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Table of Contents

Letter from the Editors........................................................................................................................................4

CIVIC POLICY

Segregation in the Modern Age: Systematic Patterns and Consequences.......................................................6  
Emily Fountain and Charles Bullock, Ph.D.,  
Political Science
Improving Access to Primary Care Services in Athens-Clarke County..............................................................14  
Smitha Ganeshan and Monica Gaughan, Ph.D.  
Public Health
Improving Student Performance by Reforming Teacher Evaluation Methods in Georgia Public Schools ....28  
Seth Taylor and Sally Zepeda, Ph.D.  
Education
The Road Forward: US Policy to Ensure Democratic Transition in Egypt......................................................35  
Patrick Wheat and Sherry Lowrance, Ph.D.  
International Affairs

FINE ARTS

The New Western: Classical Genre Cinema in the 21st Century.........................................................................51  
Brendan Boyle and Christopher Sieving, Ph.D.  
Theatre and Film Studies

HUMANITIES

You're My Teenage Fallout Queen: Public Opinion of Fallout and the Nuclear Test Ban Debate, 1945 – 1990.................................................................58  
Ashton Bagley and Kirk Willis, Ph.D.  
History
Faith Fighting Fear in the Gospel of Mark: "Don't be afraid. Just believe." ......................................................72  
Kaitlyn Wren and Wayne Coppins, Ph.D.  
Religion

NATURAL SCIENCES

Intravenous Monocycline and Its Effect on Peripheral Interleukin-6 after Ischemic Stroke ...........................80  
Andrea Sikora and Susan Fagan, Pharm. D.  
Pharmacy
Assessing the Relationship between Ankle Ligament Laxity and Ankle Stability ................................................. 91
Christopher Sudduth and Cathleen Crowell, Ph.D.
Kinesiology

Water Loss Rates of Two Terrestrial Salamanders, *Plethodon shermani* and *Plethodon teyahalee*,
and their Hybrids .................................................................................................................................................. 97
Elijah White, Samantha Frigerio, Jeff Hepinstall-Cymerman, Ph.D., Michael Conroy, Ph.D., Robert
Cooper, Ph.D., and John Maerz, Ph.D.
Forestry and Ecology

SOCIAL SCIENCES

Kathoey: Dress—the Only Opportunity for Success ................................................................. 107
Nicole Armbrust and Katalin Medvedev
Textiles, Merchandising, and Interiors

High-Resolution Behavioral Economic Analysis of the Relationship between the Cost of Cigarettes and
Smoking Cessation Motivation ....................................................................................................................... 111
Ashley Blackburn, Michael Amlung, M.S., and James Mackillop, Ph.D.
Psychology

Mothers' Perceptions and Responsiveness to Malnutrition among HIV-positive and HIV-negative
Children in Ghana ........................................................................................................................................... 116
Tanya Dieumegarde and Alex Kojo Anderson, Ph.D.
Foods and Nutrition

Landscapes of the Interior: *Ethnobotany and Sense of Place among Karen Refugees* ...................... 121
Terese Gagnon and Virginia Nazarea, Ph.D.
Anthropology

Individual Environmental Awareness and Urban Water Conservation in Kunming, China .............. 131
Logan Krusac and Larry Nackerud, Ph.D.
Social Work

Social Media's Effect of the Arab Spring Revolutions .............................................................................. 137
Stephanie Talmadge and Leara Rhodes, Ph.D.
Journalism
Letter from the Editors

Dear Readers,

Welcome to the 2013 edition of the Journal for Undergraduate Research Opportunities (JURO). Founded as a broadly inter-disciplinary publication in 2001, JURO seeks to showcase the considerable research talent of undergraduates at the University of Georgia in fields ranging from film studies to international affairs to pharmacology and more. And, as always, the authors included in this publication have proven very easy to showcase—their talent speaks for itself.

Although the topics covered by this year’s authors are diverse, a reader who takes the time to peruse the pieces will quickly find some commonalities. Chief among these is the almost obsessive attention to detail and nuance that characterizes all of the authors. Whether you’re reading Brendan Boyle’s comparative analysis of *Meek’s Cutoff*, Logan Krusac’s description of Chinese public awareness vis-à-vis water conservation, or Ashley Blackburn’s quantitative work on smoking cessation and the price of cigarettes, the detail-oriented nature of the research in this publication is apparent.

And although the authors’ topics and methods vary widely, their results are all underpinned by their respective commitments to excellence. There is something excellent in this publication for every reader, and we hope you’ll take the time to enjoy it.

Sincerely,

Seth Taylor
Executive Editor

Marianne Ligon
Operations Manager

Martin Rogers, Ph.D.
Co-Editor in Chief

Matthew Jordan
Co-Editor in Chief
CIVIC POLICY
Segregation in a Modern Age: Systematic Patterns and Consequences

Emily Fountain and Charles Bullock, Ph.D., Department of Political Science

ABSTRACT. This paper details the history of the desegregation of Tattnall County, GA, specifically examining the “deliberate speed” with which county schools complied with Brown v. Board of Education, as well as the emergence of a local private school and its impact on the local school system. A series of interviews with former students and school officials from the public and private institutions were conducted, yielding important perspectives on history and attitudes, as well as relevant data on graduation rates, dropout rates, and test scores. Additional statistical information was collected from public records. The collected data suggests that desegregation led to the formation of a local private school, which may serve as a persistent form of segregation, especially with regards to class.

Introduction

Today, segregation seems like a relic of the past, so far removed that it takes on an unfathomable and almost dream-like quality. But the truth of the matter is that the era before the turbulent years of the Civil Rights Movement, before civil rights leaders like Dr. Martin Luther King, and before the landmark case of Brown v. Board of Education was not that long ago. It was only slightly over fifty years ago that the issues of segregation and civil rights truly began to change. In some cases, the amount of change has been incremental at best and painfully slow at worst. This remains so even today.

After more than half a century, lingering traces of a segregated world can still be found in a small South Georgia county. Tattnall County is located in southeast Georgia, approximately sixty miles east of Savannah. According to the 2010 U.S. Census, Tattnall County is home to 25,520 people. Caucasians represent 59.5% of the population, African Americans 29.3%, with the remaining 11.2% distributed among other minorities, primarily Hispanics. The median household income is approximately $28,664 and 23.90% of the population lives below the poverty line (U.S. Census Bureau 2010).

Although numbers paint a statistical picture, they in no way do justice to the character of the county, its people, or its practices. What is perhaps most notable about this county is the era in which it exists. Though time moves on, Tattnall County is home to 25,520 people. Caucasians represent 59.5% of the population, African Americans 29.3%, with the remaining 11.2% distributed among other minorities, primarily Hispanics. The median household income is approximately $28,664 and 23.90% of the population lives below the poverty line (U.S. Census Bureau 2010).

What is truly at the heart of this issue in Tattnall County is the equality of education between the public school system and the private school system. I will argue that much of the existing disparity between the two spheres can be attributed to and correlated with white flight to private schools after desegregation was implemented in Tattnall County. The subsequent pages will provide a historical framework of precedent regarding the desegregation of schools and more specifically the “deliberate speed” in which schools complied with the law set forth in the re-visitation of Brown v. Board of Education, as well as the consequential emergence of a local private school and the impact that it, coupled with desegregation, has had upon our local high school (TCHS). In turn, I hope to explore the racial attitudes, along with the impact that this change has had on Tattnall County, as well as the effects that are still present today.
I propose that the desegregation of the Tattnall County Public School System directly led to the establishment of and white flight to the private school sector that now serves as a form of unintended segregation. In doing so, I suggest that the private school system has left public schools in the area with lower test scores, higher drop-out rates and a lower graduation rate as well as an overall systematic and systemic decline.

**Historical Framework and Evolving Precedent**

Before a discussion of the history of desegregation in Tattnall County, it is imperative to review the precedent that ended segregation practices in our country as a whole. First, I will begin with the landmark case of *Brown v. Board of Education of Topeka*. From there I will explain how the precedent has evolved and how it applies today to all public school systems.

In 1954, with *Brown v. Board of Education of Topeka*, the Supreme Court wrote that the “separate but equal” doctrine established in *Plessy v. Ferguson* in 1896 that permitted separate facilities for those of a different race as long as they remained equal had no place in public education. In *Brown*, the court said that “separate but equal” as a manifestation of *de jure* segregation violated the Fourteenth Amendment and that schools must integrate; however the ruling failed to provide a time frame for this to occur.

A year later in 1955, the Supreme Court in *Bolling v. Sharpe*, more commonly referred to as *Brown II*, addressed the question of when this would take place. In this case, the court decided that desegregation should advance “at all deliberate speed” leaving the process, however, up to district courts. This vagueness that allowed segregationists the opportunity to form resistance movements as Harry Byrd did in Virginia.

The first response to *Brown II* and integration were “freedom of choice plans.” This theory allowed families to choose which public schools to attend, thus allowing partial or complete segregation to continue. In fact, a decade after *Brown II* there was such little compliance with the ruling that only 1.2 percent of black students attended a school with any white students at all (United States Commission on Civil Rights 2007, 5; hereafter USCCR). As a result of this, in 1965, Dr. Calvin Greene sued the New Kent County School Board and in 1968 the U.S Supreme Court reached a decision in the critical case *Green v. County School Board of New Kent County*. This ruling declared that “freedom of choice” plans were not only ineffective, but also unacceptable. In addition, *Green* established standards to judge desegregation efforts as well as coining the term “unitary” to describe a school system that had transitioned from a segregated or dual system to a unitary and desegregated system. In order to determine if all elements of lawful segregation had been eliminated, the federal courts examined six factors: (1) student assignment, (2) faculty assignment, (3) staff assignment, (4) transportation, (5) extracurricular activities and (6) facilities (Georgia Advisory Committee to the USCCR 2007, 3; hereafter GAC). Finally, in 1969, the court said that any further delays to resist segregation would not be tolerated in *Alexander v. Holmes County (Mississippi) Board of Education*. Desegregation was to be achieved “at once”.

In *Green*, the school districts that failed to comply or meet the criteria would be placed under court order until unitary status could be achieved in all areas. However, this often placed those without expertise (e.g. judges) in power and caused federal intervention in an area that had historically been controlled locally (USCCR 2007, 8). Though this did take a lot of the power away from local governments, it achieved its purpose. After 1969, the percentage of southern black students attending integrated schools jumped from 32% to 79% in 1971 (GAC 2007, 4).

Though these numbers show significant strides they were in part due heavily to coercion. Prior to the threat of force, it is clear from a numerical standpoint that integration was not occurring. According to Dr. Charles Bullock (1976, 988) —

“The key ingredient which seems to be missing in these policy areas is coercion…achievement of extensive social change may necessitate some use of force. Our subject matter, the elimination of the South’s racially stratified dual school systems, involves a major social change which would not have been realized but for severe federal pressures.”

**Desegregation Efforts in Tattnall County**

Tattnall County was one of the many counties in Georgia that needed the aforementioned force and federal pressure in order to end segregation. In an
interview, Joey Singleton, former teacher at Reidsville High School, described the force applied as “Just how soon do you want to pack up and go to prison? There was pretty heavy coercion in all aspects of it.” In 1970, the public school system of Tattnall County was integrated under court order and, as of 2007, still had not achieved unitary status (GAC 2007, 9). As desegregation occurred, what was formerly known as Tattnall Industrial High School consolidated with both Glennville and Reidsville High Schools.

One of the main administrative problems that the school system faced was what to do with excess teachers and principals that were no longer needed when the schools consolidated. Because faculty who were displaced by segregation could not be fired without federal approval, there were many teachers who were still getting paid and principals still drawing their usual salary though only working in classrooms.

Not only was the excess faculty a concern by administrators, but there was also the issue of how the grades were to be divided between Tattnall Industrial and Glennville or Reidsville High School. In this case, they assigned different grade levels to each school with the first four grades in Reidsville or Glennville moving respectively to either Tattnall Industrial (now called Tattnall Elementary) or Seckinger School. Students in grades five through eight were moved to either the former white schools of Glennville Elementary or Reidsville Elementary. All students in grades nine through twelve were assigned to either Glennville or Reidsville High according to geographic proximity. Teachers were typically assigned according to the community in which they lived and grades previously taught.

On the positive side, integration allowed the African-American students and faculty to work with better materials and supplies. African-American educator Betty Coleman expounded upon this.

“Being educated in a segregated environment we did not have the materials that the white schools had. My books were used, written in, torn and out of date. They were hand downs from the white schools. I always felt that I was behind. Desegregation aided my performance at school because I had more and better resources and materials for my students.”

However, there were also concerns that the overall level of education was being sacrificed in order to make integration successful. This fear became apparent in numerous interviews that I conducted.

“I believe both groups (blacks and whites) wanted integration to work so badly that they did not impose the academic rigor and disciplinary structure that was commonplace in the past, I believe that actually worked against the children of both races as expectations might have been lowered temporarily. I believe for a few years academic rigor and discipline in schools was relegated to the back burner in the interest of making integration work.”

“High school years slowed down academically (during integration). Many others and I took advantage of that fact. It was very difficult for everybody involved to get in the right direction.”

Though both of these issues were certainly hurdles for the schools to overcome during the integration process, there was a larger hurdle that had been looming since the Green decision. Not unlike other areas, as the threat of integration became a reality, resistance movements and segregationists saw a direct and immediate need for an alternative. This alternative in Tattnall County was represented in the symbol of a patriot and three small but influential words—Pinewood Christian Academy.

**Consequences of Integration**

Prior to 1968, there had been no reference to the need for a private school in Tattnall County. However, as the Green decision impended over the heads of southern school districts, it was clear to those so adamantly opposed that something must be done to resist integration. In 1968 and 1969 Dr. Charles Drake, Albert Parker and Ralph Dixon were among many local citizens who met and decided to establish a private school.

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1 Singleton, Joey, personal interview, Tattnall County High School. October 28, 2011.
2 Coleman, Betty, interview by email questionnaire, October 16, 2011.
3 McCall, Ronnie, interview by email questionnaire, October 19, 2011.
4 Strickland, Henry, interview by email questionnaire, October 22, 2011.
Pinewood Christian Academy first opened its doors in 1970 to Tattnall, Evans and Bryan County students in grades one through eight, technically establishing a school founded on Christian principles. In 1971, the school added the ninth, tenth, and eleventh grade with the first graduating class in 1972. Ironically, 1970 was the year that the doors of Pinewood opened as well as the first year that the door to Tattnall Industrial closed. L.W. Bush, the white headmaster of Pinewood in the 1980s and a teacher when the school first opened, did not attribute this to mere happenstance. “[Pinewood] would’ve never existed had the schools not been integrated.”

Ronnie McCall, a white teacher at the time and now local newspaper columnist, also spoke about this occurrence: “In most cases in our area, private schools were formed for the purpose of segregation. That remains true.”

Overall, the establishment of Pinewood was but one effect of desegregating public schools in Tattnall County. Before I explore what this means for the current public school system in Tattnall County, it is imperative to look at not only the effects that the legislation had on schools, but on individuals as well.

Attitudes, Reactions, and Unrest

In order to get a clearer picture of the underlying racial attitudes that were persistent at the time of integration, I spoke with ten different individuals, all of whom participated in the integration process. Approximately one-half of those individuals were students during the time, and the other half served as faculty members or administrators. These persons include Sylvester Ashford, Andrea Levant, Betty Davis Coleman, Ronald McCall, Joey Singleton, Lisa Trim, Henry Strickland, Sherri Lamb, Nick Tatum and L.W. Bush.

By speaking with each of these individuals, I was able to gain a greater perspective on not only an individual basis, but on some of the sources of community reactions to integration as well. Perhaps the three largest effects of integration that I came across during my interviews were those of violence, discrimination, and white flight.

Violence

It is no surprise that at the onset of integration violence and race based hate crimes transpired at high rates. Take, for instance, James Meredith at the University of Mississippi or the death of the four small black girls in “Bombingham”7, Alabama. Desegregation caused much of the violence that occurred during the time, and this extended from community life to campus life as well.

Tattnall County was no different. There were many accounts of violence present there during that time. Though not all were bombings or race riots, situations occurred that were and forever will be transfixed into the minds of the individuals targeted for racial purposes.

Betty Coleman, 68, is but one of those individuals. An African-American eleventh grade teacher at the time of integration, Coleman described multiple fights and verbal abuse that went on between students of different races in school. What is more troubling however, is the violence and hatred that was specifically directed towards her and her family.

“I recall the first year of desegregation I came out on my porch at home and it was covered with dead animals and my new car was scratched by rocks piled on top. My car was constantly stopped by the local police and once my teenage brother and his friends were riding in the car and the police shot the back window out. The bullet landed in the gear console.”

Though violence certainly occurred, Tattnall County Schools were fortunate to receive a relatively small amount. White educator Joey Singleton attributed this largely to the administration at the time. “It went relatively well in Tattnall, mostly because the leaders worked really hard at [controlling violence].”

Discrimination

Despite the fact that violence was not as prevalent in Tattnall County as in other areas of the South, discrimination still occurred on a large scale. These practices occurred not only in the community, but

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5 Bush, L.W., personal interview, Rotary Corporation, October 28, 2011.
6 Ronnie McCall, email interview.
7 A name given to Birmingham, AL in the early 1960s due to the multiple bombings that occurred during the Civil Rights Movement.
8 Betty Coleman, email interview.
9 Joey Singleton, personal interview.
also within the confines of the classroom. Perhaps even more powerful than the reach of such discriminatory practices was their duration.

In 1970, at the onset of school desegregation in Tattnall County, Betty Coleman was a victim of such discrimination based solely on her skin color.

“The only movie theater in town was still segregated. The blacks still had to sit in the balcony and the whites downstairs in comfortable seats. I was the first black person to sit downstairs during a regular movie. I saw Truman Capote’s *In Cold Blood*. The movie theater immediately closed the doors never to open again. Blacks and whites continued to use different doors in entering doctor’s offices. There was a sign that said ‘Colored Only’. The only institution in town that was really integrated was the schools.”

In addition, Mrs. Coleman explained that black and white students were not allowed to stand together for a picture in the yearbook and black bus drivers could not pick up white students for school or any other activity. Personally, she had the words “Tar Baby” spray-painted on the door of her classroom.

Eleven years later in 1981, discriminatory practices still existed. Andrea Levant, 49, was a young African-American child when segregation occurred, but for her, discrimination persisted long past that initial period—just as it did for many others:

“I do recall an incident that has forever changed my life and always has me thinking when I or my children are involved in anything. Did I not win or get a certain position because of my race? This occurred in 1981 when I was a contestant in the Miss Tattnall County Pageant. You just kind of know when you have done really well in something, but after it was all said and done, members of the pageant committee resigned and let me know why. Following interviews, the judges asked how Tattnall County would feel about a black queen…the President of the committee at that time said ‘No Way!’ Needless to say, I was devastated because I spent my time and money preparing to be the best me I could be… There are so many things that I knew I could change, color was not one of them. So from that point on, I’ve just always wondered if things really are fair here in Tattnall County.”

The prejudices so embedded in the citizens of Tattnall County emerged as full and intentional discrimination after school integration put a stop to their outlet for such practices. It is this very fact and lack of an outlet that I believe causes these attitudes to persist in the citizenry today. Newspaper columnist Ronnie McCall agrees, “There was a definite period where there was, and still is, mistrust between the races. Discrimination existed then and does now.”

**White Flight**

In addition to violence and discrimination, the last major effect of integration was perhaps one of the most important. When Pinewood Christian Academy was established at the onset of integration, there was a substantial exodus of the white population in public schools to PCA. White educator Lisa Trim described not only the migration of students, but also the motivation behind it:

“Many of my close friends no longer attended school with me because their parents sent them to a private school… The same attitudes and interactions are present today that were present in the days of desegregation. The parents and students who attend private schools here are bound by prejudice. The private schools in our area did not appear until desegregation. Racial prejudice is one of the three reasons that parents send their children to private schools. The other two reasons are prestige and [athletic] prowess.”

Though white flight initially was initially a term used to describe a resistance to racial integration, there are also arguments being made now along economic lines. A recent study shows, “While it is as yet uncertain whether whites fleeing from desegregation per se have comparable economic characteristics, it is certainly conceivable that policies promoting racial integration may aggravate economic segregation, at least within races” (Clotfelter 1976, 48).

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10 Betty Coleman, email interview.

11 Levant, Andrea, interview by email questionnaire, October 04, 2011.
12 Ronnie McCall, email interview.
13 Trim, Lisa, interview by email questionnaire, October 14, 2011.
While this new theory along economic lines certainly holds weight, it cannot be viewed solely in the context of the past. What is imperative to this argument and this unintended segregation along economic lines is the current state of both the public and private school sectors in the area. In light of the current status, it is evident how the consequences of segregation in terms of violence, discrimination, and white flight have contributed to both the conditions of Tattnall County High School (TCHS) and Pinewood Christian Academy (PCA).

Current State of Schools

In the fall of 1993, Glennville and Reidsville High School joined together to form Tattnall County High School. Because I intend to examine the current state of the area’s public high school, I will focus specifically on Tattnall County High School. In addition, I will analyze the current state of Pinewood Christian Academy, the area’s only private school.

Tattnall County High School

Founded in 1993, Tattnall County High School is located in the county seat of Reidsville, Georgia. The school is home to a diverse student body including many minorities. The most predominant races at the school are whites, blacks and Hispanics, with smaller minority populations completing the student body. In order to examine the current school state, it is imperative to explore the graduation rate, dropout rate, and the Georgia High School Graduation Test (GHSGT) scores. The data I will use is the most current data released on the district profile for the year 2009.

As of 2009, Tattnall County High School had 911 students, with 68 percent of those students economically disadvantaged. This year marked the third year (along with 2004 and 2006) that the school did not meet Annual Yearly Progress, and that pattern was subsequently followed in 2010 as well as 2011 (Georgia Department of Education 2009). According to No Child Left Behind, Tattnall County High School is now classified as an NI-2 school for failing to meet AYP for the past three years. They are now required to offer school choice (options to attend other schools) and supplemental services (after school programs).

The graduation rate in 2009 was 78.7 percent, which was comparatively high to the previous years that did not exceed the 74th percentile. The racial breakdown for the 2009 graduation rate was 79.5 percent African-American, 78.6 percent Caucasian, and 75 percent Hispanic. Out of the 183 students in the graduating class in 2009, 144 received a regular diploma, meaning that 39 students did not graduate with their class.

For 2009, I will analyze the GHSGT scores that failed to meet the standard criteria for the races with biggest presence in the school—black, white, and Hispanic. The following table breaks down the data for the different races in the subjects of Math, English, Social Studies, and Science for 2009.

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*The numbers above are the raw numbers, not percentages.*

What all three of these numbers show is a racial gap on the part of the school system. Though the graduation rate for 2009 was higher than in previous years, the school still failed to meet AYP. In addition, the racial breakdown for failing scores on the GHSGT also pointed to black students failing at higher rates in all subject areas compared to both white and Hispanic students. In fact, the white and Hispanic numbers were closely aligned, though the difference in the sizable population present may reflect a skewed perception. Overall, however, black students were systematically less successful than their white or Hispanic counterparts.

Because of low numbers in these three areas, a large and justifiable concern for Tattnall County High School is the welfare of the more academically inclined students. Even though a considerable concentration of attention and resources are set aside for poorly performing students (due in large part to No Child Left Behind), some students are only marginally succeeding. Teachers express concern that this is at the expense of the more upper echelon students. Sherry Lamb, a math teacher at TCHS, addressed this very issue.

"More time and attention is invested into the lower students verses the higher students. What has happened to our upper level kids is that we..."
have kicked them to the side to concentrate on those that will never do well. That is what I’m upset about—it’s truly a disservice to both students.”

Pinewood Christian Academy

Pinewood serves grades PK-12, encompassing fewer than 900 students total. PCA is currently a part of the Southern Association of College and Schools (SACS), but because it is a private institution is not subject to state requirements such as AYP or GHSGT testing.

The student body diversity at PCA is lacking to say the least. According to prior headmaster L.W. Bush, the school has had black students before, but currently there are none. They do, however, have a very small percentage of Hispanic, Korean, Filipino, and Jewish children.

Perhaps one of the largest enticements to the school is the learning environment that it provides. Because the school has a very rigid set of standards and a clear set of rules to follow, the school fosters a learning environment by controlling the atmosphere through requirements such as school uniforms.

In addition to an enticing environment, Pinewood also has one of the lowest private school tuition rates in Georgia. However, this must be viewed in light of the geographic location, region and the economic disadvantages that accompany this area. Despite the fact that this is low relative to other private schools, the average family income in Tattnall County is also substantially lower than in other areas.

Pinewood also currently offers no academic or athletic scholarships even though there have been references to a few made under the table in regards to athletics. PCA is representative of a higher socioeconomic demographic and thus differs considerably from Tattnall County High School. Because of this, the level of parent involvement is extremely high at PCA and out of the 40 to 50 students in a typical graduating class around 40 of those would be considered upper-level students at Tattnall County High.

The Persistence of Segregation

Though integration occurred in 1970, I propose that white flight to Pinewood Christian Academy has developed as a form of unintentional segregation and is now occurring at the expense of the public school system.

While PCA was originally established to avoid integration, it is clear that it is still making its own safe haven. Although this is no longer explicitly tied to race, but instead to economic levels, racial motivation cannot be entirely overruled. Because socioeconomic levels and race are so highly correlated in the Tattnall County area, it would be impossible to say that the persisting segregation efforts are now tied strictly along economic lines. Whereas Pinewood was originally established as a form of intentional segregation, it now represents a form of unintentional segregation along economic lines that are highly correlated with race. Educator Joey Singleton also supports this argument.

“Racial discrimination is still present, but the segregation is now done economically. It is not nearly as overt anymore, but much more indirect by setting a tuition that most minority families can’t afford. Here, race and poverty are so intertwined that it’s almost impossible to disconnect the two.”

Along with serving as a type of unintended segregation, I propose that Pinewood Christian Academy is also contributing to the decline of the public school system and, more specifically, Tattnall County High School. Due to the fact that Pinewood has taken a substantial population of students away from TCHS who would have been in the top percentile of their respective classes, Tattnall County test scores, graduation rates, and dropout rates have all been affected.

Tattnall County High School graduation coach Nick Tatum offers support for this hypothesis.

“Private schools definitely skew the percentages and numbers from a demographic standpoint; it also takes additional resources out of our school indirectly. From a community outreach standpoint, we lose a lot of the financial support that those more affluent families would provide…some of our kids are from the poorest of the poor scenarios

14 Lamb, Sherri, personal interview, Tattnall County High School, October 28, 2011.
15 L.W. Bush, personal interview.

16 Joey Singleton, personal interview.
and without funding, improving our system is almost impossible.”

Conclusion

Though segregation seems long gone, it is hasty to deduce such. Desegregation may have achieved the purpose of integrating the schools, but the same cannot be said for its intent with educational equality. Segregation is still occurring today in Tattnall County and is reinforced by the white flight and high socioeconomic demographic that is represented at Pinewood Christian Academy.

Whether discrimination practices are intentional or not, they exist whenever two groups of people are stratified, regardless of whether the discrimination occurs based on race or economics. Though incremental changes have been made and conditions have improved, there still lies a disparity in educational attainment for black and white students, as well as rich and poor students.

L.W. Bush said, “There is a difference between forcing things (desegregation) to happen and working for things to happen. It may not have happened as quickly, but it may have happened eventually.” Personally, I disagree with Mr. Bush; there comes a point in time when force is necessary. And truthfully, I am not so sure that we have not reached that stage again—the point at which the actions taken against our public school system necessitates the use of force. If these conditions persist, perhaps George Wallace wasn’t so far off after all when, in his 1963 inaugural address, he asserted “segregation today, segregation tomorrow, segregation forever.” And just perhaps, what seems like such an archaic term may no longer lie in our past, but be applicable to our future educational system as well.

