the home, women's domestic authority does not always reign absolute. Helen, a strong-willed woman,[12] takes courage from the privacy the home provides, a realm with which she is familiar, to assert herself against Paris. In the security of her own sphere, Helen is willing to risk being more daring. Though forbidden by Aphrodite to refuse Paris (3.423), Helen still resists him, refusing to look at him and ἠνίπαπε (3.427) "reproaches" him, expressing that she wished he had died in the fighting (3.428-436). However, the scene also indicates that certain gender boundaries cannot be overstepped, even in the privacy of the home. Though women are expected to solicit their men to a certain extent, reproach and insolence toward a man is unacceptable. Paris' response to Helen emphasizes that women are still in some ways subject to the patriarchy of men. He returns her reproach, then commands her to come to bed with him (3.437-447). Helen's compliance, without any outward sign of complaint, indicates her awareness that she has no say in the matter. Her self-expression, even in the privacy of her chamber, is limited by the will of men.[13] Her domestic authority is over her servants, her communication powers confined to the silent manifestations of her tapestries.[14] Helen's responsibilities and authority rest in her household domain, but do not extend to men when they enter her sphere; rather, she must succumb to their will.

Similarly, when Priam meets Hecuba ἐς θάλαμον ... ὑψόροφον (24.191-192) "in the vaulted inner chamber" in Book 24 to announce his intentions to retrieve the body of Hector, he asks Hecuba to speak her mind on the matter in this private setting: ἀλλ᾽ ἄγε μοι τόδε εἰπὲ τί τοι φρεσὶν εἴδεται εἶναι (24.197) "But

[11] Ibid.

[12] Elizabeth Gregory. "Unravelling Penelope: The Construction of the Faithful Wife in Homer's Heroines," *Helios* 23, no. 1 (1996): 9.

[13] Hanna M. Roisman. "Helen in the *Iliad*; *Causa Belli* and Victim of War: From Silent Weaver to Public Speaker," *American Journal of Philology* 127 no. 1 (2006): 1, 12.

[14] Ibid., 12.

come, tell me this, how does it seem to your mind?" Hecuba accepts this intimate opportunity to bewail her grievances, crying out shrilly that Priam has lost his famed wisdom if he thinks he should go alone among his enemies' ships to meet the man who has slain his sons, and expect him to show any pity or reverence (24.201-208). Hecuba pleads that they should accept the fate given to Hector's body, and mourn him far away within their own halls (24.208-216). Although Priam has invited Hecuba to express her concerns in the privacy of the chamber, he halts her endeavors to persuade him to remain at home: μή μ᾽ ἐθέλοντ᾽ ἰέναι κατερύκανε, μὴ δέ μοι αὐτὴ/ ὄρνις ἐνὶ μεγάροισι κακὸς πέλευ: οὐδέ με πείσεις (24. 218-219) "Do not hinder me, willing it, to go, do not yourself be an evil bird to me in the chambers: you will not persuade me." He declares this, explaining that if the gods themselves had not bidden it, he would remain. But, since it has been divinely decreed, he will go forth, insisting,

> εἰ …μοι αἶσα
> τεθνάμεναι παρὰ νηυσὶν Ἀχαιῶν χαλκοχιτώνων
> βούλομαι: αὐτίκα γάρ με κατακτείνειεν Ἀχιλλεὺς
> ἀγκὰς ἑλόντ᾽ ἐμὸν υἱόν, ἐπὴν γόου ἐξ ἔρον εἵην (24. 224-227).
>
> if it is my fate
> to die among the ships of the bronze-clad Achaians,
> I wish it: for forthwith let Achilles slay me
> holding my son in my arms, after I have released from me my desire of weeping.

Here again, although the private setting allows Hecuba to convey her thoughts, her attempt to prevent her husband from fulfilling his duty is forbidden, reemphasizing that women's ability to express themselves in private is restricted by the men's will. These scenes, depicting the women of Troy in the seclusion of their homes, not only display an expected way of life for women in a domestic sphere but also reveal to an extent the inner depths of female characters that would not otherwise receive the same recognition in public gatherings in the epic. Through their weavings and their words, the women express touching concerns, which are all the more moving because of their helplessness in addressing them. By delving into the inner chambers of their homes, the narrator also offers glimpses into the inner lives of the women who lie there. These women become deeper characters to the reader, with pathos-

invoking inner thoughts that make them more accessible as human subjects suffeing the effects of the war.[15]

The interior chambers of the home become so important for intimate descriptions of women in the epic because this is the focal point of their dutiful domain. Women are able to leave the home freely, but do so only on unusual occurrences, typically with the accompaniment of one or more handmaidens,[16] as Andromache does when searching for Hector (6.399), and Helen when she is called to the walls to watch the battle (3.143). Hector's reaction when searching for Andromache reflects this expectation that certain spaces, such as the home or temple of Athena, especially in the company of other women, are where she ought to be:

> ὣς ἄρα φωνήσας ἀπέβη κορυθαίολος Ἕκτωρ:
> αἶψα δ᾽ ἔπειθ᾽ ἵκανε δόμους εὖ ναιετάοντας,
> οὐδ᾽ εὗρ᾽ Ἀνδρομάχην λευκώλενον ἐν μεγάροισιν,
> …
> Ἕκτωρ δ᾽ ὡς οὐκ ἔνδον ἀμύμονα τέτμεν ἄκοιτιν
> ἔστη ἐπ᾽ οὐδὸν ἰών, μετὰ δὲ δμῳῇσιν ἔειπεν:
> ‘εἰ δ᾽ ἄγε μοι δμῳαὶ νημερτέα μυθήσασθε:
> πῇ ἔβη Ἀνδρομάχη λευκώλενος ἐκ μεγάροιο;
> ἠέ πῃ ἐς γαλόων ἢ εἰνατέρων ἐϋπέπλων
> ἢ ἐς Ἀθηναίης ἐξοίχεται, ἔνθά περ ἄλλαι
> Τρῳαὶ ἐϋπλόκαμοι δεινὴν θεὸν ἱλάσκονται;’ (6.369-380)
>
> Thus speaking Hector with glancing helm went away:
> But when he was quickly coming to his well-dwelled houses
> He did not find white- armed Andromache in the large chambers,
> ...
> Hector thus did not find his blameless wife within
> Going he stood upon the threshold, he spoke among the slave-women:
> ‘Come on, unerring slaves, speak to me:
> In what way has white-armed Andromache gone from the large chamber?
> Or in what way has she gone out to her husband's sisters or the beautifully robed
> wives of his brothers or to Athena, there all the other
> Fair-haired Trojan women appease the fearful goddess?’

[15] Characters like Chryseis and Briseis, in contrast, become objects, pawns in the hands of men. However, Brieis' lament in book 19 shows a pathos-inducing instance of a woman suffering the effects of the war that takes place in public. Here, she mourns over Patroclus' death, the loss of her own family, and her present situation (19.290-305). Here, as in the funeral rituals in Troy at the close of the war, where the women wail over Hector's body, funeral laments serve as a way for women to express their inner feelings in public and private (24.719-775). But, as other instances of privacy in the home show, women can express grief more personally in private, as well as express other feelings, such as anger and frustration.

[16] Arthur, "Early Greece," 14.

Similarly, Hector's assertion that his role as a man of honor is to return to the fight, and subsequent command that she return to her own role in the home while he goes to perform his duty on the battlefield reinforces the gendered separateness of the spheres where they exert influence. Both are contributing to the good of the family, but in different ways: Hector by protecting and defending it, Andromache by sustaining and providing for it, as Hector states:

> ἀλλ᾽ εἰς οἶκον ἰοῦσα τὰ σ᾽ αὐτῆς ἔργα κόμιζε
> ἱστόν τ᾽ ἠλακάτην τε, καὶ ἀμφιπόλοισι κέλευε
> ἔργον ἐποίχεσθαι: πόλεμος δ᾽ ἄνδρεσσι μελήσει
> πᾶσι, μάλιστα δ᾽ ἐμοί, τοὶ Ἰλίῳ ἐγγεγάασιν (6.490-493).
>
> But going into the house, attend to your works,
> the loom and the distaff, and command your handmaidens
> to attend to the work: but war will be an object of concern to all men,
> especially me, those who were born in Troy.

Man's conception of his duty to fight and preserve his honor, which this statement expresses, is further exhibited in the private scenes that occur within the Achaean camp. These gatherings under Achaean tents differ significantly from Trojan domestic scenes. Here, where wives and familial relationships are lacking, the interactions described occur strictly among men. These meetings usually take the form of some sort of negotiation toward an end goal. Sometimes this takes place as persuasion, at other times, supplication; but they all generally focus their concern on what is man's duty. Nonetheless, despite the greater formality and toughness that this difference in sphere creates, the scenes within Achaean tents remain similar to those in Trojan homes. They provide a deeper and more intimate encounter with the characters, who, in the safety of their privacy, show sides of themselves that usually remain hidden under a tough exterior in public scenarios and are more prone to express pathos-evoking emotions where fewer eyes may see. Furthermore, just as the scenes in Troy provided insight on the cultural practices of female domesticity, the private scenes among the Achaeans also indicate cultural norms, albeit of a different kind than those depicted in Troy.

Several of the most revelatory private scenes in the epic take place in Achilles' tent. As a result, these scenes, above all others, reveal the most about Achilles, though the values and motivations that guide his actions reveal practices that concern all men in the society within which he lives. The three instances where Achilles is in his tent all occur at a time when someone approaches him to make a request: the embassy to Achilles in Book 9, Patroclus' urging in Book 16, preceded by Nestor's persuasive endeavors toward Patroclus in Book 11, and Priam's pleas

for his son's body in Book 24. In each scene, the manner in which visitors make requests and the discussions that follow vary based upon circumstance and the dictates of societal interaction.

In Book 9, upon Agamemnon's request, Odysseus, Phoenix, and Ajax approach Achilles' shelter to ply him with gifts and reason, urging him to return to battle (9.178-181). Immediately the shift in Achilles' behavior in the comfort of his own privacy is evident, compared to his angry and unyielding interactions at the Argive assemblies. His anger has not subsided, but his tent is a space where he can brood in his own quiet and loneliness.[17] In the very first glimpse of Achilles in this setting, he is found in near solicitude and peace, soothing his heart in lyre and song: τὸν δ᾽ εὗρον φρένα τερπόμενον φόρμιγγι λιγείῃ/…/τῇ ὅ γε θυμὸν ἔτερπεν, ἄειδε δ᾽ ἄρα κλέα ἀνδρῶν./ Πάτροκλος δέ οἱ οἶος ἐναντίος ἧστο σιωπῇ (9.186;189-190). "But they found him delighting his heart with a clear lyre…with this he was delighting his heart, and he was singing about the glory of men. Patroclus was sitting opposite alone in silence." Judith A. Rosner points out that, "The picture of Achilles plucking his lyre and enjoying its music separates and distinguishes him from the other Greek heroes. It is difficult to imagine, for example, Ajax or Diomedes engaged in such an activity."[18] In the security of his shelter, Achilles can let his guard down and be more relaxed. Achilles' rage appears even more subdued when he greets his visitors. Here, he is welcoming, addressing the men warmly with words of friendship: χαίρετον: ἦ φίλοι ἄνδρες ἱκάνετον ἦ τι μάλα χρεώ,/ οἵ μοι σκυζομένῳ περ Ἀχαιῶν φίλτατοί ἐστον (9.197-198) "Welcome: you are dear men who have come or how great is you need, most dear of all the Achaeans to me in my anger."