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Improving Access to Primary Care Services in Athens-Clarke County

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ABSTRACT. In Athens-Clarke County, 20% of the population is uninsured and 38% of the population receives Medicaid assistance. This 58% of the population faces severe financial and structural barriers in accessing primary care services. Most of the uninsured and Medicaid patients are seen in Athens Regional Medical Center and Mercy Health Center's emergency departments, where the cost of care is mostly uncompensated and approximately three times higher than it would be in a primary care setting. Additionally, poor longitudinal care for chronic diseases results in repeated preventable hospitalizations. A thorough literature review was conducted to develop a policy proposal to make Athens-Clarke County more competitive for federal money and assistance through the Patient Protection and Affordable Care Act. After evaluating various policy alternatives based on a cost-benefit analysis, a proposal that calls for Athens to apply for a Health Professional Shortage Area (HPSA) designation was chosen. This designation will ultimately enhance Athens-Clarke County's applications for having a Federally Qualified Health Center (FQHC) and improve low-income patients' access to primary care services in Athens. An integrated health system that provides adequate access to primary care services for low-income patients in Athens-Clarke County would improve community health, reduce health disparities, and reduce health costs.

Problem

Currently, the uninsured and low-income residents of Athens-Clarke County face severe barriers in institutional access to affordable primary care services for chronic conditions. The goal of this policy paper is two-tiered: the first and most important goal is to increase affordable access to primary care services, and by increasing access, the second goal is to reduce the burden of chronic diseases. To improve this access to care, three policy alternatives will be explored. First, the Athens Nurses Clinic and Mercy Health Center – the two free clinics in Athens – should exercise the full extent of their sovereign immunity and provide free care to Medicaid patients. Second, the Athens Health Network should compile a comprehensive application to apply for a HPSA population-based designation. And third, the Georgia General Assembly should broaden the prescriptive authority of nurse practitioners who serve medically underserved communities or who work in free clinics or community health centers. The first alternative in which the Athens Health Network files an application for a population-based HPSA designation best fulfills the goals of this policy.

Background

Chronic Conditions and the Need for Access to Primary Care

Currently, chronic diseases such as heart disease, stroke, cancer, diabetes, and arthritis “are among the most common, costly, and preventable of all health problems in the U.S.” (“Chronic Diseases and Health Promotion”). Despite their manageable nature, chronic diseases are the leading cause of death and disability in the United States and the number one killer in Georgia; seven out of ten deaths among Americans each year are from chronic diseases. Heart disease, cancer and stroke account for more than 50% of all deaths each year. In 2005, 133 million Americans – almost one out of every two adults – had at least one chronic illness. Apart from the host of chronic diseases, obesity has also become a major health concern; one in every three adults is obese and almost one in five youth between the ages of six and nineteen is obese (“CDC - Chronic Disease - Overview.”). In Georgia:

- 94% of all death in 2002 were caused by chronic diseases (“Impact of Chronic Diseases in Georgia”)
- 65% of adults were overweight or obese in 2007
- 22% of deaths in Georgia in 2005 were caused by cancer
- 25% of all deaths in Georgia in 2005 were caused by heart disease.

The World Health Organization fact sheet prescribes “access to high quality and affordable prevention measures” as essential steps to “save lives and lower costs for medical care” (“Impact of Chronic Diseases in Georgia”).

These diseases disproportionately affect the uninsured and under-covered. On the basis of National
Health and Nutrition Examination Survey (1999–2004) responses, an estimated 11.4 million working-age Americans with chronic conditions were uninsured, including 16.1% of the 7.8 million with cardiovascular disease, 15.5% of the 38.2 million with hypertension, and 16.6% of the 8.5 million with diabetes. After controlling for age, sex, race, and ethnicity, chronically ill patients without insurance were almost four times more likely than those with coverage to have not visited a health professional and to not have a standard site for care; these individuals were more likely to identify their standard site for care as an emergency department (Wilper, p. 170-176). This lack of care is especially true for low-income patients in Georgia. In 2007, 16.4% of Georgians reported that they had not seen a doctor in the last 12 months because of cost, a number that is more than 3 percent above the national average. Having a medical home or regular access to a primary care provider is vital to the treatment and management of chronic conditions, which take such a large toll on health status in Georgia (Starfield).

The prevalence of chronic conditions takes a toll on Georgia’s overall health outcomes. Georgia is 40th for overall health in 2010, 37th for public health funding, 38th for diabetes (percentage of the population afflicted with diabetes), 2nd in the country for obesity rates, and 44th for the percentage of population that lacks health insurance ("State Health States: Georgia").

**Economic Burden**

Chronic care conditions are costly because they require protracted and often complex treatment. A diagnosis of chronic condition results in an expected increase in costs of eighty to three hundred percent, depending on age, sex, and chronic condition profile (Fishman).

Since persons with chronic conditions have greater health needs at any age, their costs are disproportionately higher. Many patients without a medical home or access to primary care are more likely to be diagnosed with their chronic conditions at a later stage when the condition is more costly to treat. These factors all contribute to the fact that chronic conditions account for 3/4ths of US health care expenditures. Five percent of the U.S. population—those with the most complex and extensive medical conditions—account for almost half (49 percent) of total U.S. health care spending (Thrall). Uninsured and underinsured patients are also costly because they are more likely to be seen in emergency departments, where the cost of care is much higher. The average emergency room visit costs $1,000, as compared to the average clinic visit of $29 and an average primary care doctor visit that can range from $75 to $120 (“Health Care Affordability in Georgia”). Approximately one-third of all U.S. hospital emergency departments serve a disproportionately high number of Medicaid and uninsured patients. These hospitals serve as a safety net in communities whose residents are more likely to be low income, uninsured, or Medicaid recipients, and where there are fewer primary care services available, which describes the Athens-Clarke County community ("Characteristics of Emergency Departments Serving High Volumes of Safety-Net Patients: United States, 2000."). Emergency departments located in areas with high rates of poverty and unemployment and a low per capita income see a disproportionately larger volume of high safety-net patients (Starfield). Athens, with a poverty rate of 36% and an unemployment rate of over 7%, fits this profile. Of the 76,000 annual visits in the Athens Regional Medical Center, 82% of these visits are uninsured and Medicaid patients.

These overburdened emergency departments are also financially strained. Nationally, only 41% of high safety-net emergency departments are in hospitals that receive any Federal assistance for treating a disproportionate number of Medicaid and uninsured patients. While the national report doesn’t provide Athens-specific information, the emergency departments that they describe as the most burdened and the most costly are located in communities akin to Athens (high poverty rate, high unemployment rate, large percentage of population receiving Medicaid assistance) ("Characteristics of Emergency Departments Serving High Volumes of Safety-Net Patients: United States, 2000."). The economic ramifications of uninsured and under-insured patients who are treated in emergency departments extend beyond high healthcare costs.

Uninsured patients miss twice the number of days of work and school than their counterparts with insurance. These sicker and more costly patients cannot afford to pay such exorbitant bills. The unpaid costs are passed on to taxpayers and those with private coverage through higher insurance premiums (Landers). When
individuals miss work they forgo their day’s salary, and while this has direct impacts on the individual’s life, it has also has implications on a macro level. When uninsured and underinsured patients on a macro scale miss more days of work, businesses (and the economy in general) suffer. Employers and managed care companies spend between $1.5 billion and $3 billion through higher rates to cover part of the $24 billion hospitals have to spend on treating the uninsured and underserved. In a study that links health insurance to a decreased likelihood of missing work, access to care was an important explanatory variable (Landers).

If current trends in healthcare spending persist, the United States will be spending an unsustainable 38% of its GDP on health care by 2075 (Gruber). As the growth rate of health care costs continues to outstrip the growth rate of the overall economy, reducing uncompensated healthcare is important. These uninsured patients who incur uncompensated costs may disappear from our radar when they have access to insurance coverage through the Affordable Care Act, but without access to care accompanying insurance coverage, these costs will not disappear and health outcomes will not improve.

**Human Cost of Lack of Insurance/Lack of Access**

Total medical care expenditures among all of the uninsured in 2004 (including those without coverage for all or part of the year) are almost $125 billion. A third of the medical costs for the uninsured are uncompensated. Uncompensated care is medical care received, but not fully paid for, either out-of-pocket by individuals or by a private or public insurance payer. Most uncompensated care dollars are incurred by hospitals, where services are most costly. In 2001 hospitals accounted for over 60% of uncompensated care dollars. The annual economic value of foregone health among the 40 million uninsured in 2000 has been estimated to be between $65 and $130 billion in that year. If the middle of that range ($97.5 billion) is inflated to 2004 dollars, the annual economic value of the foregone health of those 40 million uninsured increases to $103 billion (“The Cost of Care for the Uninsured”).

**Minority Populations and Low-income Populations are Disproportionately Affected**

Minority populations, especially in Athens-Clarke County, have the least access to care. Of the 114,911 civilian population in Athens-Clarke County, 21,803 are uninsured, which represents 19% of the population (compared to the 13% national average) ("Athens: Demographic Profile") and 18.7% are Medicaid patients. The percentage of uninsured in Athens-Clarke County is 6% higher than the national average, and disproportionately affects the African American and Hispanic population ("Athens: Demographic Profile"). The uninsured and underserved population is divided along racial lines, which illustrates disparities between different population groups. In Athens-Clarke County, 25% of the Black/African American population is uninsured, and 58% percent of the Hispanic/Latino population is uninsured. In contrast, 16% of the White population is uninsured ("Clarke County, Georgia Health Insurance Coverage."). Cardiovascular disease death rates were 1.3 times higher for blacks than whites in 2007, and stroke death rates were 1.5 times higher for blacks than whites in 2007 in Georgia (“Cardiovascular Disease”).

**Low-income and Uninsured**

Most of the uninsured, low-income adults are employed (Chernew). The uninsured who are without coverage for the full year receive about half (55%) of the medical care per person compared to those who have health coverage for the entire year, even after taking uncompensated care into account (“The Cost of Care for the Uninsured”). And over a third of the poor and nearly a third of the near-poor (100-199% of poverty) lack health insurance coverage. Two-thirds of the uninsured come from low-income families, and a third of the uninsured are either low-income parents or their children (“The Uninsured and Their Access to Healthcare”).

**Policy Failures and Status Quo in Athens-Clarke County**

According to the 2010 U.S Census, Athens has a total population of 116,714. In Athens-Clarke County, 19% of the population, compared to the 13% national average, is uninsured ("Clarke County, Georgia Health Insurance Coverage."). This population is disproportionately overrepresented by African American, Hispanic, and low-income individuals; 25% of the
African American population is uninsured, 58% of the Hispanic population is uninsured, and less than 10% of the Caucasian population is uninsured ("Clarke County, Georgia Health Insurance Coverage."). In Athens, 38% of the population receives low-income Medicaid coverage. As of 2008, there were 391 practicing physicians, for a “persons to provider ratio” of 490.2. However, this statistic does not provide an accurate picture of what accessing primary care in Athens is like for low-income uninsured and Medicaid patients. As of 2009, 36.3% of the population lives below the Federal Poverty Level (“Athens Demographic Profile” 2011). In 2007, only 60% of providers in Athens said they would accept Medicaid patients, but in 2008, that percentage decreased to 41% (“One Athens Health Team Final Report” 2008). However, even the providers who do accept Medicaid patients only accept a handful each month. Experts in the field speculate that the number of providers who even say that they accept Medicaid patients has severely decreased, although recent data is unavailable.

In Athens-Clarke County, uninsured patients have two primary options to receive primary care: the Athens Nurses Clinic and Mercy Health Center. The Athens Nurses Clinic, one of the 104 free clinics in the Georgia Free Clinic utilizes volunteer nurse practitioners to provide care. However, because of the strict prescriptive authority rules in Georgia, nurses cannot prescribe any prescription medication to patients without the supervision of an attending physician. With no prescriptive power, the role of nurse practitioners in filling gaps in the primary care workforce is severely undercut and diminished. If a patient’s HbA1C test results at the Athens Nurses Clinic, which is understaffed and underfunded, indicate that the patient needs insulin to control his or her diabetes, the only option the patient has is to schedule an appointment at the Mercy Health Center. Unfortunately, Mercy Health Center has a one hour calling window during which uninsured patients can call to make an appointment, and the health center can only accommodate about 3-5 new patients each week. Mercy Health Center sees approximately 4,000 patients, but this number compared to the 21,803 uninsured patients is well below adequate (Mercy Health Center). Often patients must wait weeks or months before a primary care provider can see them. The delay in seeking care and later detection results in prolonged, costly treatment and a propensity to be hospitalized in Athens Regional Hospital Emergency Department. About 82% of the patients that Athens Regional Medical Center sees in its emergency department are uninsured or Medicaid patients ("Clarke County, Georgia Health Insurance Coverage."). In a study that surveyed 700 patients waiting for emergency department care at a public hospital, 45% of the patients cited access barriers to primary care as their reason for using the emergency department (Grumbach). Only 13% of the patients waiting for care had conditions that were clinically appropriate for emergency department service; 38% of patients were willing to trade their emergency department visit for an appointment with a physician within three days. The public hospital was located in a community with a disproportionately large population of low-income patients like Athens-Clarke County (Grumbach). A policy solution that increases access to primary care should theoretically demonstrate a decrease in emergency department use.

Causes of restricted access to healthcare

Cause 1: Reimbursement rates

Low reimbursement rates for Medicaid services have restricted access to care for low-income patients, since low reimbursement rates mean fewer physicians accept patients’ Medicaid coverage. Proponents of the Patient Protection and Affordable Care Act aim to cover some 32 million uninsured individuals (Fairman). However, physicians may not care for all these newly covered individuals once the act is implemented. Most physicians provide care for some uninsured or poorly insured patients, relying on payments from insured patients to cover the shortfall. But recently physicians have become less likely to provide such care:

Because their practices are being squeezed by steadily declining insurance reimbursement on the one hand and sharply rising operating costs on the other. These pressures make it increasingly difficult to see patients who cannot afford to pay—or, in the case of Medicaid, patients for whom payment rates are often inadequate” (Zinberg).

The Georgia 2012 Budget plan published by Governor Deal reduces Medicaid reimbursement rates by half a percentage point (“Governor’s Budget Report FY
However, under the Affordable Care Act in 2013-2014, Medicaid reimbursement for primary care increased to at least Medicare levels, 2013–2014 (“Provisions of the Affordable Care Act, By Year”). Currently, providers are reimbursed in a fee-for-service system that does not adequately pay doctors for the time spent with patients taking medical history, conducting a physical examination, or during follow-up appointments. The result of this freezing of reimbursement rates will be an additional $8.3 billion paid to primary care physicians accepting Medicaid reimbursement rates (“Provisions of the Affordable Care Act, By Year”). This expansion and the expansion of Medicaid to cover 133% of the federal poverty level under the Affordable Care Act will cost Georgia $2.5 billion between 2016 and 2020 (Miller). However, in order to compensate for these costs, Georgia will have to cut services provided and medications covered under Medicaid and increase copayments for patients.

**Cause 2: Unemployment**

Rising unemployment makes purchasing insurance, especially for low-income patients, costly and arduous. Since the majority of insurance is offered through employers, a rise in unemployment or a high unemployment rate means a large uninsured or underinsured population. About 30 to 40 percent of workers who lose their jobs lose their health insurance as well. The uninsured rate among unemployed adults is nearly three times as high as the uninsured rate in the general population, 37% vs. 14% (Lambrew). The majority of Americans, 62%, under the age of 65 receive health insurance coverage through their employers (“The Uninsured and Their Access to Healthcare”). Although three of four insured workers are eligible for the Consolidated Omnibus Budget Reconciliation Act, COBRA (allows recently unemployed people to continue their health insurance) few participate, mostly because of cost; families pay, on average, about $7,200 for COBRA. Only about one of five workers eligible for coverage under the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) purchases it. Alternative sources of health insurance are unaffordable or inaccessible for most unemployed people. Over eight times as many unemployed adults are uninsured as are insured through the individual market, reflecting barriers in the individual market (Lambrew). The closing of the poultry plant in Athens has left many jobless (Interview with Paige Cummings: Director of Athens Nurses Clinic). Many, if not most, of the 1,500 patients the ANC sees are unemployed.

**Cause 3: Budget Cuts Cause Lack of Access**

The large budget shortfall in Georgia means slashing Medicaid spending by $357 million dollars even as the Federal Government passes legislation that could potentially expand Medicaid (“Governor’s FY2012 Budget”). The poor economic situation in Georgia presents the largest obstacle to any policy proposal that calls for the state government to spend money. Even with projected revenue growth of approximately 5 percent in FY 2011 and 6 percent in FY 2012 as projected in the governor’s FY 2010 budget report, Georgia will face an FY 2011 budget deficit of $823 million and an FY 2012 budget deficit of $1.94 billion (“Georgia Faces Large Deficits in FYs 2011 & 2012”). Breakdown of budget allocations for Department of Public Health, Department of Community Health, Medicaid, Medicare etc. demonstrate a $357 million dollar reduction in Medicaid spending (State of Georgia: 2012 Governor’s Budget Report). These cuts will come from provider payments, reimbursement rates, pharmacy controls, and higher copayments, which could severely compromise access to care; therefore, it will be increasingly necessary to find ways to provide healthcare for patients who will be caught between being unable to receive care at free clinics and being unable to be seen by a physician provider. The healthcare reform bill expands Medicaid to 133% of the federal poverty level (“Full Text Of The Health Reform Law: "The Patient Protection and Affordable Care Act" - Kaiser Health News.”). In a survey released in April 2009 by the American Hospital Association, nine of ten hospitals reported service reductions because of the current economic conditions, and nearly half had cut staff; one fifth had reduced community services such as mental health care, patient education, and community clinics, and eight of ten had cut back on facility and technological upgrades, including upgrades in the area of electronic health records (Redlener 2009). Finally, the politicization of healthcare policy in Washington along party lines leaves almost no bipartisan ground to produce meaningful reform at the federal level.
If Georgia expands its Medicaid eligibility requirements to cover people who live at 133% of the federal poverty level, while Georgia is slashing $357 million dollars from Medicaid in its 2012 budget, almost 700,000 new patients in Georgia will have insurance coverage, but that does not mean they will receive the preventative care they need for chronic conditions like diabetes and cardiovascular disease, the number one cause of death in Georgia (Sweeney). These patients will no longer be eligible for care at local free clinics, and will struggle to find a primary care provider, since physicians, especially in Athens, are reluctant to accept Medicaid patients because of poor reimbursement rates.

Legislative Background

Patient Protection and Affordable Care Act (National policy)

I. Relevant provisions

- Medicaid will expand to cover 133% of the federal poverty level.
- $11 billion for Federally Qualified Health Centers, 2011–2015, to serve 15 million to 20 million more patients by 2015

A. Georgia Medicaid Spending

In Georgia, Medicaid expansion will cost the state $2.5 billion dollars in state funds from 2016 to 2020. Given the state’s financial environment, this federally mandated cost will be compensated with cuts in services and other measures that will restrict low-income patients’ access to healthcare. Medical providers such as physicians will receive a 1 percent cut in payments for treating Medicaid and PeachCare patients in fiscal 2012 (“Governor’s FY 2012 Budget”). While this reduction is not as harsh as expected, even minor reductions in reimbursement rates when rates are already too low to incentivize providers to accept Medicaid, could compromise access to care. This reduction will not affect hospitals, but Medicaid beneficiaries will face higher copays, and adults in the program will lose vision, dental and podiatry benefits. Parents of children in the PeachCare program for uninsured kids will be required to pay co-pays for the first time. The reform law will add approximately 700,000 Georgians to the Medicaid rolls, representing a 40.4% change in enrollment (Sweeney).

In 2013-2014, the Affordable Care Act mandates that Medicaid payment rates to primary care physicians for furnishing primary care services will increase to equal Medicare payment rates for these same services “with the increase paid through a 100 percent federal match to the states” (“Doty”). This will result in a total additional $8.3 billion paid to primary care physicians accepting Medicaid reimbursement. This freezing of Medicaid reimbursements, however, may not be enough to increase access. Cuts in services to compensate for this cost will indirectly impact access to care.

II. Prevention and Public Health Fund

A. Medically underserved areas and Health Professional Shortage Area

Healthcare reform provides numerous provisions (detailed below) that would help alleviate the primary care shortage for the uninsured and low-income in Athens. However, because Athens is not designated as a health professional shortage area or population, it does not qualify to receive these benefits from the Public Health Fund in the status quo.

To increase access to care in underserved areas ACA provides $1.5 billion over five years to expand the National Health Services Corps. This adds to the $300 million that the American Recovery and Reinvestment Act invested in the program. The result is an expected increase of 12,00 primary care physicians, nurse practitioners, and physician assistants by 2016. The Affordable Care Act includes a provision that excludes the value of student loans that were repaid or forgiven from taxes because the individual worked in certain health professions, including primary care (“Doty”).

The implementation of the Affordable Care Act (see explanation below) would not significantly impact the number of emergency department visits in Athens-Clarke County because Athens cannot access much of this federal money without a HPSA designation or federally qualified health center (FQHC). In contrast, since a lack of access correlates with inappropriate ED usage, the rates of emergency department use might even increase in the status quo. Mercy Health Center and the Athens Nurses Clinic will lose 70 percent of their patient base after the 2014 implementation of the Affordable Care Act, and the primary care workforce in Athens-Clarke County will not be able to handle the influx of
newly insured, low-income patients. Of the 391 general practitioners in the Athens-Clarke County area, which consists of 4 counties (Clarke, Madison, Oconee, and Oglethorpe) and 26 zip codes, only 40% accept Medicaid patients (“One Athens Final Report” 2008). These practitioners will be overwhelmed by the increased number of Medicaid patients in need of care and discouraged to see these patients by initial cuts in reimbursement rates and subsequent cuts in covered services. Medical providers such as physicians will receive a 0.5% percent cut in payments for treating Medicaid and PeachCare patients in fiscal 2012. Medicaid beneficiaries will face higher co-pays, and adults in the program will lose vision, dental and podiatry benefits. Parents of children in the PeachCare program for uninsured kids will be required to pay co-pays for the first time (“Governor’s FY 2012 Budget”). In Georgia, public health services take an $8.7 million cut in state funding, or a six percent reduction. The budget documents project a decrease of about 250 jobs in the Department of Community Health, which runs Medicaid and PeachCare, further complicating low-income patients’ access to primary care (“Governor’s FY 2012 Budget”). The provisions that the Affordable Care Act includes to help strengthen the primary workforce in medically underserved areas and health professional shortage areas will not benefit Athens-Clarke County, because its HPSA and MUA designations are at the lower limit of priority. There would be no significant change in trend of emergency department utilization rates.

Georgia Volunteer Healthcare Program (State-level policy)

In 2005, the General Assembly passed House Bill 166, the “Health Share” Volunteers in Medicine Act, which created the Georgia Volunteer Health Care Program (“Georgia Volunteer Healthcare Program”). This law authorizes the State of Georgia via the Department of Community Health (DCH) to offer state-sponsored Sovereign Immunity (SI) protection to uncompensated, licensed health care professionals who provide donated care to low-income, which includes Medicaid eligible patients. The state will be responsible for litigation as long as the volunteer health care professional acts within the scope of services. Sovereign immunity is important because it offers medical malpractice coverage or funding for malpractice coverage to individuals who volunteer their time to provide uncompensated medical services to patients. This incentivizes healthcare professionals to volunteer their time and expertise in free clinics or community health centers.

The Athens Nurses Clinic is one of the 104 free clinics that are a part of this program. A coalition of these free clinics forms the Georgia Free Clinic Network. The legislation is written to provide immunity to clinics and their volunteers as they provide free healthcare to patients. Under the legislation, clinics can see Medicaid patients, but can take no payment for these services (Looper). However, most clinics, including the two free clinics in Athens, have eligibility requirements that include income levels, residency, and a lack of any insurance coverage as part of their eligibility requirements. As a result, these clinics do not see Medicaid eligible patients.

Background for programs, terms, and definitions relevant to policy alternatives:

HPSA and MUA Designations

A wide variety of federal programs designed to improve access to health care services rely on the federal health professional shortage area (HPSA) and medically underserved area (MUA) designations to provide funding and other types of aid (Salinsky). The two related yet distinct designations, the Health Professional Shortage Area (HPSA) and the Medically Underserved Area (MUA), are most commonly used to identify underserved people or places. Before the ACA, economic stimulus from the American Recovery and Reinvestment Act of 2009 more than doubled support for activities sponsored by the National Health Service Corps and Title VII and Title VIII health professions training grants. While the stimulus represented a time-limited investment, The ACA continues these efforts into a longer-term commitment. Determining where capacity expansions are most needed is a specific yet as of yet, imprecise undertaking. Most federal programs designed to improve health care access through supply-side interventions utilize clearly defined criteria to designate underserved communities, including the measure of physician to local population ration to assess geographical availability of care. The designation criteria
attempt to also address financial, racial, linguistic, and cultural barriers to health. However, despite attempts to reflect the numerous factors that influence access to care, the score of existing designation criteria have been contested. They have been criticized for being outdated and scientifically unsound mechanisms for identifying levels of shortage or under-service (Salinsky). Athens does not have a geographic or population-based HPSA (“Athens: HPSA”). The Athens Neighborhood Health Center does have a federally qualified look-a-like designation that grants them an automatic HPSA facility of designation with a score of 0 on a scale of 0 to 25, 0 being the lowest priority and 25 being the highest priority (“Athens: HPSA”). On the MUA, medically underserved area, scale from 1 to 100, 100 being the lowest priority and 1 being the highest, Athens has a score of 60 (“Athens: HPSA”).

Athens-Clarke County area has a physician to resident ratio of 1 general practitioner for every 1,576 residents, compared to the national ratio of 1 for every 3,065 residents (“Doctors in Athens-Clarke County, GA”). These statistics make Athens seem well above the national average in terms of access to care on paper. However, the severe income disparity in Athens and the surrounding counties enforces the lack of institutional access to primary care for the low-income population in Athens. Currently, the HPSA designation for Athens-Clarke County is a geographic designation and not a population-based designation. Athens’ 36.3% poverty rate compared to Georgia’s 16.6% poverty level is masked by the three other counties’ relative wealth, including Oconee County, which has a poverty rate of 8.4% (Marks). If Athens-Clarke County applied for a population-based HPSA designation, FQHC applications from this community for a federally qualified health center would be much more likely to receive federal funding. The Affordable Care Act provides $1.5 billion over five years to expand the National Health Service Corps (“Doty”). This builds on a $300 million investment in the NHSC in the American Recovery and Reinvestment Act. The combined nearly $2 billion investment is expected to result in an increase of more than 12,000 additional primary care physicians, nurse practitioners, and physician assistants by 2016 (“Doty”). However, with lower limit HPSA and MUA designation scores, Athens-Clarke County is not very competitive for receiving funding for an FQHC in Athens-Clarke County.

Managed by the Bureau of Health Professionals, both methods allow the shortage designation to be applied either to the entire population of a defined service area or to a specific underserved population group that resides within a defined area. The HPSA designation can also be given to an individual public or nonprofit facility that provides care to certain population groups, if the facility can demonstrate that its capacity is insufficient to serve the designated population adequately (Salinsky). The Athens Neighborhood Health Center has been granted an automatic HPSA designation as a federally qualified look-a-like, but the score that it contributes to the total HPSA score is 0. Athens does not have a HPSA designation and its MUA designation is geographically based. Therefore, the income disparity and inequality in this area, particularly between Oconee and Clarke County, artificially decreases priority levels for the HPSA and MUA scores. The Bureau of Health Professions within HRSA is supposed to review and renew HPSA designations every year, but in reality no HPSA designations have been reviewed or withdrawn since 2002 (Salinsky). These designations are important to qualify an area to receive the benefits of the expanded National Health Services Corps; to increase in Medicaid reimbursement rates by 10%; and to draft a competitive application for an FQHC.