Setting the embassy scene within Achilles' shelter provides a glimpse of Greek customs of hospitality. After greeting his guests, Achilles acts as a proper host should. He practices xenia, standing and greeting them warmly, then bidding them to sit, drink, and eat their fill in comfort (9.199-224). Once again, Achilles expresses how much he values these men, saying οἳ γὰρ φίλτατοι ἄνδρες ἐμῷ ὑπέασι μελάθρῳ (9.204) "for these who are under my roof are the dearest men." These preliminary rituals, the preparation and eating of the meal, must be observed in their proper order before the real intent of the meeting can begin.[19]

Achilles' hospitality is based upon the cultural traditions expected of him, but also relies on his own value system. As a hero, he values his own greatness and honor, but this scene presents an Achilles who is willing to lay his pride aside, at least momentarily, safe in the seclusion of his shelter, for something he values

[17] Judith A. Rosner, "The Speech of Pheonix: *Iliad 9.434-605*" *Pheonix* 30 (1976) 317.

[18] Ibid.

[19] Adkins, A.W.H., "Values, Goals, and Emotions in the Iliad," *Classical Philology* 77 no. 4 (1982) 303.

more: friendship.[20] Here among the embassy are fellow soldiers and companions with whom Achilles can relate on a more personal level, and perhaps even find support in his feud with Agamemnon.[21] They are φίλοι and φίλτατοι (9.197-198; 204), "dear" and "dearest" to him, and this even surpasses his wrath. In contrast to his hostility toward Agamemnon, Achilles is more receptive to hearing these three men who have made the effort to visit him, have followed the proper customs in showing respect toward one another, and who have made an effort on behalf of friendship. Achilles allows himself to be more vulnerable and open in this private setting, where he is less subject to the regard and criticism of his peers. The embassy takes advantage of this, using their leverage as friends to play on Achilles' emotions.

Odysseus especially manipulates Achilles' emotions,[22] first toasting to his health and complimenting the good meal (9.225-228). He then attempts to persuade Achilles to end his angry isolation and contribute to the community again, reminding Achilles of his filial duty to his father to restrain his anger and avoid quarrel (9.254-256). However, Odysseus provokes different emotions than he had intended; rather than gratifying his pride through compliments or creating guilt by reminding him of his father's request, Odysseus invokes Achilles' resentment, insulting his pride and sense of honor by buttering him with bribes of gifts. He had expected Odysseus to have come as a friend, but Odysseus is motivated by an agenda to persuade, and acts as a friend only for this purpose.[23] Achilles' response, rejecting crafty Odysseus for saying one thing and intending another, expresses his true sentiments (9.312). He questions why he must participate in a war fought over the wife of one man, especially when he is not even allowed to keep the woman he loves (9.337-343). He also reveals his prophesized fate, which contributes to his indecision about returning to battle (9.410-416). His emotional disclosure holds all in amazement (9.430-431).

Phoenix, too, attempts to persuade Achilles using the intimacy of this setting, but because of his kin-connection with Achilles, already has a much better established friend relationship with Achilles than Odysseus, based on a stronger bond of paternal love and duty.[24] This relationship is something both Phoenix and Achilles value, which Achilles respects and is more responsive to. Though he is angry at the rest, he bids Phoenix to stay the night with him and return home on his ship in the morning (9.426-429). Phoenix uses the value he places on kinship to

[20] Adkins, "Values, Goals, and Emotions" 303; Rosner, "The Speech of Pheonix" 315.

[21] Ibid.

[22] Adkins, "Values, Goals and Emotions" 303.

[23] Rosner, "The Speech of Pheonix" 315.

[24] Ibid.

his advantage in his attempt to convince Achilles, drawing upon their familial ties and creating pathos to persuade Achilles to return to the fight. Rather than persuasion, his tactic borders more on pleading. In an outburst of tears, Phoenix questions how he could be left behind without Achilles, whom he has loved as own son since he raised him from infancy (9.432-445). He describes the great xenia of Achilles' father and brings up an endearing scene of the relationship Phoenix and the young Achilles had with one another: καί σε τοσοῦτον ἔθηκα θεοῖς ἐπιείκελ᾽ Ἀχιλλεῦ,/ ἐκ θυμοῦ φιλέων (9.485-486) "And I made you such as you are, godlike Achilles, loving you out of my heart, since you were not willing to go with another." He reminisces how the child Achilles preferred him over all others, refusing to go anywhere without Phoenix, who had to feed Achilles himself, his shirt soaked often οἴνου ἀποβλύζων ἐν νηπιέῃ ἀλεγεινῇ (9.491) "with wine having been spit out in grievous childhood." Phoenix endured all this for Achilles' sake since he had no children of his own: ἀλλὰ σὲ παῖδα θεοῖς ἐπιείκελ᾽ Ἀχιλλεῦ/ ποιεύμην, ἵνα μοί ποτ᾽ ἀεικέα λοιγὸν ἀμύνῃς (9.494-495). "But I was making you, godlike Achilles, my child, in order that you would ward off unseemly ruin from me."

Through these moving lines and his subsequent entreaties Phoenix hopes to remove Achilles from his anger and persuade him to accept Agamemnon's gifts and return dutifully to his proper place among the Argives (9.495-496). Fatherly Phoenix's loving pleas certainly move Achilles. As a result, he responds more kindly than he does to Odysseus, though he still refuses the request.[25] But, because he has stirred emotions of pity and longing in Achilles through recollections of the past, Achilles still invites Phoenix to stay the night and consider leaving with him in the morning (9.617-619).

Ajax, in his concise and direct speech, recognizes Achilles' staunch determination and does not waste his breath on extensive persuasion. Ajax thinks Achilles is being unreasonable, since he ignores his comrades' entreaties to him in friendship and refuses a gift of seven girls for the sake of one.[26] Achilles respects his words, but still grows angry at Agamemnon's slight to his honor and refuses to respond to a bribe. He says to Ajax:

> πάντά τί μοι κατὰ θυμὸν ἐείσαο μυθήσασθαι:
> ἀλλά μοι οἰδάνεται κραδίη χόλῳ ὁππότε κείνων
> μνήσομαι ὥς μ᾽ ἀσύφηλον ἐν Ἀργείοισιν ἔρεξεν
> Ἀτρεΐδης ὡς εἴ τιν᾽ ἀτίμητον μετανάστην (9.645-648).
>
> All things you appeared to say have touched my heart:
> but my heart swells up in anger, when I remind myself of that one

[25] Rosner, "The Speech of Pheonix," 316.

[26] Adkins, "Values, Goals, and Emotions," 311.

> who headstrong did ill to me among the Argives,
> the son of Atreus, as if I were some unhonored vagabond.

The privacy provided by the setting of the embassy meeting in Achilles' tent is important because it allows for a more straightforward communication of thoughts within the intimacy of friendship. Even though Achilles accuses Odysseus of not being straightforward (indeed, Odysseus at one point nearly quotes Agamemnon's lofty speech verbatim, rather than speaking as a true friend), the very fact that Achilles is free to so clearly reject Odysseus and point out his deceits, without strong repercussions, is indicative that this setting is much more open to a free flow of opinions than a public space. This freedom is restricted by a greater need to respect rank and decorum in a public discussion among leaders, which is less necessary in a frank conversation among friends in the comfort of private space. Ajax takes advantage of this, avoiding the customary eloquent superfluities expected in a formal public speech and cutting right to the point.

The setting is also important because it gives Achilles the security to let his guard down to a degree, enough that members of the embassy, especially Phoenix, are able to penetrate the emotions Achilles, in his anger, would keep guarded before Agamemnon. In such an environment, Achilles reveals values that are important to him and does not hesitate to let his emotions show. Phoenix is most notably successful at stirring Achilles' softer side, revealing a love for, and sense of duty to, friends and family that is touching for such a seemingly obstinate and inconsiderate warrior. Even if Phoenix's desperate plea and image of a young Achilles dependent on the care of another does not convince the now strong and independent hero, it certainly still strikes a chord in the heart of the reader, at least moving the reader to feel sympathy for childless Phoenix and his conflicted state. These intimate recollections of Achilles' childhood and Phoenix's personal experiences could not be expressed outside such an intimate setting.

The need for private space to promote frank exchanges is evident again in the series of scenes that lead Patroclus to don Achilles' armor in battle. When Achilles sends Patroclus to Nestor's tent to inquire who has been wounded in the fighting, Nestor, out of hospitality, bids Patroclus to sit, but Patroclus, determined not to anger Achilles by keeping him waiting, initially refuses (11. 610-611, 644-651). In his speech, Nestor makes intermittent allusions to the Greeks' attitude toward Achilles' self-isolation. The Argives frown upon his dissention and refusal to contribute to the good of the community. In one instance, Nestor states, αὐτὰρ Ἀχιλλεὺς/ οἷος τῆς ἀρετῆς ἀπονήσεται: ἦ τέ μιν οἴω/ πολλὰ μετακλαύσεσθαι ἐπεί κ᾽ ἀπὸ λαὸς ὄληται (11.762-764) "But Achilles will have joy of valor alone: and I think that he will weep many times, since men perish because of him." Achilles may have bravery, he says, but has no concern for his countrymen (11.663-664). Though his society values courage, this courage is meaningless when one refrains from us-

ing it for the good of his comrades. Nestor's advice reflects that of the embassy: Patroclus should use his relationship with Achilles to influence him to return to battle (11.785-792). He includes one additional suggestion, which becomes especially poignant in light of events to come: if Achilles still refuses to fight, Patroclus should at least request use of Achilles' armor so he can motivate the Achaeans and frighten the Trojans (11.793-802). Nestor's words stir up Patroclus' feelings, and inspired, he takes the advice to heart (11.803).

When Patroclus brings this message to Achilles, the privacy in which the two make their exchanges allows them to speak to one another without reservations or pretense. Without the pressure of onlookers, the companions can let their emotions and words fly at one another and their cares show. Achilles, for instance, does not respond with the same affection shown toward Phoenix, as one might expect. One would suppose that Achilles would address him in the same familial way that he does to Phoenix, since they are so close, but this is not the case. Achilles beholds Patroclus weeping uncontrollably and ᾤκτιρε (16.5) "pitied" him. However, his words appear more harsh and belittling. He likens Patroclus to a little girl, crying and reaching for her mother, treating him like a child even though, according to Nestor, Patroclus is the elder (16.6-11; 11.785). Patroclus, in great distress, entreats Achilles to consider his plea (11.20-45). Though he still refuses to enter the fight himself due to the slight to his honor, he does grant Patroclus the use of his armor, but with one caveat: Patroclus must not get carried away in the glory of battle, but must return once he has accomplished his goal of driving the Trojans from the ships (16.87-90). Achilles' reasoning combines his own pride with his concern for his dear Patroclus; to disobey him would diminish Achilles' own honor,[27] and risk Patroclus' death on the battlefield (11.90-95).

Patroclus, in his fit of emotion over the destruction of the Achaeans, stands in sharp contrast to Achilles' obstinacy. Seeing the Achaean troops fall around the ships, he is distressed at their fate, but, as Nestor has previously noted, Achilles appears to care nothing for the Danaans (11.663-664). His most important concern is his own honor and pride, although this passage indicates that Achilles has a touch of softness for Patroclus, as his hesitancy about Patroclus's involvement in the battle shows. In their privacy, Achilles can express his concern for Patroclus, albeit in such a harsh manner, as well as the values he maintains despite external pressure; even his concern for loved ones does not surpass Achilles' own esteemed self-importance.