Policy Alternatives

Policy Alternative 1

In order to address gaps in primary care for low-income patients, the two free clinics in Athens – the Athens Nurses Clinic and Mercy Health Center – should exercise the full extent of its Sovereign Immunity and provide free care for low-income Medicaid patients as well as uninsured patients.

The Georgia Volunteer Program provides immunity to free clinics that serve uninsured patients and low-income patients for free. As soon as these patients gain access to some, however minimal, Medicaid or disability assistance, they are no longer eligible for care at free clinics, which provide free medicines, basic primary care, and emergency care to these patients. As can be seen in Massachusetts, even after the health care reform is fully implemented in 2019, gaps in coverage and access to care will continue to exist if not expand in
our health care system. The need for free health clinics and health safety nets will not disappear.

**Policy Alternative 2**

Athens-Clarke County should apply for an HPSA and MUA designation for its low-income population through Georgia’s Primary Care Office. Athens-Clarke County does not have an HPSA designation, which would qualify Athens for federal programs designed for underserved areas, including the National Health Services Corps’ loan repayment program for health professionals who practice in underserved areas. These designation scores are also important when applying for being federally funded as a federally qualified health center. The data collection needed for the HPSA application is the same data that would be useful for a competitive FQHC application and for a thorough community needs assessment, which has not been done since 2008, when “OneAthens” was formed. “OneAthens” later became the Athens Health Network.

**Policy Alternative 3**

The Georgia state legislature should broaden the scope of prescriptive authority for nurse practitioners who practice in free clinics or health centers that provide care to the uninsured, low-income, or Medicaid patients. This broadened prescriptive authority would allow nurse practitioners to prescribe certain schedules of drugs (III – V), which most directly pertain to those routinely prescribed in primary care services.

**Analysis**

The substantive goal of the policy is to increase underserved, low-income patients’ institutional and financial access to primary care for chronic conditions. The abstract, multi-dimensional nature of “access” makes it difficult to measure and quantify. However, two proxies can be used to gain more insight into a patient’s ability to access care.

**Impact Category: Emergency Department Usage**

The first is a decrease in the number of emergency department visits for chronic conditions or non-emergent reasons by low-income and underinsured patients (inappropriate ED usage). The treatment and management of chronic care conditions are best handled outside of the costly realm of the emergency department. When patients have access to primary care services, they are less likely to forgo care and resort to using emergency department services. In Athens-Clarke County, 82% of the patients seen in Athens Regional Medical Center’s Emergency Department are uninsured or Medicaid patients, indicating a lack of access to primary care services.

**A. Policy Alternative 1: Status Quo (Affordable Care Act)**

The closest model that we have for the Affordable Health Care Act is the health reform enacted in Massachusetts. In Massachusetts, this same reduced access to primary care services for low-income patients resulted when the reform was implemented. “While the new health insurance improved access to care for some residents, many low-income patients who previously received completely free care under the state’s old free care program now face co-payments, premiums and deductibles that stop them from getting needed care. The Massachusetts reform law is not providing universal access to care, even in a state with highly favorable circumstances, including previously high levels of spending on health care for the poor, high personal incomes, and low rates of uninsurance” (“Massachusetts’ Plan: A Failed Model for Health Care Reform”). The data on inpatient and outpatient ED use suggests that there is not a correlation between the health reform in Massachusetts and the trend in total ED utilization rates relative to states in which no reform was enacted. All states had an upward trend in emergency department utilization rates. Massachusetts’ health care reform law has thus far neither increased nor decreased ED utilization relative to that in other states (“Massachusetts’ Plan: A Failed Model for Health Care Reform”). Either health insurance really does not have any bearing on ED utilization or two different factors are working against each other. The Massachusetts insurance expansion might be reducing ED use, but this reduction might be offset by the difficulties in finding primary care physicians (Chen 2011). In 2009 (latest data), Georgia had 3,542,787 ER visits; 954,678 of those visits were Medicaid patients; 957,727 were uninsured patients; and 922,621 patients had private insurance. The rate of ER visits was higher for uninsured and Medicaid patients than privately insured patients, who have greater access to care (“Emergency Room Visits Web Query”).
Therefore, if patients’ access to care decreases after the implementation of the Affordable Care Act, inappropriate emergency department usage would increase.

B. Policy Alternative 2: Athens-Clarke County should appeal its HPSA and MUA designation scores for the low-income population for a competitive FQHC application

Medicaid patients seen in an FQHC are 1.5% less likely to be hospitalized or seek ER care. Clusters in federally designated MUA’s that were not served by an FQHC had on average 5.8 fewer public hospitalizations per 1,000 population over the three years than did the clusters in MUAs that were not served by an FQHC (p = .029). If Athens-Clarke County could draft a competitive FQHC application, which would be aided by a high priority designation score, emergency department usage rates would decrease. Annually, the Athens Regional Medical Center, one of two emergency departments that serve the Athens community, has 76,000 visits; 82% of these, 63,960 visits, are uninsured or Medicaid patients. If this policy alternative is implemented, emergency department visits would decrease by approximately 450 visits.

C. Policy Alternative 3: The Athens Nurses Clinic and Mercy Health Center should exercise the full extent of their sovereign immunity and accept Medicaid patients when the Affordable Care Act is implemented.

If the Athens Nurses Clinic and Mercy Health Center accept Medicaid patients (they currently do not see any Medicaid eligible patients), the status quo would be maintained. The free clinics could at least maintain their patient base, if not expand to see more patients who are caught between being unable to receive care from free clinics and being unable to receive care from primary care physicians in Athens.

D. Policy Alternative 4: Increase nurse practitioner’s prescriptive authority of NP’s working in free clinics, community health centers, or serving medically underserved populations.

If nurse practitioners could have broadened prescriptive authority, the nurse practitioners at the Nurses Clinic and the nurse practitioners in Athens-Clarke County could fill the gaps in the primary care workforce. Even though increased prescriptive authority wouldn’t directly impact ED utilization rates, increased access to care would decrease inappropriate ED utilization rates.

This policy has greater potential to decrease non-emergency emergency department use than policy 3 does, because the policy alternative provides an expansion in the primary care workforce. In contrast, policy 3 would only maintain the status quo.

Impact Category: Increased number of patients seen by primary care providers

Policy Alternative 1: Alternative 1 (Status Quo)

The 5,500 patients seen by the Athens Nurses Clinic and Mercy Health Center would no longer have access to primary care services. About 70% of the patient base for both free clinics lives at or below 133% of the federal poverty level; these patients would now have access to Medicaid insurance coverage.

Policy Alternative 2: HPSA and MUA designation

After the Affordable Care Act is passed, 10.5 million new patients will be seen in Health professional shortage areas. When divided by the 5,748 HPSA’s, Athens-Clarke County would have about 1,826 more patients seen by primary care providers (“Realizing Healthcare Reform’s Potential”).

Policy Alternative 3: Sovereign Immunity Clause

Fully utilizing the Sovereign Immunity clause would not directly impact the number of patients seen, but it would maintain the status quo. The 5,500 patients that Mercy Health Center and the Athens Nurses Clinic see would continue to have access to care. Athens-Clarke County according to 2009 demographic data, has 21,769 Medicaid recipients, which accounts for 18.7% of the population (“Athens: Demographic Profile”). If the free clinics in Athens-Clarke County began accepting Medicaid patients, the 21,769 patients would have more, although still inadequate, access to care. The clinic’s resources and capacity would limit the number of Medicaid patients seen. The clinics may not have the capacity or resources to expand the number of patients seen, but at least the newly qualified Medicaid patients could continue to receive care at the free clinics.
Policy 4: Nurse practitioners prescriptive authority

If the 535 nurse practitioners in Athens could add to the primary care workforce in an augmented fashion and nurse practitioners see about 20 patients per day, about 10,700 patients (535 x 20) would have better access to primary care (Buppert).

Goal: Least implementation cost

Impact Category: Cost of implementation

Policy 1: Status Quo

The Affordable Care Act will cost Georgia 2.5B from 2016 through 2020 just for the expansion of Medicaid. The start-up costs for Medicaid are not fully defined. Also, this only represents the Medicaid portion of the ACA. The costs of the status quo, for purposes of this paper, are inevitable. Therefore, the costs of the status quo are also the costs of the alternatives.

Policy 2: HPSA and MUA designation

No clear data available. Possible costs include $3-4,000 dollars for the compensation of participating clinics and hospitals.

Policy 3: Sovereign Immunity Clause

Exercising the full extent of its powers under the sovereign immunity clause offered by the Georgia Volunteer Healthcare program would not accrue any direct costs. However, implicit costs in changing business strategy models exist in implementation. The Athens Nurses Clinic would not support exercising the full extent of its sovereign immunity, because as a clinic run by volunteer nurse practitioners, who have a very limited scope of prescriptive authority, the clinic does not have the capacity to start accepting paying patients, because this would require the clinic to hire one or two people just to handle insurance paperwork, a luxury the clinic cannot afford. The free clinic would no longer qualify for many free pharmaceutical programs – that provide all of the medications the clinic provides to its patients. The Mercy Health Center is not interested in changing its business model either.

Policy 4: Nurse Practitioners Prescriptive Authority

Broadening the Prescriptive Authority of nurse practitioners who serve in free clinics and health centers that treat medically underserved patients would not have any direct costs. The nurse practitioners who currently volunteer their time would not be working more; rather, they could continue to volunteer but have an increased scope in providing care. This policy would incentivize more nurse practitioners to volunteer and provide free care to low-income patients.

Goal: Feasibility

Impact Category: Who are opponents/supporters

Policy 1: Status Quo

The Affordable Care Act is politically feasible in that it has already been passed nationally. However, it is not politically favored in Georgia. Georgia has proposed bills to enact state statutes that will oppose elements of health reform. There are more opponents of the legislation at the state government and Athens local government level than there are supporters.

Policy 2: HPSA and MUA designation

Both the Medical Partnership and Athens Neighborhood applied to receive FQHC status, but were both denied. The interest for having an FQHC exists in Athens, but the community level data needed to make these applications competitive is not there. This information is the same information needed to complete the application for having an HPSA. The Athens Health Network, which brings together many of the health providers in Athens, has expressed interest in implementing this policy. A number of commissioners for Athens-Clarke County have expressed interest in this policy. There are not major opponents in the power hierarchy of Athens, but convincing the various health actors to not only support, but participate and help in the data collection would still be a challenge.

Policy 3: Sovereign Immunity Clause

Neither of the two free clinics, the Athens Nurses Clinic or Mercy Health Center supports this policy. The Athens-Clarke County government and Chamber of Commerce are opposed to this policy. There are no major supporters of this policy in the Athens community.

Policy 4: Nurse Practitioners’ Prescriptive Authority
The Athens Area Coalition of Physicians and coalitions of physicians all over the state of Georgia would not support this policy, because this would further blur the distinction that separates physicians from nurse practitioners. The Georgia Medical Association would not support this policy because it would lose significant sums of money. The Athens Nurses Clinic would support this policy; its nurse practitioners would have an increased scope with which to serve patients. Mercy Health Center would not support its competitor, the Athens Nurses Clinic, being more competitive in recruiting volunteer healthcare professionals. There would be more opponents of this policy than supporters in Athens-Clarke County.

Impact Category: Technical Feasibility

Who would take the lead on changing the status quo in Athens changed?

Policy 1: Status Quo
The changes from the Affordable Care Act will be national and state-level changes, which will be responsible for changing the status quo around the state, including in Athens-Clarke County. The Georgia Medicaid office will be responsible for adding Georgians to the rolls of Medicaid. This policy does not necessitate a particular actor in Athens.

Policy 2: HPSA and MUA designation
The Athens Health Network, whose executive board is composed of directors of the various health providers in Athens, will spearhead the change to the status quo. The Athens Health Network is understaffed and underfunded. However, by relying on the expertise at the University of Georgia and the various interns in the College of Public Health who are willing to gain experience in such community needs assessments without pay, Athens Health Network can complete the HPSA application. The policy is technically feasible.

Policy 3: Sovereign Immunity Clause
The Athens Nurses Clinic and Mercy Health Center would have to implement this policy by changing their eligibility requirements to “low-income” instead of “uninsured”. The clinics do not have the capacity, the funding and volunteer resources, to be able to expand their services to the more than 21,873 patients on Medicaid in Athens, who would all want to be seen at the clinics. The free clinics, would however, be able to continue seeing the same number of patients they see now, which would not require a large expansion in funding and staff.

Policy 4: Nurse practitioner authority
The changes to the status quo in Athens would have to occur at the Georgia State Legislature. While the technical expertise and ability to implement this policy exists at the State Capitol, the political favor necessary to implement it does not.

Implementation of Final Policy Recommendation
Athens-Clarke County should apply for an HPSA and MUA designation for its low-income population through Georgia’s Primary Care Office, because it is the most feasible and forward-looking policy alternative.

The Athens-Health Network should utilize interns from the College of Public Health to collect and analyze data (see below for calculations necessary) from Athens-Clarke County to complete the HPSA designation application for the low-income population in Athens. This information to enhance grant applications for the various healthcare actors in Athens, including those clinics applying to be a federally qualified health center (federally funded).

The Athens-Health Network should submit this application to the Primary Care Office of Georgia and work with the Regional analyst, Dorothy Briant, to have the application reviewed and approved for HPSA and MUA designations. The Primary Care Office should submit these to the Shortage Designation Branch of the Human Resources and Services Administration for final review. The Shortage Designation Branch would hopefully issue its decision to approve or deny HPSA status within ninety days of receiving the application.

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Improving Student Performance by Reforming Teacher Evaluation Methods in Georgia Public Schools

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ABSTRACT. Students in Georgia Public Schools are lagging behind the rest of the nation. According to the National Assessment of Educational Progress (NAEP), a nation-wide test of 4th and 8th graders, Georgia ranks among the bottom 15 states of the nation in reading and math. While numerous variables influence students’ educational outcomes, the most important school-related factor is the quality of teachers. In order to assess the ways in which teacher evaluation methods could be improved to increase the quality of teachers in Georgia Public Schools, I reviewed relevant scholarly research and conducted interviews with education scholars and policy experts. Over the course of the research, it was discovered that the current system of Georgia Public Schools identifies very few ineffective teachers, does not incentivize good teaching, and does not have accurate information on which to base employment and compensation decisions. In addition, the value-added tests currently in place to measure teacher effectiveness are in many cases inaccurate due to the small sample size involved. In the wake of these findings, I suggest that the formation of an independent body of teacher evaluators would increase the quality of teachers by providing unbiased feedback to the teachers, as well as accurate qualitative information to be used in schools’ employment and compensation decisions. These findings are important because they embody a critique of the status quo as well as a viable alternative to it. By improving teacher evaluations, we improve the quality of teachers, and thereby give Georgia’s students the education they deserve.

The Problem

Georgia’s public school system has a responsibility to provide the best possible education for its students, but Georgia’s student performance is still lagging behind the rest of the nation as measured by the National Assessment of Educational Progress: Over the past 10 years, 8th grade reading has remained stagnant, and 8th grade reading and mathematics scores have been consistently below the national average.1 The numerous influences on student performance include socio-economic status, home life, class size, and more, but the most important school-related factor is the ability of the teacher.2, 3 To ensure that teachers reach their optimal ability, they must be evaluated accurately, and the results of their evaluations should be used to identify the quality of teachers. Once effective and ineffective teachers have been identified, the ineffective teachers can be developed or let go, and the effective teachers can be rewarded. In short, Georgia’s public school system should be characterized by fair and informed decisions related to teacher employment, compensation, and development decisions. This paper will argue that the teacher evaluation methods employed in the Georgia public school system do not facilitate informed decisions.

Recent years have seen an increase in public clamor over poor student performance in Georgia. The poor performance of Georgia public school students on the reading portion of the National Assessment of Educational Progress speaks for itself: “In 2007, the average scale score for eighth-grade students in Georgia was 259. This was not significantly different from their average score in 2005 (257) and was not significantly different from their average score in 1998 (257)”. 4 I n addition, Georgia public school students have performed at a significantly lower level than the rest of the nation on assessments of reading and mathematics, and this gap has remained static for the past 10 years.5

Teacher Evaluation in Georgia

Using accurate and informative teacher evaluation methods is one way to maximize student

5 Ibid.
performance. In fact, simply letting go of the worst 6-10% of teachers substantially improves student performance, even if those employees are replaced by teachers who are merely adequate. Identifying and dealing with ineffective teachers is just one aspect of the teacher evaluation process, but even taken alone it can exert a powerful influence on student performance.

Georgia, however, fails to evaluate teachers accurately, and this inaccuracy leads to an extremely low number of ineffective teachers being identified. As the Atlanta Journal Constitution reported, “Less than 1 percent of Georgia’s 143,000 educators and support staff received ‘unsatisfactory’ ratings on annual performance evaluations in 2008-09, evidence the current system isn’t working, according to state leaders.” These overly positive evaluation results can be explained relatively easily. They are caused by the evaluation system itself: Local districts can choose how their teachers are evaluated, but most of the districts only allow evaluators to classify teachers as either satisfactory or unsatisfactory. These evaluators are usually members of the administration, such as principals, and principals’ ratings of teachers in particular tend to be overly positive, possibly due to the legal battles that can ensue if teachers are fired. Thus, Georgia Public Schools would be able to improve student performance if they implemented a teacher evaluation system that facilitated the identification of ineffective teachers so they could be developed or let go.

In addition, the system of teacher pay does not incentivize teachers to teach as well as it should. The current system allows deviations in teacher compensation from school district to school district, but most districts evaluate teachers on the basis of inputs like experience and education. The ostensible thought process behind this decision seems sound: It is difficult to gauge teacher ability through standardized testing for students for a variety of reasons. Given the difficulties inherent in measuring teacher performance in student outcomes, teacher pay can be determined in large part by the important inputs that determine those outcomes—education and experience.

In reality, however, teacher education and experience are not as highly correlated to student performance as many would assume, especially in the long run. In an aggregation of studies on the correlation between various inputs and student outcomes, it was shown that inputs like teacher education and the teacher-pupil ratio have no real impact on student performance. In the case of the teacher-pupil ratio, 28% of the studies found statistically significant differences, half of which found negative correlations. Teacher education fared similarly: Only 14% of the studies yielded statistically significant correlations: 9% were positive and 5% were negative. Teacher experience, for its part, yielded more promising results. Of 206 studies, 34% found statistically significant correlations: 29% were positive and 5% were negative. Nevertheless, teacher experience and education are important parts of a teacher evaluation system insofar as they enjoy immense political popularity, especially among teachers and education officials. In short, no politically feasible alternative can ignore them completely.

Nevertheless, this picture of teacher education and experience as insignificant is not complete; they can be useful predictors of student performance in some cases. Teacher education, for instance, may be more justified than this statistical analysis indicates when it is parsed out by type of degree, since degrees in non-education areas tend to translate more solidly into student performance gains. In other words, in terms of a teacher’s contributions to student performance gains, “more vital [than obtaining an advanced degree] are a teacher’s intelligence, experience, and mastery of the subject.” In addition, intuition would keep us from

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8 Jaime Sarrio. “Teachers to Be Graded on Student Test Scores”.
13 Ibid.
completely dismissing teacher experience as a significant factor in student performance without significant reluctance. After all, it would make intuitive sense for teacher ability to plateau after a period of several years as the teacher becomes settled in his or her role and accustomed to dealing with students. Thus, the politically necessary inclusion of teacher education and experience in teacher evaluations is actually partially justified by the modest impact they have on student performance under the right circumstances.

As mentioned above, some degrees obtained by teachers are more useful than others in terms of eventual student performance. Interestingly, some of the less useful degrees are created as a result of the education market responding to teacher compensation criteria by providing master’s degrees that can be obtained with minimal work on the part of the teacher. One case study illustrates the point painfully well: Cambridge College in Massachusetts has no entrance exam or GPA requirement. At this college, “42% of graduate students in education said the absence of tests was one of the three main reasons they chose the school, behind ‘flexible schedule’ and ‘adult learning/teaching model’”.

No failures or withdrawals are recorded on the school’s “success-based transcripts”, and most participants are able to finish their advanced degree within 6 months—about half the standard time. And this phenomenon may not be limited to Cambridge College, given how quickly the education market reacted to the incorporation of teacher education as a factor in determining teacher pay: The total number of master’s degrees conferred in America rose by 15% from 1996–2001, while the number of master’s degrees in education rose by 21%, and this growth in the number of education master’s degrees awarded took place “mainly in online and satellite, or off-campus, programs tailored to teachers who lack time and entry requirements for traditional programs”. In effect then, the market has responded to the incorporation of teacher education as a factor in determining teacher pay: The total number of master’s degrees conferred in America rose by 15% from 1996–2001, while the number of master’s degrees in education rose by 21%, and this growth in the number of education master’s degrees awarded took place “mainly in online and satellite, or off-campus, programs tailored to teachers who lack time and entry requirements for traditional programs”.

Relevant Federal Legislation

Federal legislation is the backdrop for much that occurs in Georgia Public Schools, especially with respect to student evaluations. Specifically, the No Child Left Behind Act has played a pivotal role in influencing student outcomes in Georgia. The aim of No Child Left Behind was to improve the reading and math scores of all the lowest achievers so that every public school student reached proficiency in reading and math by graduation. To measure progress towards this goal, the Federal Government placed a heavy focus on standardized testing in public schools, and these standardized tests influenced teacher evaluations in Georgia.

Specifically, No Child Left Behind requires public schools to test students in reading and math every year from 3rd through 8th grade. Every state has the leeway to determine their own tests to assess student learning, and they are not restricted to only testing those subjects and grade levels that No Child Left Behind requires. In Georgia, students are evaluated in reading, math, and language arts every year from 1st through 8th grade. The amount that No Child Left Behind requires each teacher’s class to improve by was coined Adequate Yearly Progress (or AYP), and those schools that did not

meet enough AYP would be subject to a variety of penalties, including increased oversight of the school by the Federal Government and potentially the closing of the school. Thus, No Child Left Behind influenced teacher evaluation methods in Georgia by placing a heavy emphasis on standardized tests in some subjects, and some teachers were heavily pressured by school officials accordingly. This Federal involvement with education was unprecedented, and it has defined much of the Georgia public school culture since its passage in Congress.

The No Child Left Behind Act is an ineffective policy for several reasons. Some of those schools that appear to be meeting the law’s testing goals may actually be falling short and cheating to cover over the difference. In Georgia, this cheating was epitomized in the Atlanta public school system. The cheating took place because teachers were heavily pressured to meet AYP no matter the cost, and this pressure led to a culture of fear, as described in the official investigators’ report. In all, about half of all the schools in the district were found to have cheated, and 178 teachers and principals were implicated in the scandal. The culture of cheating and fear effectively facilitated by No Child Left Behind was pervasive: A child sat under his desk and refused to take the standardized test- and a teacher made sure he “passed”; one teacher was made to sit under the table during a faculty meeting because his or her class had failed to make Adequate Yearly Progress; and whistleblowers were not just ignored- they were sometimes formally reprimanded as well.

Significantly, cheating on standardized tests in Georgia may not have stopped at the city limits of Atlanta. In fact, cheating was likely to have taken place in other areas of the state as well: In a study of erasure rates that flagged schools with unusually high rates, 16 districts had 5.5-10.4% of their public schools flagged, and 5 districts had 10.5-24.4% of their schools flagged, and two districts (including Atlanta) had even higher rates. Erasure rates refer to the number of erasures made on a given standardized test from wrong to right answers. The tests measure the probability of cheating by calculating the likelihood that the student would have made all those changes from wrong to right without cheating, and this test is highly reliable in terms of statistical method. Presumably, at least some of this cheating was also a reaction to the pressure to meet Adequate Yearly Progress as stipulated by No Child Left Behind.

**Conclusion of Background Information**

The current level of student performance is unacceptable. Since teachers are the most important school-related factors to student performance, it is essential to make sure they are evaluated, developed, and compensated as fairly as possible. Georgia’s system of teacher evaluation, however, is unable to evaluate teachers effectively, and as a result the state is unable to make informed decisions with respect to employment decisions, compensation, and teacher development. To remedy this problem, the Georgia Department of Education should implement a politically feasible policy of teacher evaluation that allows the state to make informed decisions about teacher employment, compensation, and development. In this way, Georgia will be one step closer to providing its public school students with the highest possible quality of education.

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21 Ibid.

22 Ibid.

23 Ibid.

24 Ibid.


26 Ibid.


Potential Policy Alternatives

Given the current system’s inability to incentivize good teaching and identify ineffective teachers, it is necessary to review some of the potential policy alternatives. The relevant test by which the policy alternatives will be measured is their ability to accurately identify ineffective teachers, their ability to incentivize good teaching, and (based on the prior two criteria) their ability to increase student performance.

The Status Quo

In the status quo, teacher evaluation methods differ across districts, and every district employs a range of measures in its teacher evaluations. Nevertheless, in almost all districts teachers are categorized as either satisfactory or unsatisfactory largely on the basis of a principal’s classroom evaluation. Teacher compensation, for its part, is largely based on education and experience. Though the small percentage of teachers identified as ineffective are in all likelihood actually ineffective, an ineffective teacher identification rate of less than 1% falls far short of the ideal (for our purposes) of 6-10% identified as ineffective. In addition, rating teachers as merely satisfactory or unsatisfactory fails to adequately tier the teacher evaluation system with respect to teacher ability. Thus, the status quo fails incentivize good teaching, identify ineffective teachers, and ultimately improve student performance.

Value-added Model Alternative

One policy that could potentially be utilized over the status quo is the widespread incorporation by the state General Assembly of a value-added model as part of teacher evaluation (and hence, teacher compensation) in Georgia. According to this policy, one of the measures used in evaluating teachers would be the value that they effectively add to student learning as observed in the difference in students’ test scores over time. This evaluation measure would apply only to those teachers whose subjects involve standardized tests, which in many cases would mean reading and math teachers in grades 3 through 8. The main problem with this approach is that the values produced by the value-added model would be victims of large standard errors due to the small sample sizes involved.

Ultimately, it is the excessively large standard errors involved that prohibit this policy from being selected. Since teachers would be incentivized on the basis of a number that does not accurately reflect their contributions and effort as a teacher, good teaching would not be incentivized. In addition, the teachers identified as ineffective may just be identified as such due to the mathematics involved in value-added testing, not due to actual ineffectiveness. As a result, student performance would probably not improve significantly, and the policy is not significantly better than the status quo.

Independent Body of Reviewers Alternative

The final policy to be assessed is the creation of an independent body of qualified educators to evaluate teachers, rather than the respective schools’ principals, and this body’s evaluations would be among the range of measures used to evaluate teachers and determine teacher compensation, alongside experience, education, test scores, and (depending on the district) teacher value-added. Ultimately, the exact mix of these factors would be left up to the individual school districts to decide, since flexibility and school district autonomy are defining traits of the American public school system.

The implementation of this idea cannot be addressed in this paper, but the qualitative evaluation of teachers by unbiased evaluators on a random basis would be effective in identifying ineffective teachers on the

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30 Jaime Sarrio. "Teachers to Be Graded on Student Test Scores".
1917301932915043111801026513869212.17.51240&g=cache:RCr5YHqaWj0J:http://public.doe.k12.ga.us/dmgetdocument.aspx/salaryschedule08.pdf?js=6cc679f18c137f1f969ce5f5b66c9a0b0e9d54703ade3cb893cd96b6d6a18&type=d+pay+for+Georgia+teachers&ctclnk
34 Jonathan Templin. Personal interview. 10 October 2011.
basis of what they contribute to class. These teachers would also receive feedback in order to help them improve. If bonuses are paid to teachers based in part on these evaluations, then good teaching will be incentivized. Thus, since these criteria are fulfilled, student performance in Georgia Public Schools should improve.