In the final private scene in the *Iliad*, Priam comes to the shelter of his foe to beg for the return of his son's body. Their behavior discloses much about each character that would be impossible to express before their countrymen, either Tro-

[27] ἀτιμότερον δέ με θήσεις (11.90) "but you will make me dishonored."

jan or Greek, and at the same time describes important cultural practices. Because the meeting occurs between two enemies, the normal order of such an interaction is interrupted. To avoid the risk of being captured or slain before his request can be heard, Priam takes advantage of privacy, entering unseen in the midst of Achilles' dinner and immediately begins beseeching Achilles, who sits apart from his companions (24. 472-477).[28] The act of supplication, mentioned elsewhere in the epic, is described in full here, indicating the great gravity of the situation and the necessity of the rituals involved:[29] ἄγχι δ᾽ ἄρα στὰς/ χερσὶν Ἀχιλλῆος λάβε γούνατα καὶ κύσε χεῖρας/ δεινὰς ἀνδροφόνους, αἵ οἱ πολέας κτάνον υἷας (24.477-479) "standing near him, he took the knees of Achilles by the hands and kissed his terrible and manslaying hands that killed many sons." The physical gestures of supplication reinforce Priam's willingness to humble himself before the man who killed his sons and attempted to defile Hector's body. For a king to kneel prone before another and take the knees and kiss the hands of one who has slain members of his family is indeed a remarkable feat of self-abasement, one that would be difficult to perform in private, much less in public. The privacy of the shelter protects Priam from the shame he could receive if discovered supplicating to the enemy. As Victoria Pedrick notes:

> the significance of the suppliant's gestures helps explain each recourse to the ceremony. Signaling as they do his humility, his willingness to relinquish hostility…and his desperate need, they can be the basis for any plea forced by a weakened condition or inferior position, whether to an enemy or a friend.[30]

Priam's willingness to humiliate himself before the murderer of his sons indicates just how important it is for members of this society to be able to mourn the deceased with the body present and to be able to ensure a proper burial and funeral. Hector's family wants to be able to grieve for him privately in their own chambers, and Andromache especially wishes she had been able to be with him in his final moments to hear his intimate words (24.742-745).[31] Only when his body is returned are they able to satisfy their longings (24. 719-775).

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[28] Pantelia, "Spinning and Weaving," 127.

[29] Pantelia, "Spinning and Weaving," 127. "When the suppliancy itself is the main event of a scene, when its outcome is momentous, the ceremony is described fully. Each gesture is depicted, or the inability to perform any is remarked upon, and the speeches of both parties are given. Thetis before Zeus or Priam before Achilles are scenes in which the primary focus is upon the supplication itself."

[30] Victoria Pedrick, "Supplication in the Iliad and the Odyssey." *Transactions of the American Philological Association* 112, (1982) 144.

[31] See note 15.

Priam's humility contrasts sharply to Achilles' pride and refusal to subordinate himself before another. But seeing a great king kneeling vulnerably before him due to the loss of his son moves Achilles to pity. Achilles may also be moved because, in contrast to Agamemnon's haughty bribery of gifts, Priam does not intend to bribe, per se, but only ransom his son, as would be expected, and hopes rather to convince him through emotional means to comply by reminding him of his own father.[32] Priam succeeds in stirring Achilles' emotion: ὣς φάτο, τῷ δ᾽ ἄρα πατρὸς ὑφ᾽ ἵμερον ὦρσε γόοιο (24.507) "Thus he spoke, and he aroused a desire of weeping for his father." Achilles pushes him away, indicating that he need beg no longer, and together they weep for their loved ones (24.508-512). In the privacy of his shelter, Priam's words have opened an outlet for Achilles' grief, allowing him to weep in full, until he αὐτὰρ ἐπεί ῥα γόοιο τετάρπετο δῖος Ἀχιλλεύς,/ καί οἱ ἀπὸ πραπίδων ἦλθ᾽ ἵμερος ἠδ᾽ ἀπὸ γυίων (24.513-514) "But when heavenly Achilles had delighted in sorrow, and the longing went from his mind and limbs." Priam has also caused Achilles to experience regret for not being home to care for his father in his old age (24.540-43).

Through Achilles' interactions with Priam, a different side of the great hero becomes more evident; he is now one who can show respect for another, particularly an enemy, and feels a sense of obligation toward his loved ones, both Peleus and Patroclus. Achilles, so scornful of others, has a newfound respect for Priam, and he marvels in wonder at the old man's courage and determination in approaching him (24.480-483; 517-521). He grants Priam's request, but his usual toughness is evident as he warns him not to provoke his emotions further: τὼ νῦν μή μοι μᾶλλον ἐν ἄλγεσι θυμὸν ὀρίνῃς,/μή σε γέρον οὐδ᾽ αὐτὸν ἐνὶ κλισίῃσιν ἐάσω/ καὶ ἱκέτην περ ἐόντα, Διὸς δ᾽ ἀλίτωμαι ἐφετμάς (24.568-570) "Now may you not stir my heart in pain more, lest I might not allow you yourself, old man, in my shelter although being a suppliant."

Priam ensures his request is heard, but before they can discuss the details in full, they must observe guest-host obligations. The men must sit, eating and drinking to satisfaction before proceeding. The extent of this hospitality is remarkable: Achilles has a completely new meal prepared, even though he had been dining at the time of Priam's arrival (24.475; 621-627). It is specifically notable that Achilles adheres to the practice of xenia even for the king of his enemies. It shows the amount of respect he maintains, as well as the value placed on ritual, since the ritual must not be ignored and must be performed before discussion can continue. Priam himself exhibits a great deal of trust by eating and drinking in Achilles' presence without fear of an attack of rage overpowering him. Only after they have eaten their fill and are left gazing at one another in continued amazement and respect, can they

[32] Pedrick, "Supplication in the Iliad," 129-130.

complete their arrangements (24. 628-634). At this time, after they have completed the ritual, Priam requests a space to sleep and Achilles proposes to hold off war until the end of Hector's funeral. They settle all loose ends, with Achilles making arrangements for Priam to rest concealed from detection, and the two having established a twelve day armistice (24. 635-670).

Private spaces, as this essay endeavors to show, are noteworthy due to the role they perform in the epic. What occurs in their context, in comparison to what takes place in public scenes, offers insight into the inner lives of the epic's characters, pointing out values and customs that are important to them. Achilles, for example, values individualism, honor, glory, and pride, as he expresses both in public and in private, but in private scenes he also lets a softer side show, in which he allows himself to be vulnerable and more open and loving to others. In Priam, readers discover the dedication of a great king, who is willing to humble himself and risk his own life because the burial of his son is more important than his pride. All these private scenes cultivate self expression, but in various ways. The women in the epic, specifically Andromache and Helen, are safest to express their true sentiments and fears in private, as a result of differences in gender roles. Their feelings surface especially through their creativity in weaving. For the men, who are freer to voice their opinions out loud, privacy offers an opportunity for in-depth discussion and the environment to persuade on a more profound level.

The scenes exhibit abstract values and concrete practices that are held dear both to the individuals within them and to society as a whole, among these, friendship and paternal love, xenia, supplication, and funeral rituals. They also indicate, based on the differences in attitude between Achilles and his peers, that the society depicted in the *Iliad* valued the good of the community over the individualism and isolation Achilles maintained. Finally, these scenes, since they provide an environment in which characters are more willing to disclose their true feelings than they are in public, are often the most emotionally moving and pathos-invoking of the epic, other than, perhaps, public death scenes. In them are found men moved to tears, women worrying for their families and their futures, kings reduced to beggars, individuals making choices that will harm them in the future, and all characters at times expressing a love, or at least respect, for one another that surpasses self-absorption and greed.

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Social Comparison on Facebook:
The Effects on State Self-Esteem and Mood

Emily Shultz

Abstract

Facebook presents a virtual venue for social comparison. Several studies have discovered that frequent Facebook use is correlated with low self-esteem.[1] It was hypothesized that after viewing the upward comparison profile, low self-esteem individuals (Low SEs) would have low state self-esteem and experience negative affect while High SEs would not be influenced. Participants viewed one of two Facebook profiles differing only by the photographs, to create downward (individual pictured alone) and upward comparisons (individual pictured with others). A 2 (High vs. Low SE) x 2 (Upward vs. Downward social comparison) ANOVA indicated that there were significant differences in Current Thought Scale (CTS) scores and negative affect scores between High and Low SE groups, but no significant differences by profile type, with Low SEs experiencing lower CTS scores and more negative

[1] See References, 2, 12, and 19.

affect than High SEs. Another finding was a negative correlation between the Facebook Intensity scale (FBI) and the social subscale of the CTS (r = -.19, p = .034). Limitations of this study include a fairly small sample size and the effectiveness of the Facebook profile to create a meaningful social comparison. The rapid evolution of social media and its influence on features such as self-esteem remains an important but complex area of study.

Introduction

Self-esteem, a person's overall self-evaluation or sense of self-worth, is a vital aspect of a person's identity because it contributes to how he or she responds to everyday events and how he or she evaluates him- or herself in comparison to others.[2] A related concept, social comparison, is the evaluation of one's own behavior, abilities, expertise, and opinions by comparing oneself to others.[3] Social comparison can either be upward or downward, depending on the reference of comparison; upward comparisons tend to threaten self-esteem because the individual is comparing to someone whom they consider better than themselves, while downward comparisons protect self-esteem.[4] Social comparison studies have confirmed that there are differences in how individuals with high and low trait self-esteem (High SEs and Low SEs) maintain their state self-esteem, which is a temporary fluctuation in self-esteem.[5] When unfavorable social comparisons are relatively mild, both high and low self-esteem individuals are able to raise their self-evaluations. However, only individuals with high trait self-esteem can effectively raise their own self-evaluations after particularly unfavorable upward comparisons.[6] Self-esteem can be evaluated on the basis of various factors of self-identity, such as appearance, relationships, or performance.[7] It is expected that if one's self-esteem is contingent on a specific factor, then experiencing positive and negative events related to this factor would lead to changes in state self-esteem.[8]

[2] See Ref., 13.

[3] See Ref., 6.

[4] Ibid.

[5] See Ref., 9.

[6] See Ref., 17.

[7] See Ref., 2.

[8] Ibid.

Facebook, a Social Networking Site (SNS), has presented a virtual venue for self-presentation and social comparison. Since its founding in 2004, it has become the most popular SNS with over 1 billion active monthly members.[9] The site allows members to communicate with friends and create a profile displaying personal information in the form of statuses, photographs, and comments. The virtual SNS creates a controlled setting for individuals to express their ideal selves, and congruent with this idea, previous research reports that profiles contain mainly self-promotional content.[10] Researchers in psychology, Gonzales and Hancock, investigated how viewing one's own Facebook profile affects self-esteem.[11] Contrary to previous findings on Objective Self-Awareness in which self-esteem was diminished after self-evaluation, Gonzales and Hancock found that participants' self-esteem was enhanced after viewing their Facebook profiles. The authors believe that participants engage in selective self-presentation on Facebook, thereby explaining the increase in self-esteem after viewing the ideal self they have created on their own profile.

While Facebook users report spending some time maintaining their own profile, they also report that the majority of their time on the site (69.75%) is spent browsing others' profiles. Pempek, Yermolayeva, and Calvert, researchers in psychology, asked college students to complete a diary-like measure each day for a week regarding their Facebook use.[12] They found that students spent more time browsing others' profiles than actually posting content or directly interacting with peers. They also discovered that students communicated through a one-to-many style where they created and displayed content intended for their friends, broadcasting various forms of information.