Conclusion
There is a problem with student performance in Georgia: only a minority of Georgia’s public school students are proficient in math and reading, and it is likely that they perform poorly in other subjects as well. One reason for this is that teachers are not evaluated accurately, and as a result they are not incentivized to work harder, and schools are not able to make informed decisions in terms of employment and compensation. The problem can (and should) be attacked in a variety of ways, and after a number of years the Georgia General Assembly will be able to step back and assess what works and what does not.

The change to teacher evaluation methods in Georgia that most deserves utilization is the creation of an independent body of evaluators to assess teacher performance using qualitative methods. This body would incentivize teachers, because they would be ranked on a scale. It would also identify ineffective teachers, who could then be developed through the personalized feedback and other development programs, or they could be let go to make room for a better teacher. Given its prospects of solid improvement in student performance through its improvement of teacher evaluation methods, this policy should be politically feasible. For all these reasons, I advocate the creation of an independent body of teacher reviewers and the incorporation of their reviews into teachers’ evaluations across the state of Georgia.

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The Road Forward: US Policy to Ensure a Democratic Transition in Egypt

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ABSTRACT. Since the resignation of President Hosni Mubarak, the Supreme Council of the Armed Forces (SCAF) has led the government of the Arab Republic of Egypt. Recent actions by the SCAF have raised concern that the SCAF will not surrender power upon the conclusion of the 2012 election cycle. These conclusions were drawn as a result of the continued use of Emergency Law, the continued use of military trials on civilians and the detainment of international citizens, including citizens of the United States. As a result of these observations, the United States (U.S.) must anticipate an attempt by the SCAF to hold on to political authority rather than transfer it to the elected officials of the new government. To plan an appropriate reaction to this event, the US should consider previous military-controlled governments, including the Republic of Haiti and the Republic of Poland, to chart a response. Effective options the US should consider include enforcing political and economic sanctions, which may range from the reevaluation of military foreign aid and the rescindment of military weapons sales to economic sanctions and continued support for the democratic movement within the Egypt, in an attempt to transfer power from the SCAF to a democratically elected government.

Introduction

Throughout the course of history, political power often has been vested in a nation’s military complex, either due to the generally accepted opinion that power is precious and should be wielded by the strongest or by the direct assumption of power by a military figure away from civilian leadership. As a result, governments over the centuries often took the form of dictatorships, military councils or politicians in power having served in the military at some point during their lives. During the 20th century, instances where military forces have complete control over a government have become less common in developed countries. This reduction coincides with the general rise of democracy, which was seen across the world during the 20th and 21st centuries. This trend continued in the winter of 2011 with the beginning of the Arab Spring Protests across the Middle East region. Protests sprung up in many countries, including Turkey, Tunisia, Egypt, Syria and Yemen. These protests’ outcomes had a wide range of effects, ranging from the ousting of rulers in Yemen and Egypt to ongoing civil war in Syria.

One of the most significant effects of the Arab Spring movement has been the removal of long-time President Hosni Mubarak from power in the Arab Republic of Egypt, opening the path for potential democratic reform in this nation that has been autocratic for the past half century. However, the Supreme Council of Armed Forces (SCAF) has in recent months displayed a prominent ambition to remain a political entity beyond the total establishment of a democratically elected government, as demonstrated by the resumption of power in Egypt as a result of a legal ruling dissolving the Egyptian Parliament. While the newly elected president of Egypt has worked to ensure stability in his country, Egypt is not the only nation where the military holds a preponderance of power over a civilian government. Cases of this can be seen around the world, ranging from the Republic of Fiji to the nation of Zimbabwe. The reason behind the focus on Egypt is that Egypt represents one of several nations in the Middle East that are taking their first steps toward a stable and legitimate democratic government.

The potential takeover of a government by an internal military force highlights one of many variables in a transition from an autocratic military-controlled state to a democratic one. If the military of said state should attempt to assume control over a newly democratic regime that cannot sufficiently defend itself from such actions, it falls to the allies of this nation to implement policy to attempt to provide assistance in a peaceful transition to a democracy. At this time, the world is still unsure of how to treat newly emerging democracies while at the same time working to ensure that their governments remain under civilian control. This is particularly important in the nations involved in the Arab Spring Revolutions, many of which are still attempting that same transition. In this paper, Egypt will be used as a primary example of how to attempt to ensure change if a military force assumes control of a government. Though this has happened in a variety of countries over the past fifty years, these examples will be used to
establish a possible solution if this were to occur in the Arab Republic of Egypt.

In February 2011, Hosni Mubarak resigned as president of Egypt after ruling the country for 30 years. Mubarak gave his resignation after several weeks of protests by the Egyptian population against the oppressive policies enforced by his administration, ranging from the oppression of personal liberties such as freedom of speech and religion to physical violence from the Egyptian law enforcement. The protesters also sought free and fair democratic elections. To ensure stability until a new government can be elected, the SCAF was given presidential authority to maintain order and to help ensure fair elections. After the inauguration of a new president, the SCAF has stated its intent to return to running the affairs of the Egyptian military without major influence in the Egyptian political system. However, recent events in Egypt have prompted speculation that the SCAF may choose to remain in control of the government regardless of the results of the next election cycle.

Should the SCAF fail to cede power to civilian rulers, American interests in the Middle East would be greatly affected. The reason for this is that the Mubarak government was an ally to the US for the past 40 years, a relationship which existed in part due to the offer of financial aid from the US. After the resignation of Hosni Mubarak, however, the US gave support to the democratic movement in Egypt, stating that by choosing to pursue a truly free democracy, the people of Egypt are taking control of their own future with the United States as an ally. A democratic Egypt would then be heralded by the US as a new model of transition for the governments of the Middle East, in an attempt to aid the democratic reform movement sweeping the nation. However, the possibility for SCAF to retain unilateral control of the Egyptian government would mean that the US would be forced to either work for a government that does not allow its people a voice, or to lose a strong ally in a volatile region of the world. As stated by several high level officials, the US will continue to push for a democratic government in Egypt, enabling a long-term friendship to exist between the two nations. Should the SCAF assume power, they would likely be addressed as a military junta, a group of military officers who rule a country after seizing power, and the US should choose to employ economic sanctions with the hope of returning the democratic government of Egypt to power.

Background of the Arab Republic of Egypt

The current situation in Egypt is the latest episode in a series of political events which began in the mid-20th century. In 1952, the military-led Free Officers Movement directed a revolution to end the Egyptian monarchy and the occupation of British forces, thereby establishing a national republic. After the initial success, the Free Officers Movement founded the Arab Republic of Egypt on June 18th, 1953. Since 1953, three individuals, Gamal Abdel Nasser, Anwar Sedat, and Hosni Mubarak have held the office of President of Egypt. These three presidential terms were characterized by mass repression of various freedoms, including freedom of press, religion and protest, along with allegations of the Egyptian government committing human rights violations.

After King Farouk I was deposed of his power, Gamal Abdel Nasser instituted himself as president with a wide range of executive powers, including the dismissal of ministers within parliament. With these powers, Nasser imposed many restrictions upon the
people of Egypt, severely limiting freedom of religion and the press in the name of national security. After a 1954 assassination attempt was made Nasser, a political crackdown began upon the citizens of Egypt. Under Law No. 162 of 1958, known colloquially as the Emergency Law, the president of Egypt was given wide executive powers, including the power to overrule the right to a trial by jury and limit freedom of press, severely limiting the regime’s political opponents.

Nasser’s successor Anwar Sadat reversed his predecessor’s alliance with the USSR, choosing instead to begin the process of building foundations for a political alliance with the United States. As a result of this new alliance with the US, Sadat was able to reclaim the Sinai Peninsula in return for signing the Camp David Accords, establishing peace with the State of Israel. A massive controversy ensued within the Arab world, resulting in Egypt’s expulsion from the Arab League. Domestically, Sadat worked to ensure his position by increasing limitations on religious and secular opposition, while reducing the degree of the restrictions on freedom of the press and assembly.

Sadat was assassinated in 1981 and was succeeded by Hosni Mubarak. Mubarak continued the precedent established by his predecessors by choosing to continue limitations on freedoms of speech and trial by jury found in the Egyptian Constitution, in favor of using the Emergency Law to subjugate his people. Mubarak was the first Egyptian president to allow more than one candidate to run for President in 2005. Mubarak won in a landslide amid allegations of extreme voter fraud, bribery and intimidation that culminated in the arrest and subsequent imprisonment of his opponent in a labor camp. Mubarak’s government was described to be such a complicated bureaucracy that the only way for progress to be made was through bribery. Freedom House, a non-governmental organization that reports on democracy in nations around the globe, claimed that "corruption remained a significant problem under Mubarak, who promised to do much, but in fact neither did anything significant to tackle it effectively." These three presidential terms were characterized by mass repression of various freedoms, including freedom of press, religion and protest, and alleged violation of human rights with the torture and the holding of civilians in military courts. The explanation behind many of these events comes from the powers vested in the government by Law No. 162 of 1958, which gave expansive powers to the government in the name of national security, including the power to censor the media and the power to place civilians in military trials.

The Arab Spring Revolutions and its Results
The Egyptian Arab Spring Movement resulted from the actions of the government of the Arab Republic of Egypt over the past fifty years. After the citizens of Egypt observed the success that public demonstrations had against government figures in Tunisia, a movement to replicate that success against the Mubarak government was set into motion. The main complaint of the Arab Spring was some of the policies of the Egyptian Government which resulted in a lack of freedoms for the citizens of Egypt. Until the 21st century, reporters were arrested or charged huge fines for derogatory remarks against the government or against the religion of Islam. While it has been made illegal to arrest reporters for attacking the government, the fines are still in place and the ban on attacking Islam remains in place. Another

concern was the treatment by the police and armed forces on the citizens of Egypt. Since 1985, there have been 701 reported cases of torture by members of the Egyptian Police Force, with 204 victims dying as a result.\(^\text{13}\) These, along with the general state of emergency that has been in place in Egypt for the past fifty years, resulted in the Arab Spring Movement.

A combination of demonstrations, protests, and labor strikes across Egypt culminated in the removal of Hosni Mubarak’s regime. The movement began January 25\(^{th}\), 2011 and ran for eighteen days. Around midnight on January 28\(^{th}\), the Egyptian government attempted, somewhat successfully, to eliminate the nation's Internet access, in order to inhibit the protester mobilization through social media.\(^\text{14}\) As a consequence, tens of thousands protesters entered the streets of Egypt's major cities. Later that day, President Mubarak dismissed his government, appointing a new cabinet and a new Vice-President for the first time in 30 years.\(^\text{15}\)

On February 11th, Mubarak ceded all presidential power to Vice President Omar Suleiman but subsequently declared that he would remain as President until the end of his term. However, protests continued, culminating in Mubarak resigning from the presidency.\(^\text{16}\) To ensure stability during this transition period, executive power was transferred to the Supreme Council of Allied Forces (SCAF), led by Field Marshall Mohamed Hussein Tantawi, the former Minister for Defense. The military immediately dissolved the Egyptian Parliament, suspended the Constitution of Egypt, and promised to lift the nation's thirty-year "emergency laws". Further, the Council began to make preparations for the nation’s first round of free elections, which occurred in November 2011.\(^\text{17}\) The elections to the Upper House of Parliament, also called the Shura Council, took place in January and February of 2012, concluding the second round of elections. The presidential election took place on May 23\(^{rd}\) and 24th 2012 with five candidates taking part in the first round of elections. Mohamed Morsi, the candidate endorsed by the Muslim Brotherhood, and Ahmed Shafik, the candidate who was endorsed by the Egyptian Military, both ran in a run-off election on June 16\(^{th}\) and 17\(^{th}\). Morsi was elected President of Egypt with 51.7% of the popular vote. These actions were lauded by both the movement and members of the international community.\(^\text{18}\)

**The Role of the SCAF during the Transition Period**

However, during the past several months, the SCAF has taken several courses of actions to limit protestors and to place more power with the SCAF. Since assuming power, the SCAF has imprisoned and tried 16,000 people in closed military trials, denying them due process or the ability to be tried before a jury of their peers. Of the individuals arrested and tried, many of them are bloggers, journalists and protestors.\(^\text{19}\) The continuations of military trials for civilians, a main point during the January protests, are one of the main reasons critics call for an accelerated removal of the SCAF. The


forces commanded by the SCAF also employed more violent tactics against protestors, the use of which was emphasized during the October 2011 protests, resulting in the deaths of 24 protestors.20

The appointment of 15 new regional governors is one of several controversial legal actions authorized by the SCAF. Egypt is separated in 27 governorates, which are comparable to regions, each led by a regional governor. Of the 27, 15 new governors were appointed by the SCAF on August 7, 2011. Of these 15 governors, several were either members of the military or the Mubarak Regime and included no women, Coptic Christian or younger individuals.21 The concern that rose out of this development focuses on the fear that the military is ignoring the demands of the Arab Spring Revolutions.

Finally, the actions from the SCAF furthered speculation that it is pursuing a more permanent political position. This comes from various attempts by the members of the SCAF to suggest ideas for the role of the council in the Constitution, to which General Mamdouh Shakin was credited as claiming “the military should be given some kind of insurance … so that it is not under the whim of a president.”22 From these comments, it is the opinion of some foreign observers that it is unlikely that the SCAF will completely abandon the political power they have accumulated this past year even past the current timetable to elect and implement the new parliament and presidency.23


To compound the issue further, on June 1424 2012, the Supreme Constitutional Court of Egypt announced that the elections were invalid on the grounds that a majority of the seats intended to be won by independent candidates had been won by members of political parties. This violated Egyptian election laws set up to allow for fair and free elections last year. As a result, the Supreme Court dissolved Parliament and allowed the SCAF to resume total political power over the nation. With this new power, the SCAF was able to rewrite sections of the 2011 Egypt Constitutional Declaration, taking the power of commander-in-chief away from the presidency and giving it to “the current head of the SCAF until a new constitution is drafted.”24

With this in mind, the SCAF has as of yet made no overt moves to establish themselves as the permanent leaders of Egypt beyond the establishment of a new parliament. President Morsi has taken steps to limit the SCAF’s power, ranging from granting himself executive authority to accepting Field Marshall Tantawi’s request to begin his retirement.25 However, the potential for such a move is too significant to be disregarded. The SCAF has been given complete control over the military, ranging from the establishing a budget to declaring war, removing civilian oversight completely. Also, as a result of the Supreme Court ruling, the SCAF has legislative powers, such as giving advice on the writing of the new constitution of Egypt and the appointment of new individuals to positions of power in the Egyptian government.26 Furthermore, if the SCAF chooses to establish itself as a legitimate political entity, they would most likely have the support of a majority of the armed
forces in Egypt, making them very difficult to remove from power without external military, economic or political intervention.

The Role of the US in Response to the SCAF

When considering this scenario, it is important to also anticipate the United States relationship with Egypt, as that could change depending on whether or not the SCAF cedes the authority they have assumed over the past two years. Also, the US has expressed a strong desire to see a true democratic government in Egypt. The US Department of State praised the Arab Spring revolutions, as seen with the public praise for the protestors and the call for leaders of nations such as Libya to step down as a result of similar revolutions. In regards to Egypt, the US has lauded the actions of the SCAF in its attempts to lead Egypt during this transition period. Over the past year, however, as the accusation of human rights violations against Coptic Christians and women have grown, the State Department has cautioned against ignoring these minorities, since actions could lead to permanent disadvantages to both these and other minorities within the new Egyptian establishment.

Historically, US response towards military juntas has varied drastically, ranging from military engagements to economic and political sanctions. Over the past several decades, multiple military juntas have been established, typically taking the form of a revolution against the pre-existing government, followed by a period of time with much of the executive political authority resting with the military. Ultimately, the junta would cede power to an another form of government, either transitioning into a democratic transfer of power, or throwing their support behind a single individual and dissolving themselves to allow for that individual to take control of the government.

In regards to Egypt, the US has interests in seeing the SCAF successfully hand over power to a democratic government, as a democratic Egypt would be seen as a new model to help the Middle East move into the democratic form of government, along with demonstrating the United States’ desire to work with the new democracies that have risen after the Arab Spring. Also, with Egypt’s proximity to Israel, it would be hoped that a democratic Egypt and Israel would find common ground on which to continue building a mutually beneficial relationship. Finally, the US’s belief in the superiority of the democratic model of governing gives it especially strong hopes that Egypt will give their citizens the freedoms that have been denied them under the Mubarak regime, including political freedoms and freedoms of press and speech.

In the past, the US has worked with authoritarian regimes in the Middle East to ensure that the US has some political leverage in establishing a modicum of stability in that region. However, the Arab Spring movement has created some of the first opportunities in recent years for true democracies to exist in nations that historically have had little to no free elections opportunities, such as Egypt and Tunisia. A report by the Council on Foreign Relations published in 2005 stated that if the US wanted to have serious credibility in regards to democratic movements in the Middle East, then the US needed to be willing to give real support to those movements even if that support resulted in short-term political loses. Since the US finally has the opportunity to work with governments that are democratic by choice, rather than by US intervention, it should work to ensure the protection and stability of those regimes as the first wave of a democratic movement spreading throughout the Middle East and beyond.


Policy Option for the US

Taking the conditions of the Egyptian political climate and the current climate in the Middle East into account, the best policy option would be to reduce military foreign aid to Egypt if the SCAF refuses to yield political control to the newly elected government. Further, if the military were to continue to illegally hold power, the US should halt all military sales from the US government to the Arab Republic of Egypt. Also, the US should consider implementing trade embargoes upon Egypt in an attempt to directly influence the Egyptian economy. Finally, the US should work within the United Nations to condemn the SCAF’s takeover and implement sanctions from that standpoint as well.

Since 2009, the United States has sent $1.3 billion annually in military financial aid to the Egyptian military. This amount makes up roughly 25% of the total Egyptian military budget, which totaled $4.56 billion in 2010. This amount makes the Egyptian military the second most financially stable on the African continent, after Algeria. Furthermore, in 2010 Egypt received a total $1.55 billion in financial aid from the US; the only other nation being given more financial aid is Israel. This gives the US significant leverage over the SCAF, as losing that money could put severe strain on its resources. As a result, the US is in a strong position to ensure a smooth transition of power from the SCAF to the newly elected Egyptian government.

Case Studies of Military Juntas

Historically, US response towards the establishment of a military junta varies drastically from military engagements to economic and political sanctions. Over the past several decades, many new military regimes often form revolutions against the pre-existing government. After the revolution, political authority often rests with the military. Ultimately, the junta tends to cede power to another form of government, either transitioning into a democratic transfer of power, or throwing its support behind a single individual and yielding its own power. In regards to US policy towards the Egyptian government, the US must consider other countries that faced challenges similar to the current situation in Egypt. These historical cases shed light on past US interventions and highlight what options are most effective. From these examples, it is possible to deduce what policy the US may use based on its effectiveness in other countries that have undergone similar regime changes over the past several decades.

This paper will address four different case studies which each share a component to Egypt’s current political status. The nation of Haiti, which underwent a military coup in 1991, demonstrates the effectiveness of economic, political and military sanctions in transferring political power from the military led autocracy back to a democratic state of government, and how these can be related to the situation in Egypt. The nation of South Korea, which underwent a coup in 1961, will serve to demonstrate the political aspects of trying to maintain diplomatic relations with a country during a military transition, similar to Egypt. The nation of Poland, in which the military declared themselves to be the leaders of the government under emergency laws in 1981, serves to demonstrate the effect of economic sanctions with a lack of political maneuvering in the speed of transition between governments. Lastly, the nation of Portugal, which underwent a military revolution against a dictatorship in the 1970, will demonstrate the potential for a military government to peacefully transition into a democratic government, which is the desired outcome in Egypt. After evaluating the strengths and weaknesses of each, this paper will discuss an effective US policy towards both Egypt and to other nations in the Middle East who may fall under military control rather than democratic control.

Case Study: The Republic of Haiti

In 1991, the nation of Haiti underwent a coup led by Army General Raoul Cédras, which ousted democratically elected President Jean-Bertrand Aristide. This resulted in a 3-year long rule by the military with Cédras as the de facto leader, though during this period

he did not occupy the position of president. While in power, the military junta executed over 5,000 civilians and worked to increase drug smuggling through Haiti as a source of revenue for the government. The United Nations (UN) condemned the regime, issuing repeated warnings to reinstall Aristide as President and for the military to stand down. When this failed, the UN attempted to encourage a transfer of power back to Aristide through economic sanctions. These measures included the United States cutting off all military foreign aid, the annual total of which amounted to $500,000 annually, and trade embargos being erected by various nations, including the United States and the United Kingdom. When these attempts failed, the UN Security Council passed United Nations Security Council Resolution 940 in 1994. This authorized a US-led multinational military force to depose the Cédras regime and restore Aristide to power. This marked the first time that such an operation was authorized on a nation in the Americas, demonstrating the strong necessity to reestablish the legitimate democratic system in Haiti. On the eve of deployment, a diplomatic force persuaded regime leaders to step down and allowed Aristide to return to power.

Case Study: The Republic of Korea

In 1961, several members of the South Korean military initiated a takeover of the government due to their observations of rampant corruption hampering attempts to revitalize the South Korean economy. Park Chung-hee established the Supreme Council for National Reconstruction to guide South Korea and implement a five-year plan to industrialize the nation. Over a period eighteen months, the Supreme Council worked to create export-led economic growth, and they were ultimately successful. On the other side of this issue, however, these years were characterized by severe political repression. In December of 1962, Chung-hee disbanded the council and established the Third Republic of South Korea. After the establishment of the Third Republic, Chung-hee ran for and was elected to the office of president, where he remained until his assassination in 1979.

Under the Kennedy Administration, the US chose not to widely condemn the regime change. One of the main diplomatic priorities of the US during this period was the containment of communism and South Korea, as one of the most significant non-communist nations in Asia, served as a solid ally to the US in this regard. Therefore, while the US cooperated with South Korea, the US did not give their full support to South Korea, rather choosing to give cautiously optimistic reports regarding the progress of the Supreme Council towards a more democratic government.

Case Study: The Republic of Poland

On December 13, 1981, General Wojciech Jaruzelski declared a state of war in Poland in response to numerous pro-Democracy protests and demonstrations


against the Communist policies of the People’s Republic of Poland. During this period, the government enforced a strict curfew, arresting hundreds of political dissidents and trying those arresting in military courts as opposed to civilian trials. During this period, the Military Council of National Salvation (MCNS) was established to run the country and to ensure order within Poland. The members of this Council consisted primarily of army generals, though several colonels holding positions during the reign of the MCNS. Martial law was further imposed for the next eighteen months, during which most of the nation’s infrastructure was reassigned in a highly centralized model which resulted in most citizens working under threat of being tried in military courts. By this time, these courts no longer followed the standard judicial system. Jaruzelski claimed that this was necessary to prevent potential invasion from the USSR, East Germany and other members of the Warsaw Pact, as they would have perceived the riots prior to martial law to be threats to them as well as to the nation of Poland. In 1983, Jaruzelski ended martial law and dissolved the Military Council of National Salvation, installing himself as President under the Polish Council of State, in 1983.

**Case Study: The Portuguese Republic**

In the 1970’s, the Estada Novo (Second Republic) was the reigning government of Portugal. The Estada Novo government was characterized as a dictatorship due to the severe limitations it placed on the freedoms of the people. After ruling Portugal unopposed for forty years, the Movement of Armed Forces, a group of military officers who desired a change in government, initiated the Carnation Revolution. The Revolution resulted in a military overthrow of the government, replacing the Estada Novo government with National Salvation Junta (NSJ), which was established in April 1974. During this period, members of the NSJ served as leaders of the nation, tasked with the office of president and the dissolution of the National Assembly. Over the next two years, the MFA worked to install socialist principles in the government, but was unable to do so due to strong opposition. Due to this opposition, the MFA resolved to work with moderate members of the newly founded government to create a stable democracy. The NSJ stepped down in 1976 to allow the new democratic government to assume control.

**Cases Studies in Demonstration of Options for Egypt**

When considering the case studies of Haiti, South Korea, Poland and Portugal, it is possible to observe a variety of policies which the US could implement to ensure that the SCAF transition power over to the elected officials in the new Egyptian government, ranging from economic sanctions to military intervention to conducting a policy of non-interference. The resolution of the Haitian crisis demonstrates a situation of the rise of military junta through illegitimate means; in this case, a military style takeover of the government and the removal of elected officials in favor of members of the military. This is in contrast to the transfer of power that was seen in Egypt, where the power was handed legitimately by Mubarak until the next president was elected. Methods used to reinstate the democratic government under Aristide involved the threat of a military invasion and economic sanctions against the nation of Haiti. This ultimately resulted in the

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successful application of diplomatic negotiations between the regime and the United States. In this case, economic sanctions, ranging from trade embargos to the limitation of foreign aid, did not guarantee the US’s intended regime change. The failure of economic sanctions in Haiti has been attributed to two sources; the relatively small amount of financial aid the US contributed to the Haitian military and the total dictatorship made it so the people of Haiti were not allowed to protest the economic strain they were under. Neither of these factors exists in Egypt, as the military obtains one-fourth of its budget from the US and the people of Egypt have seen the success of their protests and are unlikely to stop if a democracy is not established. Ultimately, it took the threat of a military invasion to return power to Aristide, ending the rule of the military junta in Haiti. This situation differs radically from the current situation in Egypt, but serves as a demonstration of the idea of manipulating foreign aid to attempt to re-establish a democratic regime. As over one-fourth of the total Egyptian military budget is the result of US foreign aid, Egypt presents a much more likely opportunity for this policy to succeed in influencing the Egyptian military.

The situation in South Korea is politically similar to Egypt. In South Korea, the military junta took control because of a government that was ineffective in solving the political turmoil and economic problems facing its country. This is similar to the case in Egypt, as the revolution took place to remove a government that did not provide political opportunities for its people and to attempt to remove the corruption that had plagued the government until the revolution, being given a score of 2.9 out of 10 as a nation with high corruption by Transparency International. Furthermore, the United States wishes to continue its relationship with Egypt, as the two nations have been allies since the government of Anwar Sadat. While the US should continue to maintain diplomatic ties and support for the democratic government of Egypt, taking a stand opposed to the event of total military takeover of the Egyptian government may work towards establishing a more productive relationship between the two nations after the installation of the new elected government. This is based on the observation that the relationship during the South Korean military junta was a friendship in little more than mutual support of anti-communism, creating the hope that the US and Egypt can forge a deeper relationship than just an alliance of convenience.

The US officially condemned the Polish government after an attack on Katowice Steelworks, which resulted in dozens of civilian casualties. To attempt to stand against the Military Council, the US employed economic sanctions against Poland, later vetoing the nation’s application to join the International Monetary Fund in 1982. From 1981 till 1985, during the reign of Jaruzelski as President, Poland claimed that its economy had lost $15 billion dollars as a result of US trade sanctions. This situation is similar to the Egyptian situation in regards to the potential political and economic results that will be created if the SCAF


similarly to Poland’s Military Council did. The SCAF, while they are trying civilians in military tribunals, are not committing such severe actions that immediately warrant economic sanctions by the US. If the SCAF was to declare themselves the head of the Egyptian government, the US could consider Poland’s history of a military coup before choosing how to proceed. While economic sanctions did not resolve the Polish situation, we must also consider that the US plays a much larger role in the Egyptian economy, contributing significantly to Egypt’s military budget and GDP. This larger role would give the US the leverage necessary to prevent a regime such as the one in Poland from taking control of Egypt.