Given the amount of browsing that they do, students may compare themselves to others' ideal selves as they are displayed in their profiles. which could affect self-esteem. Several studies have explored the relationship between self-esteem and Facebook use, and these studies have found that frequent Facebook use is correlated with low self-esteem.[13] Psychologists Valkenburg, Peter and Schouten explored the relationship between social networking use, adolescents' well-being, and social self-esteem by collecting information on the frequency of logging onto

[9] See Ref., 5.

[10] See Ref., 12.

[11] See Ref., 7.

[12] See Ref., 14.

[13] See Ref., 3, 12, and 19.

the site, frequency and tone of friend reactions and reported social self-esteem.[14] They measured social self-esteem as adolescents' evaluation of their self-worth or satisfaction with three dimensions of themselves: physical appearance, romantic attractiveness, and the ability to form and maintain close friendships. The frequency of Facebook use had an indirect impact on adolescents' social self-esteem and well-being, depending on positive or negative Facebook comments that they received from their peers. Positive feedback on profiles was correlated with enhanced social self-esteem and well-being, while negative feedback was correlated with decreased self-esteem and well-being.

Consistent with these findings, Mehdizah, a researcher in psychology, found that low self-esteem was associated with frequent Facebook use and self-promotional content in the main photo section on profiles.[15] Mehdizah administered the Rosenberg Self-esteem Scale, gathered information on frequency of Facebook use, and rated the participants' profile pages with Likert scales for self-promotional content. Self-promotional content was identified as written or visual information that seemed to emphasize one's own positive qualities. She coded five features of the Facebook profiles: the About Me section, the Main Photo, the first 20 pictures on the Photos of Me section, the Notes section, and the Status Updates section. Mehdizah found that self-esteem was correlated only with the Main Photo section because self-promotional content in Main Photos is normative, while self-enhancing comments are less likely in other sections of the profile.

Psychologists Ellison, Steinfield and Lampe similarly found that low self-esteem was correlated with intensive Facebook use, which was determined with the Facebook Intensity Scale they developed.[16] The scale asks questions about the frequency of an individual's Facebook usage, such as the number of log-ins per day. Furthermore, they suggested that low self-esteem individuals may perceive positive benefits from the social opportunities provided by Facebook and therefore be more likely to utilize the SNS. In a follow-up study, Steinfield, Ellison, and Lampe collected data at two points, a year apart.[17] They discovered that participants reported spending significantly more time per day actively using the Internet between 2006 and 2007. They also found that users with lower self-esteem gained more from their Facebook usage than higher self-esteem individuals. Low self-esteem individuals may use Facebook more frequently because it may be perceived as a

[14] See Ref., 20.

[15] See Ref., 12.

[16] See Ref., 3.

[17] See Ref., 19.

less threatening social venue due to its virtual nature and ability to control features of self-presentation.

As previously discussed, self-esteem can be contingent on specific factors, such as appearance, performance and relationships. Psychologists Stefanoe, Lackaff and Rosen explored how varying contingencies of self-worth explain online behavior.[18] Participants in the study completed the Contingencies of Self-Worth scale developed by Crocker and Wolfe, which measures seven domains of contingencies for self-esteem.[19] Stefanoe et al. divided these contingencies into two separate factors, private and public sphere. Private sphere contingencies consisted of family, virtue and God's love and were inversely related to time spent online. Public sphere contingencies included competency, competition, and approval from generalized others. These factors explained online photo sharing behaviors. Additionally, photo-sharing behavior online had the strongest correlation to the appearance contingency. Their research demonstrates the importance of photo sharing on Facebook, especially if self-esteem is dependent on public sphere contingencies.

While individuals with low self-esteem may choose to use Facebook more frequently, some research suggests that Facebook use may damage self-esteem when it is contingent on a particular factor. Researchers Pettijohn II, LaPiene, Pettijohn, and Horting designed a study to test the relationship between the intensity of Facebook use and a specific contingency of self-esteem called Friendship Contingent Self-Esteem,[20] using the Friendship Contingent Self-esteem Scale.[21] Previous research has shown that if self-esteem is contingent on a specific factor, especially an external factor that is not directly controlled by the individual, then the individual is more likely to express depressive symptoms.[22] Furthermore, the FCSES has previously been correlated with depressive symptoms.[23] Pettijohn II et al. found a positive correlation between Facebook intensity and friendship contingent self-esteem, in line with other previous research on low self-esteem and Facebook. The authors suggest that increased Facebook use may lend individuals to fluctuating self-esteem levels and towards rumination, which is a depressive symptom. This could have serious implications for individuals with friendship contingent self-esteem who fre-

[18] See Ref., 18.

[19] See Ref., 2.

[20] See Ref., 15.

[21] See Ref., 1.

[22] See Ref., 2.

[23] See Ref., 1.

quently utilize Facebook and other SNSs, since posts from their friends may cause a fluctuation in self-esteem and even cause depressive symptoms.

Other research suggests that more time spent on Facebook may be related to poor emotional and academic adjustment in freshman and sophomore college students. Psychologists Kalipidou, Costin and Morris investigated the relationship between Facebook, self-esteem and college adjustment in undergraduate students.[24] They discovered that the intensity of Facebook use, including time and emotional involvement, was related to lower self-esteem. The authors also found that the number of Facebook friends was negatively associated with emotional and academic adjustment for first-year students, yet was positively related to social adjustment and attachment to the institution for upperclassmen. Underclassmen spend more time on Facebook, yet upperclassmen have more Facebook friends. Their research suggests that upperclassmen, who are more socially adjusted to the college environment and use Facebook to more effectively connect with peers than underclassmen.

Since students spend a majority of the time on Facebook browsing their friends' content, they may engage in a reflective process similar to social comparison. Individuals typically present their ideal selves on their profiles. Therefore, as a Facebook user compares his/herself to others' ideal selves as displayed on their profiles, they may experience negative affect and a decline in their state self-esteem. Previous research has focused mainly on correlational research, and, consequently, a causal relationship between low self-esteem and Facebook use cannot be determined. It is unclear whether Low SEs utilize Facebook more frequently because of the social interactions it provides or Facebook use causes lower self-esteem because of social comparison.

The goal of the present study was to examine the impact of viewing different types of information on Facebook profiles on state self-esteem and mood. While there have been several correlational studies that have explored Facebook and self-esteem, the present study experimentally manipulated Facebook profiles as upward, downward, and neutral social comparisons to measure the effects on participants' state self-esteem and initial mood. It was expected that Low SEs would experience a decline in state self-esteem for the upward comparison profile, while for downward comparison profiles they would experience an increase in self-esteem. Related to self-esteem fluctuations, it was hypothesized that upward comparisons would elicit negative affect while downward comparisons would elicit more positive affect. It was predicted that the neutral profile would not cause either group to fluctuate in state self-esteem.

[24] See Ref., 10.

Method

Participants

The sample consisted of 130 undergraduate college students recruited using the Xavier University Psychology Department Participant Pool; 64.3% were female and 81% were Caucasian. A college student sample is preferable for this type of study because undergraduate college students frequently use Facebook. In fact, 94.6% of the respondents reported currently having a Facebook account. More detailed information about the sample is provided in Table 1.

Materials

Rosenberg Self-Esteem Scale

The Rosenberg Self-esteem Scale[25] is a 10-item Likert scale with each item answered on a four-point Likert scale (0 = *strongly disagree*, 3= *strongly agree*). It is widely used to measure trait self-esteem. The test has high validity with test-retest correlations are typically in the range of .82 to .88, and Cronbach's alpha for various samples are in the range of .77 to .88. Sample items include "On the whole, I am satisfied with myself" and "At times, I think I am no good at all."

Facebook Profiles

The researcher created the Facebook profiles using a Power Point template in order for the profiles to look as realistic as possible. The three Facebook profiles differed only by the content of photographs lining the top of the profile page. It was determined to focus on the photographs on the profile since a previous study conducted by Pempek, Yermolayeva, and Calvert, reported that the top activity performed each week was looking at other profiles (69.57%) and the second most frequent activity was looking at photos (58.70%).[26] Furthermore, in a study

[25] See Ref., 16.

[26] See Ref., 14.

conducted by Ellison, Steinfield and Lampe, over 70% of participants responded that their profile contains a picture with them and others.[27]

The downward comparison profile showed the individual alone, the upward comparison profile pictured the individual with others, and the neutral profile displayed photographs of nature neutral photographs. This manipulation was intended to illicit differing types of social comparison based on participant's perceptions of the individual's sociability. The other content on the profile page that remained consistent for each condition was intended to be neutral to isolate the effects of the photographs on self-esteem, yet were selected in order to be as realistic to Facebook as possible. The profile included the individual's school affiliation (Xavier University), place of employment (Coffee Emporium), year of graduation, status updates that reflected typical college activities (studying, watching the game, and home for the weekend), and "likes" (Xavier University, Student Activities Counsel, Music and Travel). Before the Facebook page appeared, participants were instructed to imagine that they were using their own Facebook and clicked on a friend's profile. They were told to study the following profile and be prepared to answer questions.

PANAS-X

Participants' current mood, or their state affect, was measured using the Positive Affect Negative Affect Schedule-Expanded Form.[28] This is a 60-item scale that has participants indicate the extent to which they currently feel a certain way (sample items: "angry", "sad", "excited") on a five-point Likert scale (1 = *very slightly or not at all*, 5 = *extremely*). The PANAS-X includes a 20-item general dimension scale (10 negative affect, 10 positive affect), as well as several other divisions of emotion with various adjectives to describe each (e.g. basic negative emotion scales: fear, hostility, guilt and sadness and basic positive emotion scales: joviality, self-assurance, and attentiveness). The alpha reliabilities for both scales are high, generally ranging from .83 to .90 for Positive Affect, and from .85 to .90 for Negative Affect.

[27] See Ref., 2.

[28] See Ref., 21.

Current Thoughts Scale

Participant's state self-esteem, a measure of how they feel about themselves in the moment, was assessed using the Current Thoughts Scale.[29] This 20-item scale asks participants to indicate on a five-point Likert scale the degree to which each of the items are true for them at the present moment. The scale incorporates three factors of self-esteem: performance self-esteem, social self-esteem and appearance self-esteem. The scale has acceptable internal consistency (alpha = .92) and it is responsive to temporary changes in self-evaluation. Sample items include "I feel confident about my abilities" and "I am worried about whether I am regarded as a success or failure."

Social Self-Esteem Inventory

The Social Self-Esteem Inventory[30] was administered to assess social self-esteem. The 30-item scale asks participants to rate various items concerning social situations on a six-point Likert scale on the degree to which they are similar (1 = *completely unlike me*, 6 = *exactly like me*). Lawson et al.'s research demonstrated that the test-retest reliability for a university sample across a one month period was high (.88). Sample items from this scale include, "I am socially effective" and "I make friends easily."

Facebook Intensity Scale

The Facebook Intensity scale[31] was also used to gather information about how often Facebook is used and the number of Facebook friends. It is an eight-item scale where participants use a five-point Likert scale to indicate the extent to whether they agree with the statements about Facebook behaviors. Sample items include "Facebook is part of my everyday activity" and "Approximately how many total Facebook friends do you have?"

[29] See Ref., 8.

[30] See Ref., 11.

[31] See Ref., 3.

Procedure

Participants completed the study online via the website Survey Gizmo in conjunction with several other unrelated studies. The Rosenberg Self-esteem Scale was completed first to assess whether participants were high or low in trait self-esteem. Survey Gizmo then randomly assigned participants into one of three conditions, which determined which type of Facebook profile he or she would view. Manipulation check questions were developed in order to ensure that participants thoroughly read the profile. In order to determine invalid data for participants who did not adequately view the stimuli material of the Facebook profile, four manipulation check questions tested participants' knowledge of the individual described in the profile. Participants were qualified on the basis of two questions out of the four being answered correctly. Out of 133 participants, the data of three participants were considered invalid. There were also four questions included in the manipulation check to determine initial perceptions of the individual in the profile. These questions asked participants to rate the individual on several characteristics on a 5-point Likert scale from *strongly agree* to *strongly disagree* and included questions such as "Michelle is a good student" and "Michelle has many friends."