In regards to Portugal, the US had little to no influence in the Portugal military junta, as it was handled almost exclusively within the country due to the lack of human rights violations by the NSJ and their goal to remove a dictatorship regime. This situation represents the ideal hoped for with the Egyptian situation, which is the military junta serving until the new democratic government is in place, a smooth transfer of power to the new government, and then a return to their posts as soldiers. This example demonstrates that it is possible to transition safely into a democratic government from a military junta.

These examples of past military juntas allow a broad perspective on the United States policy towards such governments, which is determined on a case by case basis, as no two situations require the same reaction. It is possible for any one of these outcomes to be used to address the current situation in Egypt, whether it be through military, economic or political actions on the part of the US. The four possible solutions presented by these case studies that have been proven to be effective when working with military juntas are military intervention, blind support, economic sanctions and a policy of non-intervention. Methods such as a military strike or blind support behind the SCAF have substantial costs to offset limited benefits involved in such actions. As a result, the most probable course of success in regards to the current situation is to address Egypt, with more specific focus on the Egyptian military through the use of manipulation of US military financial aid to Egypt.

Policy Justification

This policy would be ineffective if enacted under Hosni Mubarak’s regime because of the strength of Egypt’s economic status was such that any financial or economic consequence from the US would have been ineffective in producing political results. In 2010, the Egyptian government was not able to establish a balanced budget, creating a national debt so large that Standard and Poor’s (S&P) reduced Egypt’s credit rating. The Egyptian GDP grew 1.8% during the 2010 – 2011 fiscal year, down from a growth of 5.2% during the 2009 - 2010 fiscal year, demonstrating further economic instabilities. Finally, a population of individuals who sought more personal liberties and political opportunities than were previously available to them served as the core of the Arab Spring movement. As a result, it is unlikely that such a population, already strained under a stagnating economy, would respond well to a proposal to allocate more funds for the military rather than for the people of Egypt.

The US has a unique opportunity in regards to its ability to influence events in the current climate which led to the proposal of this policy. This opportunity comes from two independent reasons: The first being that the Egyptian military wants both the financial aid to continue building their military strength and the weapons that the US sells them to them on an annual basis, which include F-4 jet aircraft, F-16 jet fighters, M-60A3 and M1A1 tanks, armored personnel carriers, Apache helicopters, antiaircraft missile batteries, and aerial surveillance aircraft. This equipment is difficult to obtain without the US, granting a diplomatic advantage if the SCAF was to seize power for itself.

The second advantage is that if the SCAF was to refuse to relinquish power to the Egyptian government, it would need assistance in legitimizing itself to both the


UN and to the international community at large. If the SCAF were unable to obtain said legitimization on the world stage, many nations may impose sanctions on Egypt. Given the already unstable economic environment in Egypt, this would likely cause severe harm to Egypt’s economy, and by extension, the Egyptian government. The easiest path to avoid such a scenario would be to receive a diplomatic sign of approval from the United States, giving the US a strong negotiating position to start the process to have the military return power to the elected government.

Policy Implementation

The US could implement this policy in two phases. The first phase should be activated upon the refusal of the SCAF to surrender political power to the newly elected government after both the legislative branch and the executive branch have been reestablished. This phase would consist of the immediate halt on all transfer of funds to the Egyptian military, along with the removal of financial allocations for the Egyptian military from the 2013 US budget. The second phase of this policy would be implemented upon the deduction that the SCAF have still not yielded power to the civilian government after an appropriate time frame, or approximately one month. This would consist of a halt on all military sales to the Egyptian military and all financial assistance involved with those transactions.

This policy is recommended to be enacted if the military has not surrendered political power by the reestablishment of the Egyptian Parliament. After this point, the military should relinquish power as soon as it is possible to do so after Parliament is reestablished. A transfer at this time would be legitimate and appropriate under the military’s original assurances Hosni Mubarak and subsequent assumption of military control on February 13th, 2011. A refusal to transfer power at this point would indicate the military’s intention to remain in power illegitimately, fulfilling the requirements for the activation of this policy.

Evaluation of this policy would be based on the amount of time it takes for transition to civilian rule and its extent of completion. Complete transition would be defined as the military returning power to the civilian government with the military firmly back in their position as the defenders of the Egyptian people. An example of an incomplete transition would consist of the military surrendering power, but a military official being elected and ruling in a style similar to the previous three Egyptian presidents.

Conclusion

The recommendation of this policy is designed in the event that the SCAF does not relinquish presidential authority to President Morsi and his government. This event has not or may not occur within the Arab Republic of Egypt. Hopefully, such an action will be unnecessary as both the military and civilians will work together to promote a better future for Egypt. The Arab Spring revolutions demonstrated the desire of the Egyptian people, and the people of the Middle East at large, to be able to acquire a democratic state in which they may have a hand in dictating the course of their nation’s future. The Arab Spring represents an opportunity to help the people of the world move forward together, not by nation-building or colonization, but by acting as friends and allies to help our newest brothers and sisters in democracy. It is both the duty and the imperative of the United States to support this desire and help give the nations involved in the Arab Spring the revolutions which they deserve.

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FINE ARTS
The New Western: Classical Genre Cinema in the 21st Century

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ABSTRACT. The production of high-profile films in the Western genre has slowed dramatically since its classical period, from the 1940s to the early 1960s. Subsequent Hollywood Westerns demonstrated strong revisionist tendencies and a critical attitude toward classical trends. Close viewings of several Westerns released in the last ten years, however, reveal a marked resurgence of interest in visuals and narratives that not only reference, but also celebrate, the classical Western period. Additionally, a less conventional Western, Meek's Cutoff, turns a critical eye toward the cynical gender theory of the title character. These “New Westerns,” viewed as a small, distinct group and removed from the glut of films released during the genre’s Golden Age, demonstrate a reversal of revisionist attitudes in both mainstream and independent cinema. In particular, Meek’s Cutoff, widely considered a “slow” and challenging art film, provokes with its dramatic breakdown of the Western form a consideration of the lingering potential of this neglected genre. The existence and box office success of more mainstream New Westerns prove these implications to be far more than idle musings or misplaced nostalgia.

“It ain’t like it used to be, but...it’ll do.” The closing line of Sam Peckinpah’s The Wild Bunch also bookends Jim Kitse’s 1998 essay “Post-modernism and The Western,” a piece that attempts to capture the changing fortunes of America’s richest narrative tradition. That revisionist attitudes and deconstruction have overtaken generic classicism is one perspective; that production of the Western film has slowed to a trickle is a verifiable fact. This trickle, however, garnered significant critical acclaim over the last decade. Kites discusses the “strong strain of denial... manifest in much discussion of the genre as it has darkened, evidence of...last stand against the encroachment of the revisionist films, often seen as doing violence to the Western—the classical model” (18). If one chooses to frame the cinematic upheaval between classicism and deconstructionist cynicism, which chose the Western as its battleground, then a close examination of the genre’s recent trends reveals a clear victor and a renewed optimism, or at least a confidence, in the popular myth.

John G. Cawelti offered another thoughtful examination of the fluctuating attitudes in cinema toward generic convention in his essay “Chinatown and Generic Transformation,” which closes with his hypothesis that “we will begin to see emerging out of this period of generic transformation a new set of generic constructs more directly related to the imaginative landscape of the second half of the twentieth century” (520). While the Western’s current period of critical revival does not necessarily indicate a leap forward in generic narrative constructs, Cawelti’s prediction of an “imaginative landscape” built of more modern exercises in classical myths seems both relevant and accurate.

What shall be referred to in this paper as “New Westerns” comprises a rather short list of films, all of which were released theatrically in the twenty-first century and exist within the traditional parameters of the Western genre. The films in question are Open Range, 3:10 to Yuma, The Assassination of Jesse James by the Coward Robert Ford, Appaloosa, True Grit, and finally, Meek’s Cutoff. They merit special consideration not merely by virtue of their generic construction during a period of relative inactivity on the “Western” front, but by their visual and aural textures, cultivated from specific cinematic reference points. Although the concept of mythmaking has long been a central tenet of the genre (most explicitly in The Man Who Shot Liberty Valance), New Westerns address particular myths in their narrative workings; their dominance of the genre market, so to speak, asserts this focus as the modern Western’s primary concern.

Of course, even to phrase the most recent crop of genre offerings as the “modern Western” seems disingenuous in light of the drastically decreased volume of Hollywood output in the last decade. In the 1960s and 1970s, critics treating the Western as a serious artistic tradition for the first time were able to use such a monolithic designation by virtue of hindsight after a period of mass production; in the genre’s heyday, the 1950s, Hollywood produced hundreds of Westerns a year. The handful of contemporary films that easily qualify for the genre, therefore, became a cluster of cinematic events, and most were helmed by those with limited experience directing in the tradition. Judging
from an examination of these filmmakers and their contemporaries, working from American generic tradition in much the same way as the craftsmen of the classical era sourced their dramatizations of Western literature, one can argue that not only do these New Westerns function as “American history” but as cinema history (The Western Reader 57).

While the 1990s saw the release of big-budgeted Western epics such as Wyatt Earp and Tombstone, none received the acclaim or had the staying power of Clint Eastwood’s Unforgiven, arguably the last major film of the studio-produced Western era. Eastwood, who directed only four Westerns throughout his career, nevertheless made the most important contributions to the genre after the classical period. His cycle of films, High Plains Drifter, The Outlaw Josey Wales, Pale Rider, and Unforgiven, begins with a vengeful, supernatural interpretation of the gunfighter, veers slightly toward comedy in the next two films, and ends with a film which frames itself as a journey back to the terrifying outlaw of High Plains Drifter. As Edward Buscombe argues in his book on Unforgiven, “Munny’s viciousness and his reformation cannot be reconciled” (87). Eastwood’s ostensibly final statement on the genre, after a lifetime spent exploring its possibilities, offers no easy answers, choosing instead to assert the undeniable power of the Western form. Even Munny’s last-minute reversal of character seems, if not sensible, believable in the landscape of the cinematic West.

Although modern Hollywood no longer has such Western icons as Eastwood working within the genre, and shows no signs of creating new ones, his constant probing of filmic iconography crucially links New Westerns to the genre’s past, via his treatment of Kevin Costner’s image. Eastwood’s very next film, A Perfect World (1993), frames Costner’s Butch Haynes early on as a character indebted to a certain cinematic icon: James Dean. After the opening escape from prison, Butch dons the red jacket most associated with Dean’s performance in Rebel Without a Cause and lights a cigarette. Though he spends most of the film getting up to mischief and acting out a lighthearted coming-of-age plot with his young hostage, Costner’s runaway outlaw ultimately reveals himself as a wrathful creature of ambiguous morality, much like William Munny. In the penultimate scene, he flies into a rage over the abuse of a young boy by his father, their host, and the following few minutes are filled with a terrifying tension as he struggles with whether or not to murder the man in front of his family. While Butch’s behavior never seems as contradictory as Munny’s sudden reversal, the effects of both scenes on the audience’s perception of the protagonists are directly comparable.

Costner, of course, directed the first New Western, 2003’s Open Range, which extends the biblical undertones of Unforgiven’s climax throughout the film’s duration. Costner’s reclamation of the haunted gunfighter type trades the negative connotations of Eastwood’s angel of death for a redemptive arc that affirms the cleansing power of the Western form. Costner’s direction grants his narrative cosmic implications, shooting the nighttime scene in which Charley (Costner) relates his violent past to Boss (Robert Duvall) as a monologue which begins with a close shot of Charley’s face and slowly pulls back before fading to a field of stars as he mutters: “Every once in a while I almost get through a day without thinking about who I am and what I done.” When the two of them return to town in the midst of a torrential downpour, the patrons of the saloon comment on the storm’s likeness to one that came through town ten years ago. One woman adds: “Every once in a while a good storm washes through and leaves [the town] clean as a baby’s bottom.” Syntactical likenesses aside, these moments frame the conflict between the free rangers and Michael Gambon’s Baxter as a ritual purification of the town, itself a microcosm. This sort of purification plot recurs in most of Eastwood’s directed Westerns, though none of them match Costner’s film, with its wide, low-angle shots and painterly vistas, in sheer breadth of scope.

The lengthy, arduous shootout that functions as the climax of Open Range includes a deliberate instance of demythologization which reaffirms Costner’s cinematic persona as a major arbiter of the Western’s attitude toward the gunfighter. At the initial standoff that begins the firefight, Charley confronts Butler, the feared assassin responsible for the deaths of his and Boss’s partners, whose arrival in town has been grimly discussed several times before. Butler, with his curled facial hair, bowler hat and trussed-up arm, cuts a softer figure than his legend indicates, but his actions speak for themselves. After extracting a prideful admission of guilt from the killer with minimal effort, Charley plants a bullet in his brow. This startling, cathartic action
simultaneously undercuts the myth of the wicked outlaw and aligns Charley as the vessel of clean and swift justice, reinforced by his later sparing one of Baxter’s wounded gunmen. By the time he proposes marriage to Sue, meekly asking “Can I kiss you?”, Costner’s version of the gunfighter’s taming is complete. Unlike William Munny, Charley Waite is able to have his redemption and cleanse the town too. Despite the film’s brutal realization of the physical, tactile consequences of the nearly twenty-minute firefight, the West of Open Range functions as a crucible in which Eastwood’s supernatural implications and Costner’s own humanist, optimistic narrative for the hero melt seamlessly together.

On the other hand, James Mangold’s 2007 reworking of Delmer Daves’s classic 3:10 to Yuma focuses, in its climax, on a rare confrontation with the actual and physical consequences of the Western’s perpetual mythmaking, which nevertheless ends up granting real significance to the protagonist’s legend. Screenwriters Michael Brandt and Derek Haas majorly altered the oddly bifurcated structure of Daves’s film, which consists of a first act focused around the arrest of outlaw Ben Wade (Glenn Ford), a brief transitional interlude as the posse rides to the town of Contention, and a second act set almost entirely in a hotel room as Wade toys with the convictions of rancher Dan Evans (Van Heflin). Brandt and Haas inject a further dynamism into the narrative by lengthening the journey to Contention, changing the original’s brief montage into an entire second act which adds further weight to the climax by bringing along Evans’s (Christian Bale) teenage son William (Logan Lerman), who idolizes Wade (Russell Crowe) and feels contempt for his meek father. The extension of the film’s middle portion and elaboration upon Evans’s family situation significantly ties issues of genre to the personal impact of stories and legends. In the midst of the final run to the station, Evans wins Wade over by explaining that his war injury occurred not in combat but via an instance of friendly fire, stressing his desire to earn a story in which his sons can take pride.

Bearing this dialogue in mind, the aid offered by both Wade and William in the climax makes Evans’s triumph not an individual achievement, but the result of a conscious, collective act of mythmaking cemented by William’s penultimate line: “You done it, Pa. You done it...you got him on the train.” William’s loss of respect for Wade’s myth, signaled by his briefly aiming a gun at the outlaw, solidifies the power of his father’s example. Although Wade’s own gesture of boarding the train only extends so far (he whistles for his horse to follow, already planning his next escape), Brandt and Haas’s script evokes a cinematic West in which the surviving characters physically and consciously act out their parts in the construction of new myths.

While 3:10 to Yuma earns its status as a major film largely in its narrative machinations, contemporary Westerns also function in a distinct visual mode. Two New Westerns, Ed Harris’s Appaloosa and the Coen Brothers’ True Grit, exemplify the debt this recent trend owes to earlier films’ compositions, building on particular images more than generic tradition. Appaloosa echoes perhaps the Western’s most iconic image, John Wayne gripping his arm in the closing shot of The Searchers, in its centerpiece scene. In the 2008 film, Everett (Viggo Mortensen) goes to greet Allie (Renee Zellweger) in her unfinished home; a sketchy wooden structure without walls, frames within frames, doorways in which Allie first appears and is soon joined by Everett, her lover’s partner. Here Allie attempts to seduce Everett and is rebuffed. His act of rejection functions as the first in a long series of such decisions in the life of the lone gunfighter, an endless series of beckoning doorways he can never enter. The cinematography further asserts Everett’s archetypal status in a brief third act shot which frames him seated, in silhouette, at the end of a long hallway with sunbeams streaming around him and the shotgun resting in his lap; crucially, the editing fixes this vision as Allie’s own perspective. However, this perceptual transformation, as well as the seduction scene, draws upon the Searchers’ composition for their emotional resonance and bleak implications.

True Grit establishes ties to a particular film from its opening moments, setting up a series of musical cues which ultimately pay off in a visual evocation of The Night of the Hunter’s mise-en-scene to add further meaning to the film’s dry, dark comedy and alienating characterizations. That film’s most memorable scene shows Robert Mitchum’s Reverend Harry Powell sitting in Rachel Cooper’s (Lillian Gish) front yard, singing the hymn “Leanin’ on the Everlasting Arms” as Cooper joins in, gripping a shotgun to protect the children hiding within her house. The hymn’s
association with this tense, atmospheric scene adds layers to the Coens’ presentation of the climactic moment in True Grit in which Jeff Bridges’s Rooster Cogburn rides through the night to get Mattie (Hailee Steinfeld) treatment for a snakebite. During this scene, the score, which quotes “Leavin’” liberally throughout, swells to a crescendo as the framing repeatedly puts Mattie and Cogburn in a medium shot against a night sky full of stars, also reminiscent of the stagey nighttime backdrops in Night of the Hunter. That True Grit begins with Mattie’s narration of her father’s murder and her resolve for vengeance means that this brief scene, evoking the dreamlike atmosphere of Laughton’s film, serves as the closest thing she gets to a childhood; her upbringing has already been hinted as being formal and unaffectionate due to her cynical speech and affinity with arcane legalese. The epilogue, in which an adult, unmarried Mattie fails to reunite with Cogburn before his death, contributes to the poignancy of the film’s events; superficially arduous and harrowing, yet perhaps a bright spot in the lives of these characters.

With an understanding of how these films pay tribute to the classical Western tradition through organically occurring imagery and plot developments, we must now examine a work that directly comments on the personal consequences of American legends and their broader societal influence, anticipating, to a degree, the socially conscious nature of the latest New Western.

Though the aforementioned New Westerns comprise a convincing argument for the persistence of popular myth in genre cinema, none command a fluency of cinematic iconography to as great effect as Kelly Reichardt’s Meek’s Cutoff (2011), the most powerful and significant New Western. Critical discussion has been largely limited to its “slow” qualities, even prompting an inane back-and-forth in the press about eating one’s “Cultural Vegetables” (Kois). Dan Kois’s complaint of a perceived obligation to appreciate “boring” films like Meek’s Cutoff, as well as his indiscriminate grouping of it with works by Tarkovsky, Antonioni, the Dardennes, etc., speaks directly to the disappointingly populist (read: willfully ignorant) refusal to engage with context, or even content, in favor of the banal discussion of “pacing” which dominates so-called criticism of Reichardt’s work. Although her dedication to her signature naturalist style seems more apparent than ever in this, her latest film, it owes not nearly as much to any European or, more broadly, “art-house” tradition as it does to classical Western films, which invite the most fascinating and rewarding analysis.

The most remarkable contemporary element of Meek’s Cutoff is its treatment of what might be called the “Indian Problem”; which is to say, the glaring absence of major Native American characters within Western films of the last decade. While one might understand a certain discomfort in even indirectly addressing the genocide of America’s native peoples in the Iraq War era, the omission also therefore speaks all the more to the New Western’s retreat to classical conventions. The last major film in the genre to deal directly with Native Americans was Jim Jarmusch’s 1996 Dead Man, which also

while the film disregards convention in favor of historical accuracy, the narrative ultimately affirms the importance of myth within the nation’s culture, and the Western form itself. Assassination therefore broadens the argument made by its contemporary New Westerns by reaching back to the origins of the Western myth and telling Bob Ford’s story as one of the “bit players” forgotten by history, but nevertheless essential to American legend for his role in preserving the mystique of Jesse James. Dominik’s historical perspective grants a rare close look at the personal consequences of American legends and their broader societal influence, while the film disregards convention in favor of historical accuracy, the narrative ultimately affirms the importance of myth within the nation’s culture, and the Western form itself.
represents the close of what Jonathan Rosenbaum called “a cherished counter-cultural dream [called] the acid Western,” much like Unforgiven signaled the effective end of a more mainstream tradition (Rosenbaum 49). Dead Man’s “fulfillment” of this alternative strain lies in Jarmusch’s contributing social significance to a filmic style which, in the days of Monte Hellman, might have been dismissed as absurdist exercise (Rosenbaum 49). Meek’s Cutoff embraces this tendency toward political implications while forgoing surreal, comic style in favor of a traditional visual treatment of the cinematic West.

The very first frame of Reichardt’s film indicates a relationship to early Westerns; her choice to shoot in the Academy ratio calls to mind the many films made in the genre before the arrival of both CinemaScope and revisionism. The frequent disregard for conventional shot setups and framing (most notably, a static shot of Shirley Henderson’s Glory chasing a blown-away piece of fabric diagonally across and out the frame: one of many compositions which de-emphasize human action and motion), as well as the use of images which echo familiar scenes from classic Westerns (particularly a shot of Will Patton’s Solomon Tetherow crouching behind a wagon wheel, reminiscent of Anthony Mann’s most striking dramatization of physical violence in Man of the West), make the formatting choice one that simultaneously pays homage to classical filmmaking and illuminates the multitude of creative options offered by such a presentation.

These visual connections suggest that even a Western as radically distinct from classical narrative tradition as Meek’s Cutoff cannot avoid the implicit associations stirred up by the images with which Reichardt deals: the grizzled gunfighter, the wagon train, the arid landscape, the mute savage, and the bonneted women of the prairie. When Stephen Meek (Bruce Greenwood) riffs on gender theory midway through the film by asserting that the nature of woman is “chaos” and the nature of man is “destruction,” he sets up arbitrary gender roles which Reichardt doesn’t bother to prove or disprove. While Emily Tetherow (Michelle Williams) remains the only character to fire a gun in the film, she shoots into the sky, harming no one. Ultimately, though, her presence and confidence with the firearm render Meek himself impotent. In the final scene, he gives himself over to her command, shrugging: “We’re all just playing our parts now… This was written long before we got here.” These “parts,” though, resist Meek’s re-interpretation through his personal agenda. If his fatalist perspective holds any truth, it is in the generic, structuralist values that fill Reichardt’s compositions of strikingly clothed figures, sparsely placed in a drab desert, with meaning.

In light of these traditional, nearly primal influences, consider the evocation of mystery and lingering curiosity in the film’s conclusion and final image. The last scene, in which the travelers stumble upon a half-dead tree in the middle of the desert, feels like an extension of the biblical implications of Open Range. The group of wanderers in the desert, as well as the image of displaced greenery, evokes the book of Exodus, lending further significance to the final shot of the Indian walking away into the desert: “…and thou shalt see my back parts, but my face shall not be seen” (Exodus 33:23). In addition to the mysterious, possibly supernatural perspective the film often suggests toward the Indian, this image is the reverse of the previous shot, which shows Emily looking in the Indian’s direction, and similarly at the hill in the distance, over which they may find water. By lingering on the receding Indian, at a point in the story when Meek’s theory has proven insufficient and all characters await a decision from Emily (herself preoccupied with the Indian), Reichardt infuses this final image of a lone figure in a landscape with enigmatic possibility. One plot has ended, but will another begin? Having been effectively reset by the characters’ resigned surrender of dramatic tensions, what new roles will the travelers assume?

While the previously discussed films invoked particular cinematic myths and commented directly upon the process and function of generic narratives within society, none used the iconography of the cinematic West to argue for its broader artistic potential as effectively as Reichardt’s film. Just as the other New Westerns affirm the power of the classical tradition, Meek’s acknowledges the Western’s inescapable hereditary structure while exploring its larger (narrative and social) possibilities as the language of cinema continues to evolve. By positioning the antagonist not only as an allegorical xenophobe but as an inept theorist, Reichardt kills two birds with one blast of the shotgun: asserting the Western’s role as reflectionist critique while dismissing critics who would impose their personally motivated interpretations upon the imagery of
the Western. As Meek’s Cutoff proves and the New Westerns affirm, classical structure and its associations, which still linger in moviegoers’ collective consciousness, are not only indomitable but continually effective and worthwhile. The film’s final image is, if nothing else, a striking, wordless expression of confidence in the boundless possibilities of genre, lying just over that hill, past the horizon.

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HUMANITIES

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ABSTRACT. The term “fallout” reshaped the nuclear debate due to the strong visual imagery that became associated with the term through government newsreels, literature, film, newspapers, and even popular music. The primary focus of this paper is the psychological and political significance of these images on the American public in the 1950s and 1960s. This paper argues that widespread negative public reaction to the notion of radioactive fallout was a decisive factor that led to the Nuclear Test Ban Treaty in 1963 and the subsequent cessation in continental testing. Fallout shelters and global antinuclear movements are also examined in the context of fallout and the test ban debate. Furthermore, this paper analyzes the potential motivations for the extensive propaganda campaign conducted by the Atomic Energy Commission, which led to the initial deception of the American public. By taking a more comprehensive approach to the issue than current sources do, this paper intends to better elucidate the source of contemporary nuclear anxiety on a topic that remains an enduring legacy of the consequences of nuclear warfare.

Introduction

Public opinion regarding nuclear testing shifted dramatically in the mid-1950s as the term “fallout” entered the scientific, cultural, and political lexicon. In the early years of testing, Americans viewed tests favorably; they represented ongoing proof of military strength and national security. In fact, there is indication that continental testing in Nevada continued beyond the early 1950s so that more Americans could witness tests directly. However, once the story of the Lucky Dragon hit the American press in 1954, the dangers of radioactive fallout moved to the forefront of the nuclear debate. In a time when the reality of nuclear war was an imminent prospect for Americans, low-level radiation from fallout – not the bomb – became the primary concern of the American public. “Fallout” reshaped the nuclear debate primarily because of the strong visual imagery that became associated with the term. This imagery ranged from nuclear films and literature to the mock “Doom Town” built to study the impact of the blasts at various distances to the scientific study of 50,000 milk teeth that were already contaminated with strontium-90. An initial dearth of factual information on radioactive fallout from continental testing contributed to widespread speculation and public alarm. International concern over global fallout became conflated with a specifically American concern over the impact of more localized radiation from continental testing; both were feared and protested equally. Such widespread concerns about the dangers of fallout prompted the Atomic Energy Commission to undergo an extensive public relations campaign that controlled and downplayed information regarding the extent of the dangers of fallout from continental nuclear testing.

Research Methods and Scope

This paper seeks to demonstrate how changing public opinion and perceptions of fallout directly impacted the nuclear test ban debate. Most scholarship on the subject documents the early years of testing and subsequently considers the matter closed after the atmospheric test ban of 1963 or takes a more investigative approach to the fate of the “downwinders” in order to directly condemn the negligent actions of the Atomic Energy Commission during the “hot” years of atmospheric testing. There are valid historical reasons for both approaches, but this paper will attempt to provide a more comprehensive and critical examination of how scientific and public understanding of fallout shifted from 1945 to 1990 in the context of the debate over nuclear testing. While this paper will focus on opinions and ideas from the 1950s and 1960s, sources leading up to the Radiation Exposure Compensation Act of 1990 will be incorporated. This paper will suggest that the public furor over testing in the mid-1950s may have prompted certain decisions regarding the collection and dissemination of information on fallout in the interest of national security. This paper will also explain how the American fallout shelter program was but one of many associated “images” of nuclear fallout that contributed to this overarching narrative of nuclear testing and public opinion of radiation. This paper draws from Spencer Weart's semantic distinction of “images” of nuclear fear as more than simply the visual; an image in this sense...
can be an idea or an abstract concept as much as it can be a photograph or a diagram.\textsuperscript{1} It was through a series of powerful images that nuclear fallout marked a turning point in American opinion on atmospheric continental testing, but more broadly in the potential consequences of the advancement of nuclear technology.

\textbf{1951 – 1954: the Early Years of Continental Testing}

\textit{The Test Site}

Nuclear bomb testing was not always conducted in Nevada. The first test, \textit{Trinity}, was conducted there in 1945, but tests from 1946 to 1951 took place primarily on remote Pacific atolls. These tests eliminated the type of “public relations problems” posed by continental testing, since the islanders were often nomadic and did not mind temporary evacuation. At the time, fallout or radiation which lingered longer than a few hours or days was not considered a possibility: “The radiation from an atomic weapon, when burst in the air, is all gone in 1½ minutes. After that time, no significant radiation exists on the ground.”\textsuperscript{2} The decision to move the tests to a more secure location as far away from Moscow as possible took place in response to an escalation in the Cold War and the discovery of spies from within the Manhattan Project. Tests in the Pacific also tended to be significantly larger operations, and were becoming prohibitively expensive. Several sites were considered, but the Nevada Test Site was chosen for its obvious advantages: located in close proximity to both the original \textit{Trinity} test site and the Los Alamos laboratory, the site was surrounded by vast tracts of government-owned land with little vegetation or civilization to speak of. Technically, the downwind area, with its population of approximately 100,000 rural Mormon shepherders and uranium miners, was classified as “virtually uninhabited.”

\textit{The Public Face of Nuclear Testing}

The American public expressed little alarm when the tests first moved to the continent. Nuclear tests were already all over their televisions and movie screens; test explosions were in the classroom as well as in the home. The 1946 test on Bikini Atoll, known as Operation Crossroads, has been described as the “best-reported as well as the most-reported technical experiment of all time (original emphasis).”\textsuperscript{3} Furthermore, before 1954, fallout was a virtually unknown hazard to anyone outside the nuclear industry; as late as 1957, the state of Nevada promoted “atomic-bomb watching” as a tourist activity.\textsuperscript{4} The initial visibility of the tests was in itself a public relations maneuver to impress the public, much like the newsreel footage of earlier nuclear explosions in the Pacific had been. Newspapers in the downwind area reassured readers with headlines like this one from the \textit{Deseret News}: “Spectacular Atomic Explosions Mean Progress in Defense, No Cause for Panic.” As Howard Ball notes, the “local news media's reaction was very positive – and patriotic.”\textsuperscript{5}

Newsreels from the early years of testing may provide the greatest insight on the extent to which testing was positively represented for public consumption. One such newsreel, entitled “Atomic Blast!” depicts the test explosion on Bikini Atoll (Operation Crossroads) as a purely military exercise, accompanied by upbeat, patriotic music and footage of marching soldiers. Indications of radiation precautions are minimal: not all soldiers are given the benefit of protective eyewear, and those without eyewear merely curl up in a fetal position to protect themselves from the light and heat of the blast. The strong male voice assures the viewer than the strong explosion of the blast is all gone in 1½ minutes. After that time, no significant radiation exists on the ground.”\textsuperscript{2}

4. Ibid. 90.
killed at Bikini. War veterans had protested the use of a bugler playing taps, so a moment of silence was used to commemorate the occasion instead.\textsuperscript{7}

As anxiety about fallout increased, films such as “Atomic Blast!” gave way to much more informational pieces. However, even these were instruments of AEC propaganda. One, titled “Radiation Explained,” mixes fact and fiction in an effort to present testing in the best possible light while allowing citizens to feel informed about hazards. Radiation exposure is equated to walking into a blazing fire, and avoiding radioactive contamination is considered “common sense.” Maps and diagrams depict the movement of fallout to explain how heightened radiation levels can occur across the country. Another newsreel blatantly exposes the degree to which the AEC outright deceive the public: “Yes, livestock grazing, in a few instances, within a few miles of the site of detonation have suffered skin and eye injuries from radiation. Justified claims by owners have been compensated.”\textsuperscript{8} The newsreel coincides almost too conveniently with the sheep trial of 1956, in which the judge asserted that the sheep had died of natural causes. The same newsreel also equates fallout to background radiation and emphasizes that “radioactive fallout more than a few miles from the test site has not been known to be serious.”\textsuperscript{9} The newsreel was published a year after the Lucky Dragon was coated in deadly fallout at a location over one hundred miles from Shot Bravo at Bikini.

\textbf{Anticommunist Sentiment Favoring Continued Testing}

AEC films and educational materials in the early years of continental nuclear testing depicted testing as a military exercise intended to maintain “superiority over the communists.”\textsuperscript{10} Anticommunist sentiment was particularly appealing to the overwhelmingly conservative, anticommunist Mormon population living downwind of the test site, who took “pride in America’s nuclear military might.”\textsuperscript{11} One local editorial described tests as a “shield that protected America and Western Europe from a ‘Red invasion.’”\textsuperscript{12} A political cartoon from the March 1, 1951 issue of Washington County News (the newspaper for St. George, Utah) shows Stalin and Chairman Mao being literally knocked off their feet, asking “Can This Be the Thing?” This cartoon expresses these citizens’ pride at being an important part of “a fight against godless communism.”\textsuperscript{13} Opposition to or reservations about nuclear testing were thus equated with un-American or even pro-communist sentiments. Consequently, in the years of McCarthyism and HUAC investigations, an American mass movement against testing on the scale of the British CND was impossible. Those who questioned the tests, such as Robert Crandall, the editor of the Tonopah Times-Bonanza, found themselves “red-baited” by the Atomic Energy Commission: “well, of course the Communists would like to stop the tests, too.”\textsuperscript{14} Even the Partial Test Ban Treaty of 1963 was perceived by many as “giving in” to the communists. Senator Richard B. Russell received dozens of letters from across the country as well as within his own constituency imploring him that “we need testing to remain strong and free.”\textsuperscript{15} That fear of fallout even became an issue at all, let alone one that could compete with strong anti-communist sentiment at the time, is a testament to its impact on American public opinion.

\textbf{The “Atomic Age” in Popular Culture}

In the early years of testing, with the aid of extensive propaganda, the government assured downwinders that “nothing is left to chance” where radiation and testing were concerned. The downwinders took to heart AEC pamphlets which asserted that they were “in a very real sense active participants in the Nation’s atomic test program.”\textsuperscript{16} However, downwinders did have concerns about the impact on tourism in the area. Magazines like Nevada Highways and Parks informed readers that there was no danger from fallout on state highways, and described atomic blasts as “hellish but beautiful...[f]rom a distance each appears as

\begin{thebibliography}{16}
\bibitem{7} Hilgartner, \textit{Nukespeak}, 73.
\bibitem{8} The WPA Film Library. \textit{Radiation Explained}, 1955.
\bibitem{9} Ibid.
\bibitem{10} Ball, \textit{Justice}, 64.
\bibitem{11} Ibid. 56.
\bibitem{12} Ibid. 81-82.
\bibitem{13} Ibid. 56.
\bibitem{16} Ball, \textit{Justice}, 216.
\end{thebibliography}
a gorgeous fireworks display on a gigantic scale."\textsuperscript{17} 

"Atom-bomb watching" was promoted as a tourist attraction as late as 1957. Furthermore, the proximity of the excesses of Las Vegas may have contributed to the garish atomic culture of the period: there was an "atomic ballet," an Atomic Hairdo, the Atomic Cocktail (both an actual drink and a song), even the Atom Bomb Bounce, a popular dance. On these stranger aspects of American nuclear culture, journalist Philip Fradkin remarks, "It was as if the public and the media, tiring of the theme of awesomeness, turned to the freakish aspects of the tests."\textsuperscript{18}

This garish popular culture that emerged from "the atomic age" was not limited to the downwind area. One of the most curious chapters in American nuclear history is the extensive collection of popular music on the subject of nuclear culture and the atomic bomb. With titles like "Uranium Fever" and "Jesus Hits Like an Atom Bomb," and performed by established artists such as Roosevelt Sykes, Bo Diddley, and Roy Acuff, the pieces function somewhere between parody and propaganda. Varying in genre from country/western to prototypical rock’n’roll, these audio oddities provide pertinent insight into changing American perspectives of bomb culture.

Fallout and fallout shelters were popular subjects. One song, titled "You're My Radiation Baby (My Teenage Fallout Queen)" begins with the tagline, "a song of social protest / you can dance to!" and includes lines such as "I didn't know that you weren't with me, dear, when they locked that shelter tight!" and "My Geiger counter, dear, tells me that you're hot!"\textsuperscript{19} This may not have been what Atomic Energy Commissioner Dr. Willard Libby intended by his statement, "People have got to learn to live with the facts of life, and part of the facts of life are fallout,"\textsuperscript{20} but nevertheless, these songs demonstrate how Americans dealt with their very real fear of radioactive fallout. "You're My Radiation Baby" was intended to be satirical and produced as a Scopitone film, a forerunner to the modern music video, in which the singer comically acts out the scenario in the song.\textsuperscript{21} Such comedic treatment of an otherwise serious issue further reinforces the issue of displacement and "psychic numbing" often attributed to the phenomenon of nuclear fear.

1954 – 1955: The Lucky Dragon and “Contamination without Representation”

The Case of the Lucky Dragon

In 1954, the incident of the Japanese fishermen aboard the Lucky Dragon brought the as-yet-unknown dangers of fallout into global discourse for the first time. A group of Japanese tuna fishermen had not been having much luck in more familiar waters, so they ventured out near Bikini Atoll and neighboring atolls of Rongelap and Rongerik. The captain and crew knew of the atomic explosions at Eniwetok, but they had not been informed of Shot Bravo, which took place on Bikini Atoll on March 1, 1954. The ship was nearly three hundred miles east of Eniwetok and a hundred miles east of Bikini when it was coated in radioactive fallout. The fishermen saw the blast, describing it as "the sun rises in the west," and worried that they had come too close to the explosion. Their knowledge of the victims of Hiroshima gave them limited understanding of fallout, but they assumed they were too far away to experience adverse effects from the explosion.\textsuperscript{22} However, the winds had shifted unexpectedly, carrying a large radioactive cloud directly in their path. Their boat was coated in a whitish-gray dust, which was thought to be coral or volcanic ash. Ralph Lapp describes their attempts to wash the boat and remove the dust as futile: "the strange ash...gathered in corners, on the rims of portholes, and a mantle of the whitish-gray ash had collected on the roof of the main cabin."\textsuperscript{23}

Upon returning to shore, their darkened skin was cause for apprehension and alarm by friends and

\begin{itemize}
  \item \textsuperscript{17} Fradkin, Philip L. \textit{Fallout: An American Nuclear Tragedy.} (Tucson: The University of Arizona Press, 1983.) 104.
  \item \textsuperscript{18} Ibid.
  \item \textsuperscript{20} Hilgartner, \textit{Nukespeak}, 90.
  \item \textsuperscript{21} Conelrad. "You're My Radiation Baby – My Teenage Fallout Queen (1964)."
    http://www.atomicplatters.com/more.php?id=130_0_1_0_ M (accessed March 30, 2012)
  \item \textsuperscript{23} Lapp, \textit{Lucky Dragon}, 45.
\end{itemize}
relatives. Their catch of tuna was not discovered to be highly irradiated until it had already been sold to markets across Japan, prompting a scare which impacted the market for tuna both locally and globally. Video footage of the fishermen and the “crying fish” which set Geiger counters ticking at 200,000 clicks per minute was broadcast across the globe.\(^24\) The case of the Lucky Dragon indicated that fallout was more of a danger than previously believed. With the development of the H-bomb, atomic explosions had become increasingly larger with greater outputs of “fall-out.” By late 1954, pacifists from European and Asian nations began to call for worldwide disarmament and an end to what Norman Cousins of the New York Saturday Review labeled “contamination without representation.”\(^25\)

Atomic Scientists Clash with the Atomic Energy Commission

Even though one of the fishermen had already perished by September 1954,\(^26\) the Atomic Energy Commission delayed the release of an official report on the issue of fallout until early 1955. By this time, word had gotten out about the “crying fish” in Japan, and several articles on the effects of radioactive fallout had been published in the Bulletin of the Atomic Scientists. Even Lewis Strauss, Commissioner of the AEC, recognized what this delay meant politically for the Atomic Energy Commission; on December 10, 1954, he warned President Dwight D. Eisenhower about radioactive fallout information “being treated in a sensational manner.”\(^27\) Six days later, when no report had yet been filed, the Washington Post published an article, which stated:

“There is no danger so fearful as one in which there are no hard facts. It ought to be possible for the Administration to give the public the basic facts on radioactive fallout without divulging any essential military data.”\(^28\)

Fallout became such a significant factor in the nuclear debate due to this initial dearth of factual information and the suspiciously lengthy delay in the release of “official” reports from the Atomic Energy Commission. Atomic scientists’ explanation of the process conflicted with previous information in the official AEC report and newsreels, which downplayed the “radio-logical” hazards of atomic testing. Consequently, the Atomic Energy Commission spent most of 1955 trying to convince the public that fear of fallout was groundless.\(^29\)

Enraged at the delay and incomplete nature of the AEC report, Ralph Lapp berated the Commission in May 1955 for “risking the lives of 50 million Americans.” Lapp represented a member of the scientific community who was well aware of the true dangers of fallout and actively sought greater disclosure from the AEC on these dangers.

Instead of taking the precautions that Lapp suggested, the AEC mounted an extensive propaganda campaign of films, pamphlets, and displays, which, when coupled with carefully screened reports from Public Health Services, kept critical reports of the fallout issue out of most newspapers. As the Washington Post later reported in an article on increased fallout in the Midwest: “These events were generally unpublicized. In some cases, they were discovered by accident. In other instances, they were not known until long after the event.”\(^30\) Reporters found themselves increasingly reliant on AEC reports for information, as the scientific community remained sharply divided on the issue and information was heavily classified. Press coverage

29. Divine, Blowing on the Wind, 43.
therefore became extensions of AEC propaganda, which was designed to eliminate “scare words” that would frighten the public. The Atomic Energy Commission also controlled Public Health Services releases, so that while the release was officially released by Public Health Services, the information was actually being censored by the AEC. Furthermore, even the decorum of PHS employees was controlled and managed by the AEC. It is now known that there were two sets of PHS teams working in the downwind area. One group, clad in plainclothes, was instructed to mingle with the citizens and defuse any sense of fear or alarm. The other group, described by downwinders as “men from Mars,” dressed in full haz-mat gear to gather samples and data. Often, Public Health Services possessed information that should have been released, but never reached the public because it was classified.

Dangers of Low-Level Radiation

The conflicting information resulted in a disconnect between scientific evidence and public understanding of fallout that was not adequately remedied until the 1970s. As Newsweek stated in 1954, “The question 'how dangerous is fallout,' is potentially the most dangerous gap in man's scientific knowledge.” Scientists could not attain a consensus on the issue. One of the biggest points of contention was the question of whether a “threshold” for radiation exists, or whether the effects of radiation are cumulative. In a televised debate between Linus Pauling and Edward Teller, the newscaster concludes, “There is danger in the continued testing of nuclear weapons. Scientists disagree only as to the degree and depth of the danger.” Most studies on the effects of low-level radiation were forced to use statistically dubious methods of extrapolation and dose reconstruction to determine cancer rates because the Atomic Energy Commission simply did not gather the necessary information during the years of testing. Scientists against testing boldly spoke out in journals such as The Bulletin of Atomic Scientists on the perpetual and very real dangers of fallout. These statements contradicted the Atomic Energy Commission’s press releases, which unilaterally proclaimed “there is no danger.”

1956 – 1963: “Fall-out” and Nuclear Fear

“Nuclearosis”: Psychological Displacement and Fallout

As the term “fallout” became better known among average citizens, the image of radioactive fallout became conflated in the mind of the public with the Bomb itself. Psychologically, this is known as “displacement,” and strong negative attitudes toward fallout and the push for an atmospheric test ban in the years leading up to 1963 indicate that this notion was at work in the issue. The U.S. government was aware of this phenomenon: in one animated educational film, a man is deemed to suffer from “nuclearosis,” a fictional disease in which he is metaphorically “blinded” and “deafened” by his fear of the bomb and its radioactive fallout. The film displays graphic pie charts that show how 85% of the man’s worry goes to an agent that constitutes 15% of the danger from an atomic blast. Even prominent antinuclear spokesman Ralph Lapp points out in an essay on civil defense in the age of the H-bomb that “it makes no sense whatsoever to plan for a secondary hazard if you fail to survive the primary effects of the bomb (original emphasis).” Lapp, who had just returned from Japan, where he had witnessed the debilitating effects of nuclear radiation firsthand, still recognized that fallout was, above all else, a secondary hazard to the true danger – the blast and fire from the explosion.

A curious feature in the history of nuclear fear of fallout was that fear was expressed by many Americans long before the true nature of the fallout risk became widely known. Moreover, fallout scares reached their apex at the time when an actual Soviet attack was most likely to occur. Amid continuing assertions by the Atomic Energy Commission that there was no danger, the public continued to express great anxiety over the imagined dangers of fallout. Misinformation was widespread, and scientific data heavily classified; reporters were forced to rely on their own observations of explosions and AEC press releases. Downwinders

31. Hilgartner, Nukespeak, 78.
32. Ibid. 87-88.
33. Divine, Blowing on the Wind, 34.
34. Ibid, 183.
35. Hilgartner, Nukespeak, 87.
36. Weart, Nuclear Fear, 213.
who had been impacted by continental atmospheric tests did not have sufficient data to make their case until the late 1970s, and legislation to provide for their compensation was not passed for another decade. Thus, anxiety about fallout must have a more fundamental source than scientific data. As Ralph Lapp explains when discussing fallout’s implications for civil defense, “Blasts can be readily felt as can heat and they both come up in a flash. Radioactivity, on the other hand, cannot be felt and possesses all the terror of the unknown.”

The rise in global uncertainties and anxieties over “death dust” blurred the distinction between local fallout from a nuclear blast and global fallout carried on wind currents, which only amplified the controversy on the global level. Official government publications dismissed fears of global fallout:

“It has been calculated that in order to constitute a world-wide hazard, something like a million atomic bombs, of the nominal size [at this time, referring to A-bombs], would have to be detonated … this clearly represents a highly improbable situation.”

Even while scientists who advocated for a cessation of tests acknowledged the comparatively low danger of global fallout in relation to local fallout, not to mention an even lower danger than the blast from the bomb itself, citizens came to fear “death dust” in all its forms. Controversy over these unknowable dangers of global fallout directly contributed to the worldwide push for an atmospheric testing ban and laid the ideological groundwork for future policies of nonproliferation and deterrence. Anxiety over global fallout and “contamination without representation” promoted a global antinuclear movement and early notions of a global community in the postwar age, even in the highly divisive climate of the Cold War. Perhaps the most famous protest came from Prime Minister Nehru of India, who called for an immediate “standstill agreement” in the wake of the events of the Lucky Dragon, and lamented the extent to which Asian peoples are placed in peril through either Soviet or American nuclear tests.

**Antinuclear Movements: CND and SANE**

The first and most well-known anti-nuclear movement originated in Britain, first as the NCANWT (National Council for the Abolition of Nuclear Weapons Tests) and then as the CND (Campaign for Nuclear Disarmament). The British disarmament movement had its origins in the middle classes, was popular among women “pushing their prams,” and was characterized by its nature as a “single-issue” movement. This proved both a strength and a weakness for the movement because a certain “unity...existed around central nuclear issues.” CND’s message was primarily a “moral protest,” which was attractive to its followers. Once the ‘single’ issue of nuclear disarmament proved to be more complex than “the simple, emotive, morally-based slogan of ‘Ban the Bomb,’” however, the CND declined in support and public concern. Unlike SANE, the CND was a much broader antinuclear movement that encompassed all social strata of British society and gave the world the now-ubiquitous “peace” symbol as its logo. The CND is often characterized as a true mass movement, inciting the participation of everyone from militant vegans to women pushing their prams, in a way that was never truly possible on a similar scale in America. The CND’s popularity is thought to arise from the nature of its “human protest against the evil of nuclear weapons testing and, implicitly, of nuclear weapons themselves.” The CND, too, would protest what Norman Cousins called “contamination without representation,” but support waned because of its single-mindedness and focus on morally-based, nonviolent satyagraha protest rather than broader political action.

The Committee for a SANE Nuclear Policy (SANE), the closest American equivalent to the British

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CND, capitalized on the fallout issue to promote its goals of disarmament. SANE shamelessly provoked Americans' fears of fallout with controversial and bold advertisements. One such advertisement, which ran in an April 1962 edition of the New York Times, features a baby's face superimposed over a nuclear blast. The bold headline reads, “Can We Protect Our Children from the Effects of Nuclear Fallout?” Included in the corner is a helpful graph which charts the rising strontium-90 levels in children. 48 Robert Divine notes that SANE’s “scare tactics” were controversial, but nonetheless effective: within one year of its founding in 1957, SANE garnered a membership of nearly 25,000. 49 Another advertisement put forth by Dentists for SANE featured two healthy, smiling boys, and was captioned “Your children's teeth contain Strontium-90 (original emphasis).” A paragraph below provided an explanation of the relationship between testing and the presence of radioactivity in human bone. Another poster, typically displayed in subways, depicted a silhouetted pregnant woman and was captioned “1 1/4 Million unborn children will be born dead or have some gross defect because of Nuclear Bomb testing.” 50 Unfortunately for SANE and similar antinuclear organizations, the passage of the Atmospheric Test Ban Treaty would ultimately undermine support for their original cause. Fallout became associated primarily with contamination rather than disarmament, and the test ban treaty effectively “solved” the problem for many citizens.

Atoms for Peace and an “Absolutely Clean” Bomb

One tactic for promoting the continuation of testing and the elimination of the fallout problem was the Atomic Energy Commission's promotion of the idea of a “clean” bomb. This was first referred to in the context of Eisenhower's “Atoms for Peace” program. Eisenhower, who was never completely comfortable with the nuclear testing program, expressed a desire for atomic strength “to serve the needs rather than the fears of mankind.” 51 Atomic Energy Commissioners such as Dr. Willard Libby reluctantly acknowledged “the AEC's ability to develop...clean devices was evident; however ... there was a desire by the military for some degree of off-site radiation for troop training purposes.” 52 Furthermore, for the Atomic Energy Commission to properly develop this “absolutely clean bomb,” 53 further testing would be necessary. Dr. N.E. Brabury of the Los Alamos Scientific Laboratory admitted at the Test Ban Treaty hearings, “it is probably eventually possible to make an explosion which is almost, if not entirely, 'clean.' Whether this would be a practical device for the military arsenal is completely problematic in my opinion.” 54 Atomic Energy Commissioner Lewis L. Strauss, however, was undeterred. He declared that American tests were now designed “to clean up weapons and thus protect civilians in event of war.” 55 Thus, weapons testing, which had been the source of the fallout problem from the beginning, was cleverly justified in terms of reducing the fallout hazard.

Fallout in the 1956 Election

By 1956, fallout was enough of an issue to the electorate that Adlai Stevenson turned fallout and the test ban into a campaign issue. The previous year, Anthony Eden had succeeded Churchill as British prime minister on an anti-testing platform. Stevenson's call for disarmament garnered wide support, but Eisenhower was dismissive of attempts to discredit his nuclear policy. He explained that tests would not be used to develop a more destructive bomb. Instead, the tests would perfect it for military use. 56 While Stevenson lost the election to incumbent Eisenhower, he successfully imparted the

52. Health Effects of Low Level Radiation, 3.
53. Divine, Blowing on the Wind, 150.
55. Divine, Blowing on the Wind, 149.
56. Ibid. 73.
political significance of fallout and nuclear testing to many Americans. In 1955, one-sixth of Americans could explain the term “fallout,” and by 1961, this number had increased to more than half. 57

 Fallout Shelters

The American fallout shelter phenomenon exemplifies one of the most enduring and potent images associated with nuclear fears of radioactive fallout. Playing on traditional American values of individualism and self-reliance, the Gaither Report of 1957 advocated the fallout shelter program as demonstrative of “our will to survive.” 58 The fallout shelter program was arguably implemented as a method to curb the overwhelming feelings of worry and concern many Americans had about radioactive fallout. In the previously mentioned film in which a man suffers from “nuclearosis,” the prescribed cure by the white-coated scientist is none other than the fallout shelter. In another newsreel on radiological defense from 1961, the narrator proudly pronounces, “[unlike the blast] there is a defense against fallout...[the] shelter is the answer.” 59 Fallout shelters had a peculiarly domestic emphasis as well. In one newsreel depicting the supposed “Operation CUE,” a young female reporter observes Operation TEAPOT,60 and makes observations specific to her role as a woman, including the effect of the blast on fabrics and on nonperishable foods. She observes that the test was “well planned,” and “many lessons were learned from this test that affect civil defense planning.” 61

Unlike the universal fear of fallout, the emphasis on fallout shelters seems to be much more of an American phenomenon. The reason is purely geographical; American civil defense had to plan for the “more than 100 million people living beyond the destructive range of blast and heat [that] could be subjected to deadly amounts of radiation from fallout.” 62

In the Operation CUE newsreel, the female reporter comments on the restoration of utilities after a nuclear attack, asking, “How soon can power be restored?” 63 Therefore, unlike Britons, Americans did not consider the immediate prospect of dying in a nuclear blast, but instead faced the notion of survival in an irradiated world. This distinction of nuclear attitudes is best illustrated through literature: Pat Frank’s novel, Alas, Babylon, narrates the saga of a Florida family forced to “start over” after surviving nuclear war in which the American government and most of society are obliterated. By contrast, Raymond Briggs’s graphic novel, When the Wind Blows, depicts a doddering, elderly British couple who have an unfortunate tendency to confuse the Bomb with the Blitz. After a radio broadcast warns them of imminent danger, the pair ducks into a makeshift shelter just before the H-bomb goes off. The couple waits faithfully for the government to come to their aid as they slowly perish from radiation sickness. 64 These two sources illustrate the divergent perspectives of Great Britain and the United States on the effects and consequences of fallout from nuclear war.

1959 – 1975: Health Hazards of Low Level Radiation Uncovered

Dr. Kulp’s Baby Tooth Survey

The Lucky Dragon provoked greater scientific inquiry into the dangers of fallout, producing results that shocked and alarmed the public. One of the most concrete examples of the danger of fallout was the baby

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57. Weart, Nuclear Fear, 204.
61. Ibid.
62. Ibid.
63. Prelinger Archives. Operation CUE.
tooth survey, in which the “tooth fairies” of the United States were requested to send their children's milk teeth to be analyzed for radioactive isotopes in bone. The results of the baby tooth survey were chilling: young children's teeth in the downwind area and across the nation already contained a measurable level of strontium-90, which could only have resulted from fallout. SANE responded with a stark advertisement featuring a bottle of milk labeled with skull and crossbones. The tagline simply read, “Has it come to this?” In 1959, Dr. J. Laurence Kulp published a second report on Sr-90 in human bone, noting that Sr-90 levels were increasing in the wake of heavy fallout from the Soviet tests. The strong public response to the baby tooth surveys highlights the way in which public opinion was swayed by the images, both literal and abstract, surrounding the fallout debate. Cultural historian Spencer Weart suggests that there would have been far higher concentrations of strontium-90 in vegetables and wheat than in milk, yet milk was a much more specific and harrowing image that the public could understand. The strong reaction to milk may have also reflected a different market than exists today: one Bulletin of the Atomic Scientists article notes that “in most diets in the United States, milk is the major local product.” CNI, the antinuclear advocacy group responsible for the studies, devoted their March 1959 issue to “Strontium-90 and Common Foods” as a reminder to the public that strontium-90 could be present in foods besides milk. Nevertheless, milk remained a potent symbol long after the greatest danger from fallout had subsided. As late as 1975, an EPA study from an atmospheric test conducted by the People's Republic of China included an extensive milk study as part of their report on the effects of global fallout from the Chinese test. Naturally, as the threat from global fallout was much lower, the results of the study were fractional increases in cancer rates, obtained from statistical modeling and extrapolation of data.