The PANAS-X was then administered in order to determine the initial mood of the participant. The Current Thoughts Scale and the Social Self-esteem Inventory were completed to assess state self-esteem following the social comparison. A variety of demographic information was collected at the end of the study, including information about participant's Facebook use, such as why they use the site and how often they use it.

Results

The frequency of Facebook use was high in the sample with 94.6% of students reported having a Facebook account. 84.6% of the students reported that they had been a member on Facebook for greater than three years. The majority of participants also reported that they check their Facebook account daily (68.3%). On average they logged onto Facebook1-3 times per day (60.6%) and spent an average of five minutes per log-in (49.1%). Detailed information about the frequency of Facebook use for this sample is included in Table 2.

Students utilize Facebook for various reasons and the most common reasons selected for using Facebook on a regular basis are listed in Table 3. Table 4 displays the mean scores of the measures used in the study, the Rosenberg Self-

esteem Scale, Current Thoughts Scale, Social Self-esteem Inventory and Facebook Intensity Scale.

One-way ANOVAs on the manipulation check questions asking about Michelle's level of sociability were used to determine if the profiles were perceived as different. A one-way ANOVA indicated that participants rated the upward vs. downward profiles as reflecting statistically significantly different levels of sociability (F (1) = 22.70, p = .001). However, the neutral profile was not perceived as different from the downward comparison profile. It was determined that the "neutral" profile, which was included in the study as a control group, in fact was not perceived as neutral by the participants. Therefore, the neutral profile was excluded from subsequent analyses.

To sort participants on the basis of trait self-esteem to complete the rest of the analyses, quartiles were computed to determine the lower and upper extremities of the Rosenberg self-esteem scores (a total score of 30). The top 75% of the sample scored above 25 (n = 23) and were considered High SEs, while the bottom 25% of the sample scored below 17 (n = 23) and were considered Low SEs.

In order to further analyze the differences in the frequency with which High and Low SEs utilize Facebook, chi-squares and t-tests were computed. Chi-square analyses indicated that Low SEs spend significantly more time per Facebook log-in than High SEs (p = .038). The results of the chi-square analysis are displayed in Figure 1. This was the only statistically significant difference between self-esteem groups based on the various descriptive information gathered regarding Facebook use. Additionally, independent sample t-tests indicated no significant differences in FBI scores (t (65) = .42, p = .68), even though Low SEs scored slightly higher on the measure (M = 25.12, SD = 7.25) than High SEs (M = 24.31, SD = 8.39).

A series of 2 (High vs. Low SE) x 2 (Upward vs. Downward social comparison) ANOVAs were computed in order to determine differences between the groups in scores on the Current Thought Scale, Social Self-esteem Inventory, and PANAS-X after viewing the Facebook profile. There was a significant difference in CTS scores between High and Low SE groups (F (1) = 68.15, p = .001), but there was no significant difference by profile type, (F (1) = 1.26, p =.27), nor was there an interaction effect between profile type and trait self-esteem (F (1) = .133, p = .72). Table 5 presents the means of the CTS scores between-groups. Similarly, a 2x2 ANOVA demonstrated that there were significant differences in Social Self-esteem Inventory scores between the High and Low SE groups (F (1) = 42.77, p = .001), yet not on the basis of profile type (F (1) = .60, p = .41). There were significant differences in negative affect between High and Low SEs (F (1) = 4.50, p = .04) with

Low SEs experiencing more negative affect than High SEs. Table 1 displays the marginal means between High and Low SE groups for negative affect.

Table 1: Race, gender and student status demographic information

Category		Percentage
Race	Asian/Pacific Islander	4.80%
	Black/ African-American	8.30%
	Caucasian	81.00%
	Hispanic	2.30%
	Other/ Multi-racial	2.40%
	Decline to respond	1.20%
Gender	Male	35.70%
	Female	64.30%
Student Status	Freshman	10.70%
	Sophomore	14.30%
	Junior	52.40%
	Senior	20.20%
	Non-traditional student	2.40%

Table 2: The frequency of Facebook (FB) use

Category		Percentage
Frequency of checking FB	Hourly	13.80%
	Daily	68.30%
	Few times per week	14.60%
	Few times per month	3.30%
Log-ins per day	3-Jan	53.80%
	8-Apr	20.00%
	15-Sep	7.50%

	20-30	3.70%
	Always logged-in	15.00%
Time spent per log-in	5 minutes	49.10%
	15 minutes	41.80%
	30 minutes	6.40%
	1 hour	2.70%

Table 3: Percent of student responses regarding why they use Facebook on a regular basis, they were instructed to check all that applied

Category	**Percentage of responses**
Entertainment	81.50%
Procrastination	73.80%
Communicating with friends	87.70%
Communicating with family	64.60%
Re-contacting old friends	56.90%
Employment networking	3.80%
Advertisement and promotions	3.10%
Event planning	25.40%
Apps and Gaming Platform	3.80%

Table 4: Mean scores on Rosenberg Self-esteem Scale, Current Thought Scale, Social Self-esteem Inventory and Facebook Intensity Scale

Measure	**Mean (SD)**
Rosenberg Self-esteem Scale	20.58 (5.28)
Current Thought Scale	68.70 (12.3)
Social Self-esteem Inventory	131.41 (24.35)
Facebook Intensity Scale	24.88 (7.33)

Table 5: 2x2 ANOVA results by profile type (Downward vs. Upward profiles) for the Current Thought Scale (CTS), Social Self-esteem Inventory (SSE), Positive Affect (PA) and Negative Affect (NA). The table displays the means and standard deviation for each profile type.

Scale	Downward	Upward	df	F	p
CTS	69.40 (14.84)	67.33 (14.29)	1	1.26	.269
SSE	131.88 (29.67)	138.29 (26.41)	1	.60	.441
PA	24.64 (7.13)	27.57 (9.61)	1	1.42	.240
NA	13.44 (4.68)	16.86 (8.44)	1	3.51	.068

Table 6: 2x2 ANOVA results by trait self-esteem (Low vs. High SE) for the Current Thought Scale (CTS), Social Self-esteem Inventory (SSE), Positive Affect (PA) and Negative Affect (NA). The table displays the means and standard deviation for each self-esteem type.

Scale	Low SE	High SE	df	F	p
CTS	57.26 (9.79)	79.65 (8.38)	1	68.15	.001
SSE	115.04 (23.72)	154.57 (15.38)	1	42.77	.001
PA	21.78 (6.77)	30.17 (7.82)	1	14.08	.001
NA	16.96 (7.62)	13.04 (5.36)	1	4.50	.040

Table 7: Correlations among the scales used in the study

Scales	1	2	3	4	5	6
1. Rosenberg						
2. CTS	.76**					
3. CTS (Social)	.54**	.78**				

4. SSE	.58**	.51**	.43**			
5. FBI	-0.06	-0.13	-.19*	0.05		
6. NA	-.37**	-.50**	-.50**	-.24**	0.02	
7. PA	.44**	.24**	0.04	.33**	-0.02	0.07

Discussion

The current study experimentally manipulated Facebook profiles to reflect different levels of sociability to determine if viewing Facebook profiles contributes to state self-esteem and mood. The results indicate that High and Low SEs differ in how they maintain their self-esteem after viewing a Facebook profile, but there was no indication that the type of comparison (upward or downward) affected the individual's state self-esteem significantly. Consistent with past research, trait self-esteem significantly affected individuals' state self-esteem.[32] Additionally, trait self-esteem influenced the amount of negative affect that individuals experienced after viewing a profile, with low SEs experiencing more negative affect than high SEs.

This study also collected information about how and why students use Facebook. This study discovered that the majority of students checked their Facebook account daily and spent an average of five minutes per log-in. This information indicates that Facebook has been integrated into the daily routine of college students. Previous research has varied in the amount of time that students report spending on Facebook daily from approximately 30 minutes[33] to 60-120 minutes.[34] While both of the previous studies were conducted with undergraduate students, perhaps the frequency of Facebook use varies based on the sample (e.g., private vs. public universities, students' ages, and students' amount of free time). Additionally, since 2009, there have been several other SNSs that have become popular and widely utilized by students, perhaps as a substitute for Facebook (e.g. Twitter and Instagram).

[32] See Ref., 9.

[33] See Ref., 14.

[34] See Ref., 10.

These factors should be explored in future research to identify the preference of each SNS and the amount of time being spent on each.

The present study suggests that the current Facebook Intensity Scale needs to be updated to incorporate a wider range of Facebook use. The mean score on the Facebook Intensity Scale, which was widely used in previous research, was 24.88 out of a score of 30, with a standard deviation of 7.33. The scale should be revised in order to give a more accurate representation of an overall increase in Facebook use across the undergraduate student population, perhaps by including more questions on a wider range of response options (e.g. 7-point Likert-scale rather than a 5-point). Additionally, since 84.6% of the students had been a member on Facebook for greater than three years, nearly half of students (46.2%) had between 400 and 800 Facebook friends, while in previous studies individuals reported an average of 200-250 Facebook friends.[35] One question on the Facebook intensity scale asks about the number of Facebook friends, which may not be an indicator of frequency of Facebook use but rather an indication of how long the individual has been a member since the social network size tends to grow as time progresses.

Correlational analyses indicated several notable relationships among the scales utilized in the study. These correlations emphasize the reliability of the measures, since several of them measure self-esteem. Table 5 displays the correlation matrix. Consistent with previous research, there was a correlation between self-esteem and the frequency of Facebook use.[36] In past research, Mehdizah found a negative correlation between self-esteem, as measured by the Rosenberg trait self-esteem scale and the number of times Facebook was checked per day ($r = -.458$, $p < .01$). Similarly, in the present study there was a small but significant correlation between the social subscale of Current Thought Scale and the frequency of Facebook use as measured by the FBI. This indicates that Low SEs may be more attracted to the social opportunities that Facebook provides. Facebook may be useful for Low SEs because it may be a less intimidating venue for what Steinfeld, Ellison and Lampe call "bridging social capital," which is the benefits of a heterogeneous network of weak ties.[37] Facebook provides a virtual venue for expanding close personal networks by allowing individuals more opportunities to communicate through features such as profile pages, status updates and messaging. Additionally, information found through browsing profiles may be used to initiate face-to-face communication.

[35] Ibid.

[36] See Ref., 12.

[37] See Ref., 19.

Limitations

The present study is limited by its fairly small sample size. While 130 participants completed the study, only the upper and lower extremities of trait self-esteem were included in several of the analyses. Future research should utilize a larger sample size in order to increase statistical power. Another limitation of this study was the effectiveness of the Facebook profile to create a meaningful social comparison. Although respondents rated the upward vs. downward profiles as reflecting statistically significantly different levels of sociability ($F(1) = 36.92$, $p = .001$), the neutral profile was not perceived as being significantly different than the downward profile. This suggests that either the neutral profile designed was not effective or that it is not possible for a Facebook profile to be truly neutral, since the nature of profiles is to elicit perceptions and judgments about the featured individual. Future research might aim to more realistically replicate the experience of Facebook browsing by incorporating a social connection between the Facebook user and the individual in the profile. This type of social connection may be necessary for a relevant social comparison.

While efforts were made to utilize effective measurements of trait self-esteem and state self-esteem in this study, a pre- and post- test design using the same state self-esteem measure may be a more accurate indicator of fluctuations in state self-esteem. Furthermore, the long-term effects of Facebook use on self-esteem cannot be understood from a single study. It would be valuable to conduct a longitudinal study of Facebook use and self-esteem.

Conclusion

With over 1 billion active Facebook members the widespread use of Facebook makes this topic of study both interesting and pertinent. While there are various reasons that users claim they utilize SNSs, this study explores the possibility that Facebook browsing can be potentially detrimental to one's state self-esteem and mood. The exploratory nature of the study provides an introduction to this relationship, but is by no means conclusive. The effect of SNSs on self-esteem continues to be a relevant, yet complex area of study.

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Hospital Charge Function Estimation and Study of Some Interactions:
A Case Study of Diabetics

Allison Smith

Abstract

In this study, we have proposed the backward elimination regression method to model hospital "charges" for diabetic patients. Although charges and cost functions are related, literature shows that both economic theory-based methods and regression-based methods have been employed in modeling the cost function (Business Company's interest). We have developed an interactive multivariate regression method for modeling charges (Patients' interest), as charge is a more "natural" function of the demographics of patients. Moreover, various first order interactions among explanatory variables of hospital charges for these patients have been investigated.

Introduction

The recent trend in hospital businesses shows that hospitals place importance on providing pricing information to the public. In order to give consumers the information they are looking for, hospitals are allowing users to easily access charge information for any type of inpatient hospitalization. The primary concern for a patient is always the hospital's "charges," i.e., the amount the hospital charges a patient or his/her insurer for hospital services. On the other hand, hospitals are interested in their cost and profits.

There is a lot of literature on the estimation of cost and profit functions based mainly on economic methods and statistical (regression) methods. These methods have their own advantages and disadvantages, and there is no single method that

is predominantly accepted.[1] Johnson has developed and applied some cost indices based on regression methods. When the objective is to predict the cost for a single patient, the literature suggests that one should choose a regression model based on the quality of its predictions.[2] The objective of this study was to estimate a charge function in order to determine the charge for a patient with diabetes.

Among regression methods, the most studied model is:

$$\text{Cost} = f(\text{RCC}) + e_i,$$

where e_i is the residual component of the model, which is assumed to be normally distributed with mean zero and some constant standard deviation. The most studied forms of the function "f" are the lognormal and polynomial functions.[3]

The ratio of cost-to-charge (RCC) is defined as a ratio of what a day in the hospital costs and what the hospital charges (i.e., the cost divided by what the hospital charges); the closer a RCC is to 1, the less difference there is between the actual costs and the hospital's gross charges. The RCC varies from state to state. For example, the average RCC in California is 0.328, which means hospitals there are charging roughly three times their costs.[4]

Shwartz et al. has found that RCC-calculated costs are not a good basis for determining the costs of individual patients[5]; however, RCC performs better when examining average costs per diagnosis-related group (DRG). The study reveals that RCCs are more reliable when comparing the relative cost of patients in a DRG in one hospital to the average cost of patients in the same DRG in a group of hospitals. Over the past 30 years, there has been a large increase in the use of sophisticated hospital cost accounting and management information systems. In most cases, costs in these systems are estimated using relative value units (RVUs). Under the RVU approach, each item consumed in a department is assigned a value that reflects its relative costliness compared to a departmental baseline cost. The

[1] See References, 5.

[2] See Ref., 1.

[3] See Ref., 1.

[4] See Ref., 7.

[5] See Ref., 6.

RVU method is generally considered more accurate than the RCC method because it directly incorporates relative cost information on each item consumed.[6]

It is important to realize that these estimates are just estimates, and charges are the same for all patients. However, patients' financial responsibilities may vary, depending on payment plans negotiated with individual health insurers, etc. Professional fees for physician services associated with surgeons, radiologists, pathologists, anesthesia administrators and others are also not reflected, and will be billed separately by the physician. This study has proposed a special regression method of estimating the charge value for the patients of diabetes. The method developed can easily be extended to any disease, provided that the data is available.

Diabetes Statistics

Diabetes is a chronic disease that affects 25.8 million Americans per year (23.6 million in 2009).[7] It results from a high level of glucose in the body and can lead to serious complications such as heart attack, stroke, blindness, and limb loss. This can result in time in the hospital and potentially incur great costs for diabetes patients. In 2008, the mean cost of hospitalization for patients with diabetes was $10,937, compared to $8,746 for patients without diabetes.[8] According to Kaiser Health, the disease costs Americans $83 billion a year in hospital bills, accounting for 23% of total hospital spending.[9] There are two types of diabetes: Type 1, which is most often found in children, and Type 2, which is most often found in older people and caused by poor health habits. 95% of Americans with diabetes have Type 2, comprised mostly of the elderly, obese, and a growing number of children.[10] These types of patients rely heavily on Medicare and Medicaid, as shown in many studies.

In a 2007 study conducted by the American Diabetes Association, it was found that the annual cost of diabetes in the U.S. exceeds $174 billion ($116 billion in excess medical expenditures and $58 billion in reduced national productivity). Approximately $1 in $10 health care dollars is accredited to diabetes.[11] In this study, we examine the contributing factors to the total charge for diabetes patients.

[6] See Ref., 2.

[7] See Ref., 8.

[8] See Ref., 4.

[9] See Ref., 5.

[10] See Ref., 3.

[11] See Ref., 9.

Motivation for the Study

There are several reasons why diabetic patients face such steep costs. First of all, people with diabetes are encouraged to check their blood sugar every day; this requires buying a meter and test strips, which can cost thousands of dollars annually. Furthermore, people with Type 1 diabetes need insulin every day, which requires either insulin shots or an insulin pump. Many diabetic patients also take one or more medications to help regulate their blood glucose.[12] This is not to mention any time a person with diabetes may have to visit the hospital. A hospital visit could be for anything from an imbalance in blood glucose to something as severe as a heart attack or stroke.

Since there is such a wide range of people with diabetes, demographic variables differ considerably. However, there are some common risk factors for the disease. These include family history of diabetes, lack of physical activity, being overweight or obese, being over age 40, and being African American, Native American, Hispanic, Asian American, Asian Indian or Pacific Islander. Diabetes without treatment can result in serious health problems such as high blood pressure and cholesterol. Though managing blood glucose can reduce the risk of complications, high blood glucose damages one's blood vessels over time. This damage can lead to heart attack, stroke, kidney damage, blindness, nerve damage, and risk of limb loss.[13] The great risk of hospitalization for diabetic patients gives reason to devise a mathematical model that can predict the charge for a patient even before he or she goes to the hospital.

Methodology

The data used for this project was obtained from the Nationwide Inpatient Sample (NIS) on hospital admissions of patients with diabetes in 2009. The NIS is one of a family of databases that are part of the Healthcare Utilization Project (HCUP), a Federal-State-Industry partnership funded by the Agency for Healthcare Research and Quality (AHRQ). The NIS is the largest all-payer inpatient care database in the United States and is used to identify, track, and analyze national trends in health care use, access, charges, quality and outcomes. The 2009 NIS contains all discharge data from 1,050 hospitals in 44 states.

[12] See Ref., 10.

[13] See Ref., 10.

For this study, only admissions to the hospital with a primary diagnosis of diabetes were observed. This includes three diagnosis related groups (DRGs): 637, 638 and 639. A DRG of 637 indicates diabetes with major complications/comorbidities, 638 with complications/comorbidities and 639 without complications/comorbidities. Crosstabulations, correlation analysis, and analysis of variance (ANOVA) were used to compare important variables against one another to find which were significant in explaining variation in the incidence of diabetes. Variables that were significant to total charge were most noteworthy.

Backward Regression Method

The interactive multivariate regression method is considered to be a precise and reliable method of estimating costs in general, but there is a disadvantage in its complexity: the effort, expense, and expertise necessary to utilize this method. In the backward regression method, there is one dependent variable and many independent (predictor) variables. The backward regression method finds a relationship between predictive variables and the dependent variable in a special way. In our case, we find a model for total charge of the hospitalization of a diabetes patient in the Northeastern region of the United States, controlling various factors that are highly significant.

In this method, all independent variables and their various order interactions are entered into the model. Once the model is run, the weakest (most insignificant) interaction is removed, and the regression is re-run. If removing this interaction of variables weakens the model, then it is re-entered. If the model stays about the same without the predictor variable, then the variable is deleted. This process is repeated until only significant variables and interactions remain.

To find the best model, it is wise to control as many categorical variables as possible. This ensures that small fractions of data are observed, which will provide a better model in a large data case like ours. Variables that we controlled were geographical region of the hospital, DRG, hospital location (urban/rural), government control of the hospital (government, private) and teaching status of the hospital.
As sample sizes are large for each subgroup, we selected a reasonable random sample for each subgroup and analyzed it. The main reason behind this size reduction was to eliminate the heterogeneity of the data, maintaining the assumption of equal variability at each observed input value.

This type of analysis can be done for all three regions and for any data-modeling problem as a whole.

Some stochastic models for total charge for diabetes patients:

Categorical variables

- DRG
- Geographic Region: N = Northeast, MW = Midwest, S = South, W = West
- Ownership of Hospital: G, N = Government, nonfederal, PNP = Private, non-profit, PIO = Private, investor-owned
- Hospital Location: U = 0 = Urban, R = 1 = Rural
- Hospital Teaching Status: NT = 0 = Non-teaching, T = 1 = Teaching

Quantitative Variables

x1 = Age, x2 = LOS, x3 =Total #s of CCs, x4 = Severity of illness, and interactions

A diabetic patient in Boston (Geographical region = N) was admitted to a nonfederal (N), non-teaching (NT), private, non-profit hospital (PNP) located in an urban area (U). The patient was 54 years old (x_1), stayed in the hospital for 3 days (x_2), had 2 comorbidities (x_3), and had a severity of illness of 2 (x_4). The hospital charged this patient $7,125.