**Fallout Scares**

Due to the efforts to cover up and classify information on the issue, much of the public knowledge and reports on the fallout issue occurred well after the fact. This may also have increased a sense of alarm and urgency felt by many people during the later years of atmospheric nuclear testing. A report in the Washington Post from 1959 details the previously unreported levels of high fallout and strontium-90 levels in the Midwest, an area not considered in the typical “downwind” zone. These high levels of fallout were thought to have originated from the 1957 test series. In Fargo, South Dakota, high levels of strontium-90 were measured, yet the citizens of the area did not find out until May 13, 1958: over eight months after the test series had concluded and the measurements were taken. The report continues, explaining that “the people in the region, panic-stricken, swamped public health authorities with calls to find out where they could find 'safe' milk.” These new reports on levels of fallout may have prompted the Minneapolis Star to begin printing the daily radiation count along with the weather summary in 1958.

While the extreme levels of deception practiced by the AEC to conceal the radiological hazards of fallout contamination were significant, scholars like Philip Fradkin assert that “the truth would have worked” for these citizens, ignoring the political and social climate of the times which brought about these questionable decisions. The benefit of hindsight, aided by increased scientific knowledge from recent studies and testimonies from citizens who experienced the detrimental effects of

65. Katz, 81.
67. Weart, Nuclear Fear, 213.
71. “Serious Fallout Cases Uncovered in Middle West,” the Washington Post and Times-Herald, 7 June 1959.
72. Divine, Blowing on the Wind, 185.
73. Fradkin, Fallout, 22.
years of nuclear testing, makes fallout an obvious danger to the contemporary scholar. However, Fradkin's statement is not without basis: in a 1979 hearing, Senator Orrin Hatch stated that “these witnesses testified, almost to a person, that if it was for the essential security of this country they would go through it again. But they surely wished the Government would tell them what they had to go through.”74 However, the same evidence used to condemn the AEC for concealing the truth about atomic weapons tests in Nevada also points to their growing concern about the public relations problems with testing. In the same hearing, minutes from an AEC meeting include the following statement: “It is not a question of health or safety with St. George, but a question of public relations.”75 As public outcry against continental testing increased both at home and abroad, the commissioners of the AEC felt compelled to maintain an informational propaganda campaign in order to preserve the testing program. In another AEC meeting in 1957, a Dr. Failla stated, “that the problem exists in the mind of the public.”76 Of course, the problem in question was the hazard posed by strontium-90. From the outset, continual testing was understood to pose a “public relations problem,” but the decision was made in the interest of national security at a time when Communist spies were feared to be everywhere. At the height of the public relations efforts directed at fears of radioactive fallout, a “secondary hazard” in the event of nuclear war, the Bomb itself was the most imminent threat to the American people.

1957 – 1963: Public Opinion Turns Against Continued Testing

The Nuclear Test Ban Treaty of 1963

Ultimately, the public relations efforts by the AEC did not have the intended effect, and U.S. Congressmen received thousands of letters from concerned citizens who understood the need for an end to nuclear testing in terms of reducing fallout. Intermingled with stringently anti-communist letters – “Please vote against a contract with [a] crook”77 – Senator Richard B. Russell of Georgia received many letters written in the polite cursive of wives and mothers imploring him to vote in favor of the treaty. As one letter read: “continued testing will mean genetic damage to future generations.”78 The test ban was needed “stop future fallout for the good of all mankind (original emphasis).”79 Senator Russell was not the only one to receive such mail. As stated by Senator Mundt in the record of the public hearings on the Nuclear Test Ban Treaty of 1963, “Some of our mail indicates a near-panic attitude concerning the health hazards of fallout.”80 In fact, most of the letters written to Senator Russell which addressed issues such as pacifism or disarmament did so in terms of reducing radioactive fallout. One letter from the Atlanta branch of the Women's International League for Peace and Freedom read as follows:

“We believe the best way to improve the security of our nation, to protect mankind from further radioactive contamination and to halt the spread of nuclear weapons is to reach agreement as speedily as possible.”81

Generally speaking, letters to Richard B. Russell either condemned the treaty as an act of “high Treason”82 in staunch anticommunist terms, or were humanist pleas to consider “the dangers to as yet unborn children from the continuing poisoning of the atmosphere.”83

Long-term Impact on Public Consciousness

Efforts to educate Americans on the dangers of fallout in the 1960s with the fallout shelter program provoked the type of mass hysteria the commissioners had always feared. As Dr. Wolfgang Panofsky of the Stanford Linear Accelerator Center testified in 1976, he stated, “As we learned from the ill-fated program of the early sixties, such involvement [in civil defense] divides Americans and increases their anxieties.”84 Furthermore, environmental concerns about fallout came into play at

74. Health effects of Low-Level Radiation: Joint Hearing, 9.
75. Ibid. 2.
76. Ibid. 5
77. Richard B. Russell Collection, Box 227, Folder 4.
78. Ibid. Folder 3.
79. Ibid. Folder 7.
81. Richard B. Russell Collection, Box 227, Folder 8.
82. Ibid. Folder 4.
83. Ibid. Folder 2.
the same time as many of the “downwinders” began to die of cancer. The nuclear accidents at Three Mile Island and Chernobyl brought contamination from radioactive fallout back into public consciousness, provoking a mass revival of antinuclear movements, particularly through the action of CND. While citizens who still maintained the need for fallout shelters into the 1980s were deemed as alarmist or simply out-of-touch, fallout had become permanently associated with science fiction visions of a post-apocalyptic world. Late 1980s video games such as “Waste Land” and its 1997 sequel, “Fallout,” depict an irradiated world filled with genetically mutated animals and humans.85

Continued Problems of Underground Testing

The decision to move nuclear tests underground has not completely mitigated the problem of fallout. However, underground testing did permanently mitigate the relieve of negative public relations, for painfully obvious and literal reasons. Those who remain concerned about fallout are viewed as relics of the Cold War, conspiracy theorists, or simply paranoid. Yet, as early as 1972, Congress was aware that underground testing also constituted a hazard. An article from the Washington Star was included in one congressional hearing to illustrate concerns over these hazards. As an aside, the article also addresses fallout as a “major reason” for the Limited Test Ban Treaty.

“Of the announced 200 U.S. underground tests between 1963 and 1970, 68 vented radioactive material detected in or near the testing site...after 19 years of underground testing experience... [Shot] Baneberry vented radioactivity contaminating 300 workers and forcing evacuation of...the Nevada Test Site.”86

The article describes radioactive fallout as a pollutant and source of contamination. While the Threshold Test Ban Treaty was passed two years after this hearing, a comprehensive test ban treaty remains unratified to this day. The marked decrease in public concern after fear of fallout was “exorcized”87 through an atmospheric test ban has contributed to the delay in further comprehensive test-ban legislation, but testing by more recent nuclear powers and underground venting have not eliminated the presence of radiation from nuclear fallout altogether.

Conclusion: An Enduring Image of the Nuclear Age

What must be understood is that fear of fallout from an atomic explosion is but one facet of a larger phenomenon of nuclear fear that spans the globe in the nuclear age. In America, these fears actually eclipsed fear of the blast from the Bomb, primarily because the dangers were less straightforward and more invasive into everyday life. The prospect of hazards from nuclear fallout due to continental testing provoked some of Americans' deepest anxieties about their safety in the domestic sphere and fundamental trust in their government's ability to safeguard their welfare. One way that Americans dealt with the problem was by constructing elaborate home fallout shelters to emphasize their individualism and self-reliance. Unique to the American experience was a garish, frivolous nuclear culture of “atomic” songs, dances, and alcoholic beverages, with the intent to distract from or satirize their underlying fears. Other countries took the issue perhaps more seriously. Prime Minister Nehru of India was a prominent spokesman against nuclear testing, and it was in Britain rather than America where the worldwide anti-nuclear movement began. The CND’s distinctive attitude as a “single-issue” movement, with its iconic slogan “Ban the Bomb,” put anti-nuclear attitudes at the forefront of public discourse on both sides of the pond. Fallout profoundly altered the way the world thought about nuclear weaponry, but the issue was part of a larger culture which defined the post-Hiroshima era known as the “nuclear age.”

Widespread public anxiety over fallout permanently altered American perception of atmospheric nuclear testing because of strong associated imagery imparted through scientific journals, media broadcasts, newspapers, and popular fiction. Photographs of deserted streets after a mock evacuation, images of the


87. Divine, Blowing on the Wind, 163.
irradiated tuna from the Lucky Dragon, and the notion of 50,000 milk teeth already containing measurable levels of strontium-90 were more powerful in influencing the public than all the propaganda and public relations efforts the Atomic Energy Commission could muster. A survey in 1982 found that the most vocal protests against nuclear war were motivated “not by technical statistics but by concrete personal images.”88 Fallout was feared because it was unknown and because it was unavoidable. It could contaminate at the genetic level, and there was no “cure” for radiation sickness or from cancer contracted from fallout exposure. Fear of fallout and its associated imagery prompted government interest in a nationwide shelter program to demonstrate Americans’ will to survive as well as the global push for the Limited Test Ban Treaty of 1963. Unfortunately, one of the tragic and unintended consequences of this widespread fear of nuclear fallout was a series of misinformation and propaganda campaigns conducted by the Atomic Energy Commission with the intent to dispel these fears. With these civil defense pamphlets, altered language of press releases and newsreels, and even the decorum of Public Health Services employees on site in downwind areas, the Atomic Energy Commission attempted to control and manage the images of their agency as well as the nature of continental testing. The motivations for these actions originated from the tense political climate of what is historically considered the “high Cold War,” in which tests were justified as protection from communism. The debate and uncertainty within the scientific community over the true extent of the fallout dangers, as well as the legal ramifications of a precedent of compensation for victims of nuclear fallout, also contributed to the lack of accountability during this time. Unfortunately, these efforts only delayed, rather than prevented, the truth about fallout from coming to light, and nuclear fallout remains an enduring image of the nuclear age and a powerful warning of the consequences of nuclear warfare.

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Faith Fighting Fear in the Gospel of Mark: “Don’t be afraid. Just believe.”

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ABSTRACT. The Gospel of Mark in its entirety is a call to action. This idea can be seen in Mark’s use of fear in his narrative: using fear as a literary device that functions at a higher level than merely the narrative stage, Mark draws upon his audience’s post-Easter understanding of the Christ-event in order to communicate his transcendent message. This paper will explore the way in which various depictions of fear in secondary characters challenge the reader to respond in faith. The role of pending persecution within the Markan audience also shapes the reading of the Gospel material. Nothing in Mark can be understood apart from the looming death and resurrection of Christ. I will delve into specific pericopae, such as Jesus pacifying the dangerous sea (Mk 4.35), the healing of the demoniac (Mk 5.1-20), the sickness and death of the girl (Mk 5.21-24; 55-45), the rejection of Jesus (Mk 6.1-6), Antipas and John the Baptist (Mk 6.14-29), and Jesus walking on water (Mk 6.45-52). Whether it functions as a depiction of a lack of faith or of understanding, Mark consistently uses the concept of fear as a type of reverse psychology. Ultimately, this analysis of the Markan text concludes hopefully: the Markan author, through skillful use of fear in light of the resurrection message, calls his audience to apostolic commission resulting from faith in the risen Christ.

Introduction

The Gospel of Mark cannot be understood apart from the atmosphere of the author’s close pastoral engagement with his audience’s situation. Scholarship widely debates the presence of persecution within the Markan community; a thorough sifting of the text, however, makes it apparent that the author is aware of either present or pending persecution. The author’s depiction and ironic juxtaposition of the literary characters’ fear makes this awareness clear. Nearly every pericope of this Christological narrative furthers momentum to the ultimate depiction of persecution-the cross. The depiction of fear in the gospel acts as an instructive element of discipleship in the face of such persecution, centered on the paradigmatic figure of Jesus. True victory, faith, and discipleship only appear in Mark in direct opposition to paralyzing failure, fear, and rejection. The Markan author’s representation of fear can only be viewed in light of the victory that comes through the suffering of the cross and the ultimate hope derived from the vindication of the resurrection and coming Parousia.

History and Persecution

Just as the context of the Gospel of Mark cannot be understood apart from the resurrection, it is likewise unintelligible apart from the context of the Markan community. Scholars still dispute the actual year of the gospel writing, but the most widely accepted estimate is that it was written between the years 69-73 CE, during the Jewish revolt (66-73 CE) that resulted in the fall of the Temple (70 CE). Placing the writing of the gospel within this historical setting implies either anticipation of or immediate reaction to this monumental occurrence, which directly impacted the resolve of the Markan community. The revolt’s impact can be seen in the evangelist’s view of fear and particularly his address of persecution in his gospel. Though contemporary scholars do not acknowledge broad-scale Christian persecution in the first century, the Markan author displays a particular interest in the subject. A thorough reading of the gospel material illuminates the understanding that the Markan author is closely tied to his audience and that his literary choices reflect the situation of his readers. Careful consideration of four particular passages, Mark 4:17; 8:34—35; 10:29—30; and 13:9—13, elucidates the Markan author’s attitude towards persecution and his belief in its impending presence within his readers’ community.

A redaction-critical examination of the Markan passages 4:17, 8:34—35, 10:29—30, and 13:9—13 shows that the Markan author expanded the traditional content by emphasizing the theme of persecution. Roskam argues that the topic of persecution was of particular interest to the Markan author, who aims to provide comfort and encouragement to his readers in each of these examples.

In the eschatological discourse (Mark 13:9—13), the Markan audience is graphically warned that persecutions will come because of belief in Jesus as the

1 Marcus 2000, 38
2 Marcus 2000, 29
3 Roskam 2004, 26
Christ. Verse 9 of this section states, “You will be handed over to the local councils and flogged in the synagogues. On account of me you will stand before governors and kings as witnesses to them,” giving weight to the idea that Christians would face persecution by Jewish and non-Jewish leaders alike. However, the central message—to stay faithful to and widely preach the gospel—remains prominent. The concept of the Holy Spirit giving assistance to those persecuted is not a purely Markan concept. It also appears in Pauline literature in his initial letter to the Corinthians. The passages below demonstrate the Markan pattern of how the transcendent address of faith overrides the present address of persecution. They also support the idea that, though the Gospel will not be accepted everywhere, the prevailing power of God is still at hand. According to the statement, “but the one who stands firm to the end will be saved” (Matthew 24:13), God is still ultimately in control and the eschaton is still to come.

According to the passage Mark 8:34—9:1, and particularly verse 35, to follow Jesus is to prepare for death. Verse 35a states straightforwardly that, “whoever wants to save their life will lose it.” After the death of Jesus, dying for his sake is no longer plausible, but the evangelist implies that doing so for the sake of the gospel is a likely reality. Despite this bleak realization, the ultimate tone of the passage is hopeful. The evangelist changes his tone in verse 35b by stating, “but whoever loses their life for me and for the gospel will save it.” He provides hope to the reader in that suffering for the gospel’s sake will ultimately result in saving one’s life upon judgment. This passage increases awareness of the evangelist’s concern about persecution within the Markan Christian community. Losing one’s life for their belief in the gospel was an impending future looming over the historical Markan audience.

Close consideration and redaction analysis of the parable of the sower and its subsequent explanation (Mark 4:1—20) allow for further understanding of the evangelist’s attention to persecution. The specific verse under consideration is verse 17: “But since they have no root, they last only a short time. When trouble or persecution comes because of the word, they quickly fall away.” Roskam concludes that the individual phrases “but they have no root, and endure only for a while,” “or persecution,” and “and on account of the word” have no directly tangible pre-Markan source. They have been added due to Mark’s redaction of the historical tradition in order to speak beyond the narrative to the reader. The explanation given in verse 20, “Others, like seed sown on good soil, hear the word, accept it, and produce a crop—some thirty, some sixty, some a hundred times what was sown,” is another example of how the Markan author motivates his readers to endure hardships and to remain true to their faith in the gospel by reminding them that they will ultimately be rewarded. In this pericope, the evangelist both warns of pending persecution and offers encouragement for the Markan contemporaries. He thus brilliantly juxtaposes the destruction of families and of livelihood with the promise of prosperity and of eternal life; for those who suffer or who will in the time to come, vindication is at hand.

The warning of persecution sheds light upon the device of fear in Mark’s narrative. On a surface-level reading, fear may seem to function as a scare tactic to support conversion to Christianity, but in fact the use of the antagonistic character of fear provides an overall dissertation in discipleship. In order to understand the function of fear, one must assess the author’s standpoint on faith in the face of perilous situations. In several specific pericopae (Mark 4:35—41; 5:1—20, 21—24, 55—45; 6:1—6,14—29, 45—52), the evangelist addresses the aforementioned warnings by giving specific examples of fear and how it should be handled. Jesus Pacifies the Sea (4:35—41)

The pericope in which Jesus pacifies the sea (Mark 4:35—41) functions on two levels of address to an audience facing persecution. The first is at the level of the narrative. The eerie description of the setting allows for further understanding of the evangelist’s attention to persecution. The specific verse under consideration is verse 17: “But since they have no root, they last only a short time. When trouble or persecution comes because of the word, they quickly fall away.” Roskam concludes that the individual phrases “but they have no root, and endure only for a while,” “or persecution,” and “and on account of the word” have no directly tangible pre-Markan source. They have been added due to Mark’s redaction of the historical tradition in order to speak beyond the narrative to the reader. The explanation given in verse 20, “Others, like seed sown on good soil, hear the word, accept it, and produce a crop—some thirty, some sixty, some a hundred times what was sown,” is another example of how the Markan author motivates his readers to endure hardships and to remain true to their faith in the gospel by reminding them that they will ultimately be rewarded. In this pericope, the evangelist both warns of pending persecution and offers encouragement for the Markan contemporaries. He thus brilliantly juxtaposes the destruction of families and of livelihood with the promise of prosperity and of eternal life; for those who suffer or who will in the time to come, vindication is at hand.

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the narrative. In their distress, the disciples exclaim, “Teacher don’t you care that we are about to die?” (4:18). The Markan audience could read this desolate plea as the desperate cries that resulted from the tumultuous outbreak of civil war and believed persecution.

The elevated Christology of the passage works on two levels in this section, in accordance with the suffering of the Markan audience. Thematic and linguistic connections with the Old Testament God are present, including the question of “Why do you sleep O LORD” from Psalm 44:23—24 and “rebuking” the sea from Job 26:11—12, Psalm 18:15: 104:7; 106:9, and Isaiah 50:2. There is also a clear reference to Jonah 1:16. In the Jonah passage, the sailors are overcome with fear in the presence of God at work. This allusion presents Jesus as the one in whom the exhibition of the power of Yahweh is manifest. This high Christology is prominent in that it equates Jesus with the God of the Old Testament. If the Markan author is in fact writing to a persecuted community, the leading accusation among the Jewish leaders (warned in Mark 13:9) would be blasphemy. Besides providing this evangelical defense, this passage also functions to encourage perseverance in the presence of persecution by asserting that the one in whom they place their faith is the one whom “even the winds and sea obey.”

After rebuking and vanquishing the threatening external obstacle, the Markan author refocuses on the internal: the disciples’ unbelief and fear. The emphasis and repetition of language allows the reader to zoom in on the central conflict of the story. The author uses the word megas, “great,” in three different instances within the section: great windstorm, great calm, and great fear. This term reflects the external and internal conflict of the pericope. The language used in these concluding statements is indicative of martyrdom (John 14:27; 2 Timothy 1:7, and Revelation 21:8) and would be pertinent to a community faced with affliction on account of the Gospel.

The reader would expect the outcome of the story to be positive; in Markan contemporary literature, the proper response would have been thanksgiving and worship (Psalm 107:28-32); However, that is not the case. Instead, the outcome follows another theme of literature known to Mark: when one divine power overcomes another, the observing humans are subject to uncertainty and fear. The concern often arises that, though one power has overcome, this victorious power may be no safer than the former. In this story, the disciples remain in a fearful position. This particular instance of fear is derived from uncertainty of what to make of the identity of this very powerful Jesus. This passage represents two main aspects of Geyer’s “anomalous frightful” at the narrative level: dumbfounding ambiguity over the present situation and of what is next to come, and the fear of what could have taken place and of who Jesus might be. No resolution

11 Marcus 2000, 336
12 Marcus 2000, 339
13 Marcus 2000, 339
14 Dwyer 1996, 109
15 Marcus 2000, 339
16 Dywer 1996, 110
17 Marcus 2000, 335
18 Geyer 2002, 108
19 Marcus 2000, 339
20 Marcus 2000,339
21 Geyer 2004, 106
22 Geyer 2004, 108
23 Geyer 2004, 109
comes for the disciples or for the reader. The narrative only progresses forward. Trust in Jesus must come with a comprehensive understanding of who he is; Markan Christology does not allow for any understanding of Jesus apart from the resurrection. The ending of this pericope directs the reader past the fear of the disciples straight to the persona of the deliverer. The pericope ends in uncertainty and simply moves forward to the next. This is characteristic of the Markan momentum toward the death and resurrection of Jesus, the actualization of the identity of the figure in whom faith that overcomes fear is to be placed.

Gerasen Demoniac (5:1—20)

The following section of the Gerasene Demoniac (Mark 5:1—20) also provides a commentary about the Markan view of discipleship in the face of fear and rejection. After the momentous healing of the man, the contemporary reader expects a reaction of awe and praise, but the author spins it differently. Verses 14-17 of this section depict the rejection of Jesus from the region. The narrative audience acts in a way that strikes overtones of the experiences (possibly still in the future) of the Markan contemporary audience. This story also significantly provides a narrative discourse for missionaries dealing with fear of rejection. Marcus argues that such rejection could have a demonic explanation and that the seed parable explanation is at work in this story. The idea that Satan takes the seed before it takes root has strong resonance here. Jesus’s reaction to the man’s pleading is also unexpected. Instead of allowing him to follow like the others, Jesus diverts from the motif of the Messianic Secret by calling the man to mission among his hometown. This call is another gesture toward the audience because they have no way of directly following the physical Jesus like the disciples, but can “go to [their houses], to [their people], and announce to them what great things the Lord has done [for them], how he has had mercy on [them]” (v. 19). Despite initial rejection, such missionary activity results in the acceptance and amazement of the people in the surrounding territory.

The demoniac pericope communicates on two levels: at the narrative level, where the power and authority of Jesus are displayed yet rejected, and at the Markan community’s level, where they are aware of the miraculous power of God in Jesus yet are faced perplexingly with persecution that results in fear. An overall point of this passage is that, despite the present fear and uncertainty, the supernatural act functions as God’s ultimate reinstatement of creation and the spreading of this news of what God has done. The transcendent question that the Markan audience faces is whether they are among those who fear and reject Jesus or if they are among the ones continuing to proclaim the marvels of Jesus when faced with opposition. The gospel at the narrative level—the encouraging final note, “and everybody was amazed” (v. 20)—and at a holistic level—the post-Easter hope of the resurrection and eschaton—serves to urge the reader to persevere.

Markan Intercaluation of Resurrection and Healing (5:21—43)

The subsequent section, the Jairus’ Daughter and the Woman with the Blood Flow intercalation (5:21—43), has a central theme of faith with an overlay that points to both the impending death and the victorious resurrection. This section is an example of a Markan sandwich story that reflects upon itself to cast light on the call away from fear and into faith. This scene opens with a feeling similar to that of the calming storm scene. Though not implicitly mentioned, fear can be seen as a driving force behind the urgency of the synagogue ruler. Death is looming. Just as the disciples cry out for salvation from a fatal situation, likewise this ruler falls at Jesus’s feet pleading for his daughter’s life; and, as in the storm story, faith and the power of Jesus are central. In this case, however, the evangelist juxtaposes another story to bring out these emphases more potently.

The woman, after receiving instantaneous healing, is called by Jesus and approaches him “fearing and trembling” (v. 33). Once again, fear surrounds the act of approaching Jesus. Instead of being rendered mute, however, she proceeds to tell “the whole truth” (v. 33). The story calls the audience to do the same. The concept of “the whole truth” has a judiciary connotation, which contains echoes of the warning of Mark 13:9—13 that facing court is a looming possibility for the Markan audience. In contrast, following the motif of the dark

24 Marcus 2000, 350
25 Dwyer 1996, 115
26 Marcus 2000, 354
27 Dwyer 1996, 115
28 Marcus 2000, 369
The address of the Markan Jesus that holistically encapsulates the Markan view of fear is Mark 5:35, “Don’t be afraid. Just keep on believing.” This simple statement can be heard as a direct address to the Markan audience that sums up Mark’s opinion of how to deal with persecution and fear. The resurrection act in this story is a minute sample of the greater story that is happening at large and must be viewed in light of the imminent death and resurrection of Jesus. The language allows for this connection to be drawn. The word used here for “rise” (egeire) is the same used in relation to Jesus in that he will “be raised” (ēgerthē, 16:6). The overall direction of the gospel, as depicted in this pericope, juxtaposes of the fear of the finality of death with the overcoming power and hope of the resurrection that accompanies the promise of a new beginning. This story carries overtones of the salvific power of Jesus in the resurrection that calls the post-Easter reader to keep this message fresh in their minds.

The Way to the Cross (8:34, 13:9)

The Markan depiction of the crucifixion is the ultimate picture of perseverance in the face of persecution. The emphasis of discipleship is always on the cross. The motif of the path in which Jesus calls his disciples to “follow me” (1:17) is known as the “the way” (1:3) which the readers can identify as “the way to the cross” (8:34). Though Mark does not draw out the dramatic, gruesome details of crucifixion—his audience is aware of the brutal picture—his particular choices of emphasis reflect the message of perseverance to his audience. Mark uses exaggeration in referring to the “whole” Jewish Sanhedrin and the “whole” Gentile battalion. This was highly unlikely; however, the heightened circumstances of mockery and rejection provide for a greater resonance within a persecuted community. The parameters of 13:9 are present in Jesus’s passivism in this moment. Though Mark clearly believes in the power of God at work in this section, the human aspect of powerlessness is still present and communicated to the reader. Mark calls his reader to put faith in the place of their feeling of powerlessness; as Marshall argues, Mark depicts faith as power for the powerless. Mark’s underlying theme in this moment, then, is that though his central figure is heading to the cross, faith is the way to encounter the power of God and to carry out this way of the cross through discipleship. In contrast, the mocking call to “come down from the cross” and “save yourself” is the ironic distortion of the message that the way to save one’s life is to take up the cross, as stated in 8:34—35.

The end of the Markan depiction of the crucifixion, just as every call to faith in the face of persecution, provides a glimmer of hope. The final words of Jesus are a quotation from Psalm 22:1. Though this psalm begins with despondence, the reader knows that it ends on a hopeful, victorious final note of worshipping God and celebrating the coming of the kingdom, which is also the ultimate outcome of Jesus’ death. The final line of the Psalm of “He has done it!” thus highlights the victorious overtones of this gruesome, seemingly hopeless situation (22:31). There is also a final note of hope in the centurion’s confession. The centurion comes to this Christological actualization not through a miraculous sign, but through his witness of the death of a man that has been ridiculed and rejected and has died a criminal’s death in weakness. Thus, the centurion becomes the Markan model for the post-crucifixion believer.