	Demographic Variables with significant categories						
DRG	**Geographical Region**	**Ownership of Hospital**	**Hospital Location**	**Hospital Teaching-status**	**The model of Best-fit**	**R^2 (%)**	**Sample–size**
Diabetes with w/o CC	**N**	**G,N**	**U**	**NT**	**$TC = -12666.3 - 409.6\ x_1 + 2.67\ x_1^2 - 0\ x_1/x_2 + 4389.25\ x_2 - 7306.4\ x_3 + 11248.4\ x_4 + 13498\ x3/x_4$**	**83.1**	**103**
Diabetes with w/o CC	**N**	**G,N**	**U**	**T**	**$TC = -1519.7 + 29.4\ x_1 - .383\ x_1^2 + 18.1\ x_1/x_2 + 3708.5\ x_2 + 76.8\ x_3 + 394.727\ x_4$**	**81.2**	**153**

Diabetes with w/o CC	**N**	**G,N**	**R**	**NT**	**n/a***	**n/a**	**0**
Diabetes with w/o CC	**N**	**G,N**	**R**	**T**	**n/a**	**n/a**	**0**
Diabetes with w/o CC	**N**	**PNP**	**U**	**NT**	**TC= 55153.42 – 819.18 x_1 + 8.0 x_1^2 – 161.49 x_1/x_2 + 7409.732 x_3 - 13195.745 x_4 – 10039.028 x3/x_4**	**46.2**	**127**
Diabetes with w/o CC	**N**	**PNP**	**U**	**T**	**TC= -5149.575 + 551.2 x_1 – 6.625 x_1^2 + 9643.45 x_2 – 5459.94 x_2/x_4**	**35.8**	**150**
Diabetes with w/o CC	**N**	**PNP**	**R**	**NT**	**TC= 12641.786 + 164.82 x_1 – 1.684 x_1^2 + 7428.738 x_2 - 8187.385 x_4 – 7332.857 x_2/x_4**	**66.6**	**135**
Diabetes with w/o CC	**N**	**PNP**	**R**	**T**	**TC= -5233.44 – 0 x_1 - .624 x_1^2 + 57.165 x_1/x_2 + 2743.5 x_2 – 0 x_3 + 3804.326 x_4 + 1755.8 x3/x_4**	**61.8**	**321**
Diabetes with w/o CC	**N**	**PIO**	**U**	**NT**	**TC= 9563.14 – 252.85 x_1 + 2.7 x_1^2 – 0 x_1/x_2 + 3221.65 x_2 – 0 x_3 + 0 x_4 + 0 x3/x_4**	**47.6**	**301**
Diabetes with w/o CC	**N**	**PIO**	**U**	**T**	**TC= -37682.164 + 1916.54 x_1 – 20.6 x_1^2 – 538.625 x_1/x_2 + 4944.35 x_2**	**58.2**	**105**
Diabetes with w/o CC	**N**	**PIO**	**R**	**NT**	**TC= 28975.4 – 0 x_1 + 2.0 x_1^2 – 384.8 x_1/x_2 – 3662.945 x_2 – 1958.4 x_3 - 1454.7 x_4 + 0 x3/x_4**	**75.4**	**55**
Diabetes with w/o CC	**N**	**PIO**	**R**	**T**	**n/a**	**n/a**	**0**
Diabetes with CC	**N**	**G,N**	**U**	**NT**	**TC= -8353.74 + 238.1 x_1 - 3.45 x_1^2 – 255.1 x_1/x_2 + 2563.23 x_2 + 5792 x_3 + 3472.6 x_4 – 4736.27 x3/x_4**	**94.3**	**49**
Diabetes with CC	**N**	**G,N**	**U**	**T**	**TC= -4460.56 – 0 x_1 + 0 x_1^2 + 31.6 x_1/x_2 + 4131.4 x_2 – 975.44 x_3 + 1678.78 x_4 + 1361.56 x3/x_4**	**71.9**	**367**
Diabetes with CC	**N**	**G,N**	**R**	**NT**	**n/a**	**n/a**	**0**

Diabetes with CC	**N**	**G,N**	**R**	**T**	**n/a**	**n/a**	**0**
Diabetes with CC	**N**	**PNP**	**U**	**NT**	**TC= 25829.5 – 522.05 x_1 + 3.8 x_1^2 + 1456.03 x_3 – 5245.83 x_2/ x_4 + 838.36 x_2^2**	**78.9**	**115**
Diabetes with CC	**N**	**PNP**	**U**	**T**	**TC= 1545.8 – 1396.34 x_1 + 6.666 x_1^2 + 1687.98 x_1/x_2 + 3457.62 x_2 + 19848.225 x_3 - 50134.2 x3/x_4 + 23050.26 x_2/x_4**	**70.1**	**120**
Diabetes with CC	**N**	**PNP**	**R**	**NT**	**TC= -22902.85 + 195.24 x_1 – 4.685 x_1^2 + 121.98 x_1/x_2 + 12434.7 x_2 + 2013.34 x_3 + 2348.63 x_4 -2608.08 x3/x_4 – 5449.125 x_2/x_4 – 891.38 x_2^2 + 330.25 x_1/x_4**	**58.9**	**135**
Diabetes with CC	**N**	**PNP**	**R**	**T**	**TC= -2658.9 – 47.35 x_1 + 0 x_1^2 + 61.9 x_1/x_2 + 2927.37 x_2 – 0 x_3 + 2716 x_4 + 0 x3/x_4**	**77.1**	**321**
Diabetes with CC	**N**	**PIO**	**U**	**NT**	**TC= 19144.36 – 1010.4 x_1 + 8.02 x_1^2 + 116.65 x_1/x_2 + 4828.95 x_2 + 3804.26 x_3 + 0 x_4 – 2670.6 x3/x_4**	**69**	**383**
Diabetes with CC	**N**	**PIO**	**U**	**T**	**TC= -17279.75 + 1187.03 x_1 –12.28 x_1^2 + 845.18 x_1/ x_2 + 53354.6 x_2 – 5175.23 x_2^2 – 5204.8 x_3 - 20851.9 x_4 – 1188.97 x_1/x_4**	**64.3**	**112**
Diabetes with CC	**N**	**PIO**	**R**	**NT**	**TC= -35045.4 + 769.8 x_1 – 9.71 x_1^2 + 382.28 x_1/x_2 + 2744.1 x_2 + 4498.4 x_3 + 4318 x_4 – 628.735 x3/x_4**	**99.7**	**49**
Diabetes with CC	**N**	**PIO**	**R**	**T**	**n/a**	**n/a**	**0**
Diabetes with MCC	**N**	**G,N**	**U**	**NT**	**TC= 5044.32 + 476.88 x_1 – 5.35 x_1^2 – 165.9 x_1/x_2 + 0 x_2 – 4491.225 x_3 + 0 x_4 + 15076.1 x3/x_4**	**1**	**33**

Diabetes with MCC	**N**	**G,N**	**U**	**T**	**TC= -5970.96 + 21.635 x_1+ 0 x_1^2+ 0 x_1/x_2+ 4176.53 x_2 – 0 x_3 + 1919.5 x_4+ 0 x3/x_4**	**71.5**	**168**
Diabetes with MCC	**N**	**G,N**	**R**	**NT**	**n/a**	**n/a**	**0**
Diabetes with MCC	**N**	**G,N**	**R**	**T**	**n/a**	**n/a**	**0**
Diabetes with MCC	**N**	**PNP**	**U**	**NT**	**TC= 5262.67 – 2023.16 x_1 + 34949.715 x_2 + 25380.15 x_3 – 71717.96 x3/x_4 – 49593.05 x_2/x_4 – 1257.88 x_2^2 + 4343.59 x_1/x_4**	**59.4**	**98**
Diabetes with MCC	**N**	**PNP**	**U**	**T**	**TC= -35976.65 + 1814.42 x_1 – 18.66 x_1^2 + 7351.97 x_2 – 383.7 x_2^2 - 2348.9 x_3 + 3841.615 x_4**	**38.9**	**101**
Diabetes with MCC	**N**	**PNP**	**R**	**NT**	**TC= -3574.25 – 0 x_1 - .527 x_1^2 + 47.65 x_1/x_2 + 3107.7 x_2 – 0 x_3 + 2178 x_4 + 0 x3/x_4**	**60.5**	**791**
Diabetes with MCC	**N**	**PNP**	**R**	**T**	**TC= -10336.2 – 0 x_1 - .678 x_1^2 + 125.95 x_1/x_2 + 4370.5 x_2 – 3745.49 x_3 + 4990.9 x_4 + 4657.63 x3/x_4**	**78.9**	**191**
Diabetes with MCC	**N**	**PIO**	**U**	**NT**	**TC= 18695.25 – 0 x_1 – 2.055 x_1^2 + 263.536 x_1/x_2 + 7371.4 x_2 + 12107.89 x_3 - 9527.74 x_4 – 28469.8 x3/x_4**	**76.4**	**166**
Diabetes with MCC	**N**	**PIO**	**U**	**T**	**TC= 91936 – 1520.2 x_1 – 5840.125 x_2 + 2463.67 x_1/x_2 – 10591.43 x_3 - 37651.425 x_4 – 48217.09 x_2/x_4 – 5840.125 x_2^2**	**50.5**	**101**
Diabetes with MCC	**N**	**PIO**	**R**	**NT**	**TC= 8757 – 1044 x3/x_4**	**1**	**11**
Diabetes with MCC	**N**	**PIO**	**R**	**T**	**n/a**	**n/a**	**0**

*n/a: There was not enough data to find the model.

Model application:

A diabetic patient in Boston (Geographical region = N) was admitted to a nonfederal (N), non-teaching (NT), private, non-profit hospital (PNP) located in an urban area (U). The patient was 54 years old (x_1), stayed in the hospital for 3 days (x_2), had 2 comorbidities (x_3), and had a severity of illness of 2 (x_4). The hospital charged this patient $7,125.

Our model for these demographics to estimate total charge (TC) is as follows:

$$\widehat{TC} = -12666.30 - 409.6\, x_1^2 + 2.67\, x12 + 4389.25\, x_2 - 7306.4\, x_3 + 11248.4\, x4 + 13498\, x_3/x_4,$$

which yields

$$\widehat{TC} = -12666.30 - 409.6\,(54) + 2.67(54)^2 + 4389.25\,(3) - 7306.4\,(2) + 11248.4\,(2) + 13498\,(2/2)$$

$$= \mathbf{\$\ 7,550.78}$$

As seen, the difference between the real charge value and estimated charge value using the model is just about $425. This clearly demonstrates the strength of these models in making predictions of real charge for diabetic patients.

For this model, there are two significant first-degree interactions: (i) the interaction of age with age and (ii) the interaction of the number of comorbidities with the severity level of illness . To understand the meaning of the first interaction, for example, the partial derivative (the rate of increase) of the total charges (TC) with respect to age (x_1) is given by $\frac{\partial TC}{\partial x1} = 5.34\, x_1 - 409.60$. So, the model predicts that

$\frac{\partial TC}{\partial x1}$ = $ 17.60, $ 44.30, and $71 when a diabetic patient is 80, 85 and 90 years old respectively.

Two other partial derivative rate equations that can be derived from the original equation are as follows:

$\frac{\partial TC}{\partial x3} = -7306.4 + 13498\,(x_4)^{-1}$, and $= 11248.4 - 13498\, x3\, (x_4)^{-2}$

These equations can be used to study the dynamics of total charge at a deeper level. This analysis shows how these models can be used to understand the dynamics of the total charge for different demographics.

Study of Some Interactions Related to Total Charge for Diabetes Patients

In 2009, there were nearly 70,000 hospital stays of patients with diabetes as the principal diagnosis. Of these hospital stays, patients stayed an average of 3.5 days and were charged a mean cost of $18,778. Several cross-tabulations were performed to see which variables were most statistically significant in explaining the variance in the incidence of diabetes. The first few cross-tabulations examined trends in expected primary payers.

Relationship Between Primary Payer and Median Household Income

Table 1 shows a relationship between the median household income (determined by utilizing the median income of the patient's ZIP code) and the expected primary payer for each discharge. The "Other" category of the expected primary payer includes Worker's Compensation, Title V, and other government programs.

It is interesting to note that the percentage of Medicare payers remains approximately constant (about 36%) for patients of all median income groups, while Medicaid payers' percentage decreases with an increase in median income. The percentage of private insurance payers increases with an increase in the median income of patients. This relationship is statistically significant ($\chi^2 = 2515.029$, p-value < 0.0005) and is shown in Figure 1.

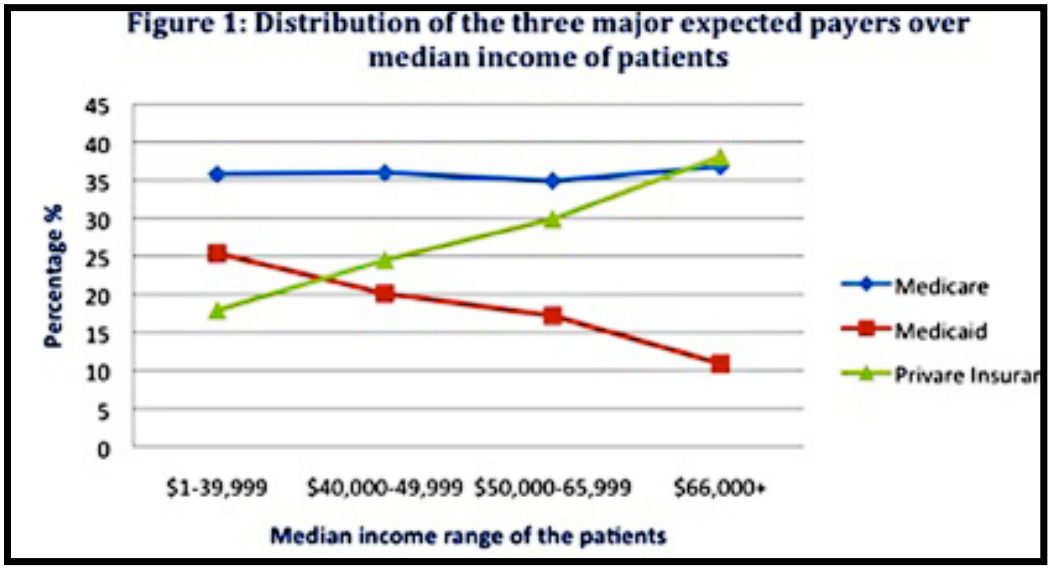

Table 1: Relationship between **Primary expected payer** and **Median household income** for diabetic patients

Primary expected payer		**Median household income***				
		$1-39,999	**$40,000-49,999**	**$50,000-65,999**	**$66,000+**	**Total**
	Medicare	8767 -35.80%	6570 -36.00%	4906 -34.90%	3801 -36.80%	24044 -35.80%
	Medicaid	6212 -25.40%	3662 -20.10%	2410 -17.20%	1123 -10.90%	13407 -20.00%
	Private Insurance	4387 -17.90%	4464 -24.50%	4195 -29.90%	3938 -38.10%	16984 25.30%
	Self-Pay	3890 -15.90%	2505 -13.70%	1691 -12.00%	956 -9.30%	9042 13.50%
	No Charge	312 -1.30%	272 -1.50%	161 -1.10%	57 -0.60%	802 -1.20%
	Other	893 -3.70%	777 -4.30%	681 -4.80%	448 -4.30%	2799 -4.20%
Total		24461 100.00%	18250 100.00%	14044 100.00%	10323 100.00%	67078 100.00%

*Median household income for patient's ZIP code.

Numbers in parentheses represent column percentages.

Relationship between primary payer and gender

Table 2 shows a relationship between the gender and expected primary payer for each discharge. Higher percentages of men were uninsured, shown by the 63.1% of males who were expected to self-pay and the 65.5% with no charge. More females were expected to pay with Medicare and Medicaid (53.1% of females to 46.9% of males and 54.7% to 45.3%, respectively). However, the percentages stay reasonably close until the self-pay and no charge categories. This relationship is statistically significant ($\chi 2 = 1146.853$, p-value < .0005) and is demonstrated in Figure 2.

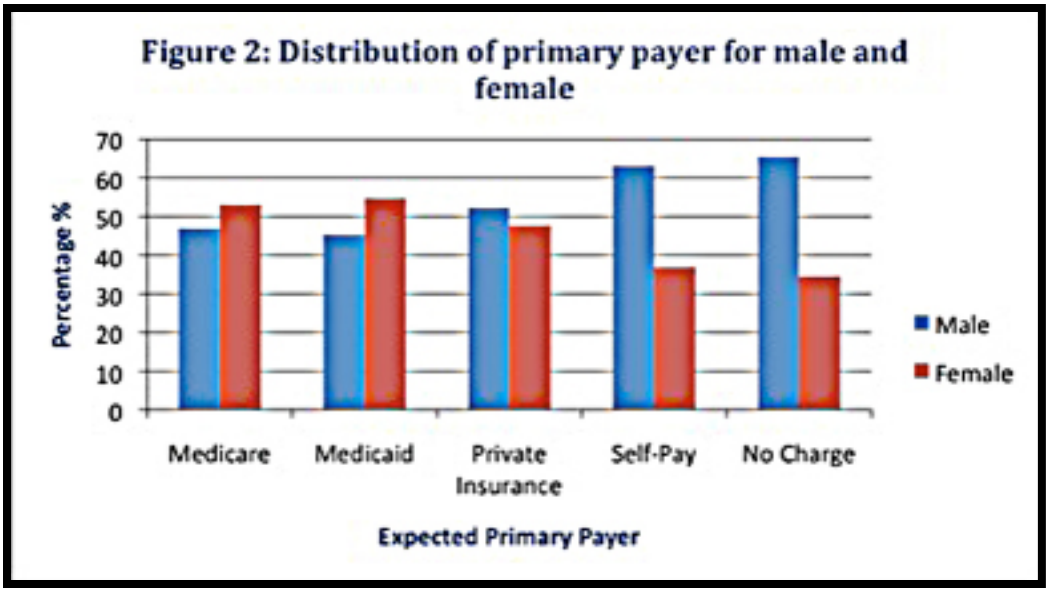

Table 2: Relationship between primary expected payer and gender for diabetic patients

		Indicator of sex		
		Male	Female	Total
Primary expected payer	Medicare	11654 -46.90%	13189 -53.10%	24843 100.00%
	Medicaid	6495 -45.30%	7852 -54.70%	14347 100.00%
	Private Insurane	9008 52.30%	8224 47.70%	17232 100.00%
	Self-pay	5937 -63.10%	3471 -36.90%	9408 100.00%
	No Charge	550 -65.50%	290 -34.50%	840 100.00%
	Other	1816 62.70%	1080 37.30%	2896 100.00%
Total		35460 51.00%	34106 49.00%	69566 100.00%

The next few cross-tabulations examined trends in total cost.

Relationship between total charge and hospital region

Table 3 shows a relationship between the total charge and region of hospital for each discharge. It is interesting to note that the Western region has the lowest percentages in the two smallest charge categories (3.7% and 17.0%, respectively). It also has the highest percentage in the two highest charge levels (35.0% and 9.2%). The Northeast also has a fairly high percentage in the higher categories with 23.9% and 8.5%. This relationship is significant ($\chi 2 = 3202.555$, p-value = .000).

Table 3: Relationship between total charge and region of hospital

		Region of hospital				
		NE	MW	S	W	**Total**
Total charge level	$1-5,000	1612 11.70%	1643 11.40%	3328 11.60%	467 3.70%	7050 10.20%
	$5,001-10,000	3566 26.00%	4538 31.50%	7995 27.90%	2148 17.00%	18247 26.30%
	$10,001-20,000	4103 29.90%	5210 36.20%	10309 36.00%	4429 35.10%	24051 34.70%
	$20,001-50,000	3279 23.90%	2606 18.10%	5888 20.60%	4406 35.00%	16179 23.30%
	$50,001+	1169 8.50%	402 2.80%	1097 3.80%	1156 9.20%	3824 5.50%
Total		13729 100.00%	14399 100.00%	28617 100.00%	12606 100.00%	69351 100.00%

Relationship between total charge and race

Table 4 shows a relationship between the race and total charge for each discharge. Those of Asian or Pacific Islander descent generally paid more, with their highest percentage of charge in the $20,001-50,000 range. Native Americans paid the least, with 80.3% of charges below $20,001. This relationship is significant ($\chi^2 = 1002.123$, p-value = .000).

Table 4: Relationship between total charge and race for diabetic patients

		Total charge level					
		$1-5,000	$5,001-10,000	$10,001-20,000	$20,001-50,000	$50,001+	**Total**
Race	White	3235 10.10%	8452 26.50%	11220 35.20%	7343 23.00%	1637 5.10%	31887 100.00%
	Black	1416 9.30%	3790 25.00%	5180 34.20%	3727 24.60%	1037 6.80%	15150 100.00%
	Hispanic	449 5.50%	1673 20.40%	2924 35.60%	2547 31.00%	617 7.50%	8210 100.00%
	Asian or Pacific Islander	66 6.50%	181 17.90%	307 30.30%	334 32.90%	126 12.40%	1014 100.00%
	Native American	90 16.60%	168 30.90%	178 32.80%	91 16.80%	16 2.90%	543 100.00%
	Other	472 18.70%	716 28.40%	676 26.80%	508 20.10%	151 6.00%	2523 100.00%
Total		5728 9.70%	14980 25.20%	20485 34.50%	14550 24.50%	3584 6.00%	59327 100.00%

Discussion

Diabetes carries a range of risks, including diabetic shock, heart attack, and stroke. The incidence of hospital admissions related to diabetes varies with age, length of stay, and comorbidities associated with each patient. Intuitively, it seems length of stay would have the greatest impact on total charge for any kind of hospi-

tal patient. This study evaluated the contribution of length of stay, age, total number of comorbidities and severity of illness to total charge for diabetes patients. The data showed that length of stay contributed the most (with a correlation coefficient of .645). Total number of comorbidities also contributed greatly. This could be attributed to the fact that many comorbidities of diabetes patients are chronic conditions, which tend to lead to higher health care costs.[14] In a research study done by AHRQ, it was found that people with one chronic condition faced costs twice as great as those with no chronic conditions; people with five or more chronic conditions were charged 14 times more than those with none.[15] Furthermore, two of the five major chronic conditions in the U.S. (heart disease and hypertension) are common in people with diabetes.

In our cross-tabulations and two-way ANOVA, it was found that charges were significantly higher in the West and Northeastern regions of the United States. This is most likely not a result of severity of illness or socioeconomic status, but rather the overall quantity of medical services provided and the amount of specialized doctors in these regions.[16] It was also found that total charge was highest for people of Asian or Pacific Islander descent. According to the Joslin Diabetes Center, about 90-95% of Asian Americans with diabetes have Type 2 diabetes.[17] Since this type of diabetes develops most often in people who are overweight, one is more susceptible to complications such as heart disease and hypertension. As aforementioned, these complications lead to higher medical care costs.

Limitations

As our sample selection is specific to diabetes admissions, the related health care costs may not be generalizable to other disease processes or time periods. Our findings are essentially limited to hospital admissions in the U.S. in 2009 and for DRGs 637, 638, and 639.

[14] See Ref., 11.

[15] Ibid.

[16] Ibid.

[17] See Ref., 12.

Conclusion

In this research study, we describe how the backward elimination regression method can be used to find the interactive multivariate regression models for the hospital charge of diabetic patients living in the Northeastern United States. The example introduced under the title Model application demonstrates how these models can be used to estimate possible charge for inpatient hospital diabetic patients. The interactions of various important variables sheds light on some interesting facts related to the dynamics of the hospital charge. The major contributing factors to the total cost of hospitalization for diabetes patients were identified, and models used to describe the total cost were determined. The major contributing factors were age, length of hospital stay, total number of comorbidities, and severity of illness (along with their various order of interactions).

The most significant correlations were between total cost and length of hospital stay, followed by age and total number of comorbidities. As the length of stay increased, so did the total charge, and as age increased, so did the number of comorbidities. The number of people paying with private insurance increased with income level and decreased with an increase in total charge. The number of people paying with Medicare stayed about the same with increasing income level and increased with increasing total charge. The highest charges were in the Northeast and Western regions of the United States. All of these facts were determined by running cross-tabulations between these variables. Much was revealed about how the variables interacted and are connected with one another. With this information and the models determined using backward regression, it becomes unproblematic to make an accurate prediction of total charge for any diabetic patient.

Acknowledgements

The author would like to thank the Math Department of Xavier University for supporting this research project. Also thank to the referees for their valuable comments, which have helped to improve the presentation of the paper.

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About the Author

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