Despite the controversial scholarship of the Markan ending, this discussion will simply develop

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29 Marcus 2000, 369
30 Marcus 2000, 370
around the function of the conclusion as it is, analyzing what it communicates to the Markan audience. The brief mention of the resurrection forces the reader to continue to focus on the cross. This emphasis communicates that, though Mark obviously believes in the fulfillment of the resurrection, the reader may not bypass the reality of the cross. This unexpectedly ambiguous ending reassures the disciples, and ultimately the Markan reader, that glory will in fact succeed suffering, but this glory will not and cannot ensue exclusive of the cross. 37

For They Were Afraid (14:50—16:8)

The final note of the entire narrative hangs upon the fearful reaction of the two women who initially seem to respond faithfully to the resurrection. These women have followed Jesus to the cross and now into this scene. Though they have not come to the tomb in anticipation of a resurrection, they still seem to be viewed positively in comparison to the male disciples; for though these men were repeatedly told that the way of discipleship comes by means of the cross, still, "they all forsook him and fled" (14:50).38

The scene they encounter upon entering the tomb paints the final picture of Jesus in an unexpected way. The young man does not refer to Jesus in high Christological terms. Rather, he refers to Jesus in terms that depict moments of weakness and rejection—"from Nazareth" and "the Crucified One" (16:6).39 "From Nazareth" suggests his rejection in his hometown, and "the Crucified One" emphasizes his death. This final Markan depiction of Jesus leaves the lingering image of Jesus as the one who has faced persecution, suffered, and died—a looming reality for his reader. However, the Markan reader is called to place faith in this person whom they know has faced this adversity and has ultimately conquered death.

In virtually every interaction between Jesus and his disciples, Mark presents their failure coupled with Jesus’s unvarying consistency in keeping his promises. This depiction of the resurrection remains consistent with that motif. The scenes of their neglect at the crucifixion and Peter’s denial were clear portrayals of the disciples’ failure. However, Jesus’s promise from 8:31, 9:9, 9:31, and 10:34 stands despite this abandonment, and the command to the women declares that this concluding failure of the disciples is not final; there is still hope. The news that “He has risen, he is not here…He is going ahead to Galilee” confirms that the ultimate promise has remained intact (16:6).40 The prevail of his promise is vital to the Markan community who would have undoubtedly been experiencing the threat of failure amid persecution. The women’s unexpected reaction to this news in 16:8, “they said nothing to anyone, for they were afraid,” creates an interesting double irony. They are commanded to tell of the promise that failure is not final, yet their failure is the end of the narrative.41 Nevertheless, the faith of the Markan audience and Christian faith at large rely upon the fact that this instance of fear is not final. The news of the resurrection is a concrete reality to the Markan community. After this fulfilled promise, there remains one promise lingering past the narrative level: that of the Parousia of the Son of Man. This ending creates a reality of hope to which the Markan audience adheres. This motif of promises being fulfilled despite failure instills a hope that, faced with human failure, the promises of God ultimately remain supreme.42

Conclusion

In the Markan Gospel, fear is not simply a scare tactic; it is a means of creating triumphant faith that will ultimately result in vindication at the Parousia. The various depictions of fear in secondary characters challenge the reader to respond in faith. Mark draws upon his audience’s post-Easter understanding of the Christ-event to communicate his transcendent message via the lack of understanding of the characters in the narrative’s pre-resurrection setting. Though persecution is pending in the Markan audience, the reader is invited to transcend submissive fearfulness. Markan Christology creates momentum toward the death and resurrection of Jesus, the actualization of the identity of the figure in whom faith that overcomes fear is to be placed. The apostolic call to “follow me” is one that involves danger and suffering; however, the call, “Don’t be afraid. Just believe,” overrides the risk involved and ultimately leads to the hope of the promise of victorious liberation toward which the Markan reader is to strive faithfully.

37 Lincoln 1989, 294
38 Lincoln 1989, 283
39 Boring 2006, 444
40 Lincoln 1989, 289
41 Lincoln, 1989 298
42 Lincoln, 1989 290
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NATURAL SCIENCES
Intravenous Monocycline and Its Effect on Peripheral Interleukin-6 after Ischemic Stroke

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ABSTRACT. This experiment studies the effect of intravenously administering minocycline on the inflammatory response level as measured by interleukin-6 (IL-6) concentrations in the blood of ischemic stroke patients. IL-6 levels have been associated with stroke severity and clinical outcome. Due to a favorable safety and pharmacokinetic profile, anti-inflammatory activity, demonstrated compatibility with tissue plasminogen activator (t-Pa), and efficacy in multiple pre-clinical stroke models, minocycline shows potential to improve therapeutic outcomes in ischemic stroke. In this early phase trial of intravenous minocycline in acute ischemic stroke patients, blood samples were collected to quantify the effect of minocycline on inflammatory biomarkers. Following an open-label, dose-escalation design, minocycline was administered intravenously to patients within 6 hours of stroke symptom onset in preset dose tiers of 3, 4.5, 6, or 10 mg/kg daily over 72 hours. Blood samples for biomarker analysis were drawn 24 hours after symptom onset and analyzed using ELISA techniques. The effects of minocycline on interleukin-6 levels were subsequently compared to a historical control group and to literature values of IL-6 levels in patients who suffered from an acute ischemic stroke. A statistically significant association was found between patients who received minocycline and non-detectable IL-6 levels. Patients who received minocycline were 7.16 times (95% CI 2.64-19.38) more likely to have a non-detectable IL-6 level than patients who did not receive minocycline. In conclusion, minocycline shows anti-inflammatory activity by reducing IL-6 levels in the ischemic brain.

Introduction

Stroke is responsible for 135,952 deaths in the United States according to the Center for Disease Control’s 2009 survey, the third-leading cause of death in the United States.1 Worldwide, stroke is the second leading cause of death with 6,000,000 deaths annually.2 In the United States there are 6.5 million stroke survivors, and stroke is the leading cause of adult disability.3 The estimated annual cost of stroke treatment and associated expenses is $69 billion in the United States alone.3 The primary complicating factor to stroke is permanent brain damage due to death of brain tissue, making full recovery rare. Patients who have suffered a stroke are often sent to rehabilitation, a nursing home, or hospice care. Many require a permanent caregiver. As such, stroke treatment both in the acute, chronic, and preventative phases is an important field of study in modern medicine.

Stroke Pathophysiology

Stroke is a term used to describe the rapid onset of focal neurological deficit that is thought to be of vascular origin. The lifetime risk of suffering a stroke is around 8-10%.4 Strokes can be classified into two primary categories: ischemic and hemorrhagic, and it results from a heterogeneous group of factors and processes.6 Ischemic stroke, which accounts for approximately 85% of all strokes, involves a vessel occlusion, whereas a hemorrhagic stroke involves a primary intra-cerebral bleed. Symptoms of stroke include numbness, weakness, or paralysis of the face, arm, or leg. Stroke also results in neurological defects such as confusion, trouble speaking or understanding, blurred or double vision, dizziness, or severe headaches with unknown causes.7 The key factor in recognizing stroke is the suddenness of the event; stroke is a sudden loss in

Figure 1. In an acute ischemic stroke, an embolus blocks blood passage through the artery resulting in an ischemic core characterized by neuronal cell necrosis as well as a surrounding area of ischemia and inflammation known as the penumbra. The penumbra can be potentially salvaged through medical intervention. Image by Andrea Sikora.
brain function. A transient ischemic attack, or TIA, is a temporary loss of brain function usually under 10 minutes in duration before the patient returns to a normal functioning status. Ultimately a TIA is differentiated from a stroke if the symptoms resolve in under an hour. However, because the only available treatment for ischemic stroke must be administered within a very narrow timeframe, TIAs lasting more than 10 minutes are often worked up as ischemic strokes.

Atherosclerosis is a significant contributing factor to ischemic stroke. Ischemic strokes are primarily caused by either local thrombus formation or by an embolic event. Cardiogenic embolisms are often the result of atrial fibrillation or valvular heart disease. Both of these conditions result in the stasis of blood in the heart chambers which can lead to clot formation. The clots can ultimately dislodge and travel through the circulatory system before becoming caught in the smaller vessels of the brain. In carotid atherosclerosis, plaque formation results from the combined processes of the accumulation of lipids and inflammatory cells and the hypertrophy of smooth muscle cells. Over time, shear stress can result in plaque rupture. In this situation, exposed collagen initiates platelet aggregation and clot formation that may either fully occlude the vessel of origin or travel downstream as an embolism to occlude a cerebral vessel. The etiology of an ischemic stroke is highly important in the development of a therapy plan for secondary preventative measures, but in the acute phase, all processes result in a similar situation and are treated in approximately the same manner.

The brain is a heavily perfused tissue that requires a high volume of blood to supply its need for oxygen and nutrients. As a result, brain tissue has a very high sensitivity to ischemia, and within minutes of an ischemic attack, tissue begins to die resulting in various forms of permanent damage or death. Normal cerebral blood flow averages around 50mL/100g per minute. Ischemia results when blood flow drops below 20mL/100g per minute, and irreversible damage occurs below 12mL/100g per minute. Irreversible brain damage is termed infarction. Ischemic tissue that can maintain membrane integrity for a period of time is known as the penumbra and can be salvaged through therapeutic intervention; however, prolonged or severe ischemia results in the depletion of adenosine triphosphate (ATP) and the accumulation of waste products (see Figure 1). Through a series of processes, neuronal damage ultimately results in the formation and accumulation of inflammatory molecules including prostaglandins, leukotrienes, and free radicals that overwhelm the anti-oxidant scavenging systems in the tissue. Stroke severity can be measured through several scales, but most popular include the National Institutes of Health (NIH) Stroke Scale and the Modified Rankin Scale (MRS). The NIHSS is an assessment tool that yields a quantitative measurement of stroke-related neurological deficit. NIHSS can be used both as a research tool to evaluate new treatments or as a clinical tool to evaluate the severity of the stroke in patients in order to determine the appropriate treatment regimen and to predict overall outcome. The NIHSS is a 15-item examination that evaluates consciousness, language, neglect, visual-field loss, extraocular movement, motor strength, ataxia (lack of muscle coordination), dysarthria (motor-speech disorder characterized by difficulty articulating words), and sensory loss. The Modified
Rankin Scale measures the degree of disability or dependence of stroke patients in daily activities. The scale has 6 levels ranging from no symptoms (0) through various levels of independence and dependence all the way through death (6). Lower numbers correlate with independence whereas higher scores correlate to requiring specialty care.

Current stroke treatments focus heavily on prevention because a significant portion of risk factors can be controlled through lifestyle modification and pharmacotherapy. Stroke is part of a broader disease category of atherosclerotic disease. The ATP III Guidelines include major risk factors as cigarette smoking, hypertension (blood pressure $\geq 140/90$), low HDL cholesterol (<40mg/dL), family history of premature CHD event, and age. The presence of coronary heart disease (CHD) or a risk equivalent (diabetes mellitus, symptomatic coronary artery disease, peripheral artery disease, or abdominal aortic aneurysm) is also considered a major risk factor for stroke. Other risk factors include abdominal obesity, atrial fibrillation, alcohol use, and physical inactivity. Although some factors such as age, gender, and race are not controllable, many of the risk factors are treatable with lifestyle modifications and low-cost, low-risk medications. However, the other reason for such a focus on preventative medicine is the lack of curative medicine once a stroke has occurred. Much of the medical care provided to stroke victims can be classified as supportive, and the actual brain damage due to ischemic tissue has no medical cure beyond physical therapy and time. Thus, the focus on preventative medicine is both prudent due to the availability of controllable factors and necessary due to the lack of efficacious treatments.

**Acute Ischemic Stroke Treatment: t-PA**

Acute stroke treatment focuses on supportive care, reperfusion therapy, and secondary prevention of recurrent stroke and other complications of stroke. The first-line medication in acute ischemic stroke treatment is tissue plasminogen activator, or t-PA. t-PA is a thrombolytic agent that breaks down clots through the activation of plasminogen to plasmin. t-PA has been shown to improve therapeutic outcomes in stroke patients when given within 4.5 hours of symptom onset. Despite the huge advancement that t-PA represented in acute stroke therapy, it is not without limitations and risks.
While the intent of activating plasminogen to plasmin is to lyse the fibrin component in a blood clot, plasmin is also involved with tissue remodeling through both direct and indirect modeling. At a certain point after the acute onset of stroke symptoms, the risk of intracranial hemorrhage (ICH) and enhanced brain injury due to plasmin’s double role outweighs the potential benefit of clot lysis. Therefore, while t-PA was a breakthrough medication that significantly improved stroke outcomes, its use is limited by the fairly narrow therapeutic window of 4.5 hours within the onset of acute symptom t-PA was originally approved for use within 3 hours, but the European Cooperative Acute Stroke Study (ECASS)-3, showed significant improvement in clinical outcomes up to the 4.5 hour mark; however, delayed use was also associated with a 20-fold increase in the incidence of ICH. Due to this risk, certain patient populations are not candidates for treatment beyond 3 hours. These patients include individuals older than 80 years-old, individuals with National Institute of Health (NIH) Stroke Score (NIHSS) greater than 25, individuals with histories of both stroke and diabetes, or individuals currently being treated with anticoagulants.

**Inflammation and Stroke**

Ischemic stroke and its aftermath result in inflammatory processes in the brain (see Figure 2). These processes have both beneficial and deleterious effects which are still not fully understood. t-PA’s adverse effects beyond the 4.5-hour window can be explained both as a direct toxicity and through its role in the inflammatory process. t-PA is thought to cause direct toxicity through an activation of N-methyl-D-aspartic acid (NMDA) receptors. The proposed mechanism for the indirect effects is through the activation of matrix metalloproteinases (MMPs) through an increase in MMP-9 expression and activity. The t-PA induced increase in MMP-9 has further been correlated to neurological worsening and t-PA-related hemorrhage. Matrix-metalloproteinases (MMPs) are a family of zinc endopeptidases that break down extracellular matrix proteins and thus result in tissue remodeling. t-PA has also been shown to induce MMP-3. MMP-3 has broad specificity for extracellular proteins and has also been shown to play a role in tissue remodeling. MMP-3 has additionally been implicated in a variety of pathological states including glioma, atherosclerosis, and rheumatoid arthritis. Through up-regulation of MMP activity, t-PA can cause the tissue remodeling, vascular leakiness, and edema that results in hemorrhage. Thus, therapeutic agents that do not interfere with t-PA’s clot-busting activity but in some way reduce its deleterious effects could conceivably increase t-PA’s therapeutic window and expand the patient population eligible for this treatment.

**Figure 3.** Levels of IL-6 within 24 hours of onset of symptoms in acute ischemic stroke from the conducted literature search. Data displayed as median and IQR. *mean±SEM **median and range
Minocycline: a potential neuroprotective agent

Minocycline (MC) is a broad-spectrum tetracycline antibiotic with good penetration of the blood-brain barrier that is used to treat a variety of infections. It is an ideal drug candidate for several reasons. First, because it has a well-elucidated safety profile for a broad range of patients, and it is a viable candidate for drug re-purposing in a variety of diseases including rheumatoid arthritis, multiple sclerosis, and periodontal disease. Second, minocycline exhibits anti-inflammatory, anti-collagenase, and anti-apoptotic characteristics. Third, minocycline displays protease inhibition and glutamate-antagonist activity and has shown decreased disruption of the blood-brain barrier integrity, presumably through its inhibition of MMP-9.

Minocycline has been studied in relation to global cerebral ischemia, focal cerebral ischemia, traumatic brain injury, spinal cord injury, and intracerebral hemorrhage in animal models and has proved to decrease injury and improve overall recovery in each model. Further, the serum concentrations achieved in the animal models have been shown to be achievable in patient populations. Doses used to achieve these concentrations, 3 and 10mg/kg, were proven to be safe with limited to no side effect profiles in the patients studied. Promising results led to adjunct administration of minocycline in t-PA treated patients suffering from acute ischemic stroke. Recorded levels of MMP-9 and NIHSS scores were lower in patients who received minocycline and t-PA than in untreated subjects. The purpose of this study is to continue to characterize minocycline activity in acute ischemic stroke and to hopefully show its effectiveness at decreasing injury and improving overall recovery of ischemic stroke patients.

IL-6: a potential biomarker for minocycline activity

The inflammatory process results in an entire cascade of events mediated through a number of different molecular signalers that initiate, propagate, and regulate the inflammatory and immune responses in the body. Interleukins (IL) are low molecular weight glycoproteins produced by a variety of cell types including neurons, astrocytes, and microglia and are key inflammatory mediators. IL-6 is a cytokine produced by monocytes, macrophages, and stromal cells of the bone marrow and acts primarily on proliferating B cells and plasma cells. IL-6 has been associated with fibrinogen synthesis as well as C-reactive protein (CRP), both of which are biomarkers related to stroke severity and outcome. The expected concentration of IL-6 in plasma is 0-5pg/mL. Due to correlations with infarct volume, brain damage, stroke severity, clinical outcome (see Table 3), IL-6 has emerged as a potential prognostic factor for patient outcome and clinical decision-making as well as a potentially useful biomarker in evaluating the efficacy of stroke treatments.

Methods

The methods described have been previously published in The Minocycline to Improve Neurologic Outcome in Stroke (MINOS) study. The local Institutional Review Board approved these studies, and written informed consent was obtained from all participants or their legally authorized representative.

Subjects
Table 3: Serum IL-6 in the first 24 hours of ischemic stroke

<table>
<thead>
<tr>
<th>References</th>
<th>Number of cases</th>
<th>IL-6 (pg/mL)</th>
<th>Interpretation of IL-6 as biomarker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Kes et al 2008⁵⁵</td>
<td>68</td>
<td>Cases with AIS: 8(4-21)</td>
<td>Elevated relative to controls</td>
</tr>
</tbody>
</table>
| Castellanos et al 2008⁴⁶ | 197             | Cases with poor functional outcome: 35.1 (21.0, 67.3)  
Cases with good functional outcome: 19.1 (10.9,44.2)  
Median, IQR                          | Increases associated with baseline PWI lesion volume and penumbra volume |
| Chamorro et al 2007⁴⁷    | 75              | Cases with infection at day 7: 31 (17-43)  
Cases with no infection at day 7: 78(36-247)  
Median, IQR                          | Mortality at 3 months was associated with higher IL-6 levels             |
| Emsley et al 2003⁴⁸      | 36              | Cases with AIS: 22.5(9.0,311.3)  
Median (min, max)              | Elevated relative to controls and remained elevated 5-7 days but not at 3 months |
| Dziedzic et al 2004⁴⁹    | 18              | Cases with AIS: 10.3±8.4  
mean±SD                             | Elevated relative to controls                                          |
| Leira et al 2006²⁰       | 229             | Cases with hyperthermia: 28.9 (16.8-41.4)  
Cases without hyperthermia: 12.2(4.0-15.3)  
Median, IQR                          | Increases associated with hyperthermia                                  |
| Licata et al 2009⁵¹      | 120             | 11 (6-30)  
Median, IQR                          | Increases associated with cardio-embolic subtype of AIS but reduced levels in lacunar subtype |
| Nakase et al 2008⁴⁰      | 105             | 3.2±3.2  
mean±SD                             | Associated with worse outcome and severity of stroke lesion             |
| Oto et al 2008⁵²         | 19              | Cases with poor outcome: 75±5.2  
Cases with good outcome: 65±13.8  
mean±SD                            | Not statistically associated with outcome in AIS; study found IL-6 levels associated with poor outcome in hemorrhagic stroke |
| Perini et al 2001⁷⁷      | 42              | 3.89±0.81  
mean±SEM                           | Increases associated with outcome and stroke severity                   |
| Rallidis et al 2006⁵⁵    | 203             | Early death: 23.9(13.9-34.8)  
No early death: 3.5(2.1-6.4)  
Median, IQR                         | Increases associated with in-hospital mortality                         |
### Table of Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Size</th>
<th>Findings</th>
<th>Associations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rodriguez-Gonzalez <em>et al</em> 2011 (^{51})</td>
<td>129</td>
<td>Neuroserpin decrease within 24 hours ≥70ng/mL: 18.4±3.2 Neuroserpin decrease within first 24h &lt;70ng/mL: 29.2±8.1</td>
<td>Decreases associated with neuroserpin, a potentially neuroprotective compound</td>
</tr>
<tr>
<td>Rodriguez-Yanez <em>et al</em> 2006 (^{55})</td>
<td>844</td>
<td>Normotensive: 12.4(7.7-20.2) Chronic hypertensive: 15.5(7.1-27.1) New-onset hypertensive: 33.5 (21.6-46.2)</td>
<td>Increases associated with new-onset hypertension and poor outcome at 3 months</td>
</tr>
<tr>
<td>Shenhar-Tsarfaty <em>et al</em> 2008 (^{39})</td>
<td>186</td>
<td>4.4±3.6 mean±SD</td>
<td>Increases associated with unfavorable clinical outcome (NIHSS, mRS)</td>
</tr>
<tr>
<td>Song <em>et al</em> 2006 (^{50})</td>
<td>46</td>
<td>26.5 (6.4-161.3) mean, range</td>
<td>Increases associated with elevated plasma fibrinogen, a risk factor for stroke</td>
</tr>
<tr>
<td>Sotgiu <em>et al</em> 1996 (^{57})</td>
<td>50</td>
<td>9.8(8.0-16.2) median, IQR</td>
<td>Increases inversely associated with stroke severity</td>
</tr>
<tr>
<td>Tuttolomondo <em>et al</em> 2010 (^{58})</td>
<td>107</td>
<td>10(6-28) median, IQR</td>
<td>Increases associated with large artery stiffness</td>
</tr>
<tr>
<td>Waje-Andreassen <em>et al</em> 2005 (^{59})</td>
<td>11</td>
<td>6(4-8.5) median, IQR</td>
<td>Increases associated with large stroke volume and less favorable prognosis at 1 year</td>
</tr>
<tr>
<td>Welsh <em>et al</em> 2009 (^{60})</td>
<td>180</td>
<td>Dead/dependent at 30 days: 10.4(6.0-16.7) Alive/independent at 30 days: 4.4(2.4-9.2)</td>
<td>Increases associated with poor outcome</td>
</tr>
<tr>
<td>Vila <em>et al</em> 2000</td>
<td>231</td>
<td>Neurological worsening: 35.0±13.0 No neurological worsening: 10.2±8.0</td>
<td>Increases on admission associated with early clinical deterioration</td>
</tr>
<tr>
<td>Yang <em>et al</em> 2010 (^{61})</td>
<td>100</td>
<td>Cases with post-stroke depression: 7.99±5.36 Cases with no post-stroke depression: 8.16±6.80</td>
<td>Elevated relative to controls</td>
</tr>
</tbody>
</table>

The MINOS study was a non-randomized, dose-escalation design trial of minocycline administered intravenously within 6 hours of symptom onset. Between June 2008 and October 2009, sixty patients divided into 4 dose tiers (3.0, 4.5, 6.0, 10.0mg/kg) at Georgia Health Sciences University (GHSU), University of Kentucky, and Oregon Health Sciences University received minocycline infused over 1 hour every twelve hours for the first 3 days after symptom onset. Blood samples for biomarker analysis were drawn before MC treatment.
For the measurement of IL-6, venous blood was collected into chilled anti-coagulated (citrate) vacutainer tubes. Samples were transported to the biomarker research laboratory on ice, centrifuged at 2000g for 20 min at 4°C. The plasma was then removed, aliquoted, and frozen at -80°C. All measurements were performed in the biomarker laboratory by researchers blinded to the clinical data. IL-6 and CRP levels were measured by using commercially available ELISA (enzyme-linked immunosorbent assay) kits from Thermo Scientific-Pierce (Rockford, IL) and Millipore (Billerica, MA), respectively. Intra- and inter-assay coefficients of variation were <10 and 10%, and 4.6 and 6%, respectively. The sensitivity is <1 pg/mL.

Statistical Analysis

All statistical analysis was performed using SAS 9.2, and statistical significance was assessed using an alpha level of 0.05 unless otherwise noted. Due to having a large proportion of IL-6 levels at 24 hours below the limit of detection, IL-6 levels were separated into two groups: detectable levels and non-detectable levels. To examine whether an association between detectable IL-6 and minocycline existed at 24 hours controlling for baseline NIHSS, logistic regression was used. Odds ratios and 95% confidence intervals were determined for having a non-detectable IL-6 level among patients receiving minocycline compared to the historical control group patients.

Results

For the minocycline group, the mean IL-6 level at 24 hours was 3.34 (SD=10.18, median=0, IQR 0-0.95). Among the comparison group, the mean IL-6 level at 24 hours was 12.82 (SD=17.87, median=10.10, IQR 6.8-18.). The baseline NIHSS was 8.67 in the minocycline group (SD=5.83, median=7.0) and 9.52 (SD=6.08, median=8.0) in the comparison group. At 90 days, the mean NIHSS in the minocycline group was 2.16 (SD=3.27, median=1.0) and 4.50 (SD=4.99, median=3.0) in the comparison group.

The minocycline group had undetectable IL-6 levels making data analysis difficult; however, when the number of undetectable values was analyzed, there were significantly more undetectable levels in the minocycline group when compared to controls. Table 2 presents descriptive statistics of minocycline by IL-6 status and the logistic regression results controlling for baseline NIHSS. A statistically significant association between minocycline and non-detectable IL-6 was found with those given minocycline being 7.16 times (95% CI 2.64 – 19.38) more likely to have a non-detectable IL-6 level at 24 hours than those not given minocycline.

IL-6 levels from the minocycline group and historical control were also compared to other studies found in the literature search (see Figure 3). IL-6 values were reported as mean±SD, mean±SEM, and median/IQR (see Table 3). Some studies differentiated between a good outcome and a poor outcome when reporting their IL-6 levels. Levels of IL-6 from the MINOS trial and the control group were subsequently compared to the outcomes other researched labeled as positive (see Figure 4).
Discussion

In the hours and days following an acute stroke, serum markers of inflammation, including IL-6, are elevated. Elevated IL-6 is correlated with larger infarct volume, more brain damage, stroke severity, and poor clinical outcome (see Table 3). In this study, lower IL-6 values were associated with minocycline-treated patients at 24 hours.

There are several limitations to this study. The small sample size limits the ability to make definitive conclusions about minocycline’s effect on biomarker levels. Further, the study was not a randomized controlled trial, thus inequities due to unidentified cofounders cannot be excluded. The lack of pre-MC treatment samples also bars definitive conclusions about the impact of MC on IL-6 levels. Further, though IL-6 has been correlated to outcome, the exact significance of lowering IL-6 levels in clinical outcome remains to be fully elucidated. Finally, IL-6 levels may also be raised by concomitant infections or other inflammatory complications of stroke such as urinary tract infections, pneumonia, or deep vein thrombosis, which potentially argues against IL-6’s direct involvement in ischemic injury.

In summary, IL-6 levels were lower in patients from the MINOS study compared to the non-MINOS patient group who did not receive minocycline treatment. These results need confirmation by a randomized clinical trial and support further investigation into the combination of minocycline with t-PA to improve clinical outcome. Further, elucidation of the role of other cytokines in stroke, including IL-10 and IL-1β, could continue to support the use of minocycline in ischemic stroke patients and offer guidance in the discovery of other potentially viable neuroprotective agents.

REFERENCES

45. Basic Kes V, Simundic AM, Nikolac N, Topic E, Demarin V. Pro-inflammatory and anti-inflammatory cytokines in acute ischemic stroke and their relation to


Assessing the Relationship between Ankle Ligament Laxity and Ankle Function

Christopher Sudduth and Cathleen Crowell, Ph.D., Department of Kinesiology

ABSTRACT. After suffering a lateral ankle sprain, a significant number of people report residual symptoms such as pain, swelling, instability, and the sensation of their ankle “giving way” during activity. These recurring symptoms have been coined Chronic Ankle Instability (CAI). This definition is vague and does not empirically quantify the degree of ankle instability. The aim of the present study was to characterize CAI by evaluating the relationships between ankle laxity, as measured using a portable ankle arthrometer known as the LigMaster, and self-reported ankle function. Twenty-four participants had lateral ankle ligament laxity assessed using the LigMaster. They self-reported scores of ankle function using two questionnaires. Two testers measured ankle laxity on multiple days for a subset of participants. Correlation coefficients were calculated to measure relationships between self-reported ankle function and ligament laxity. Significant correlation coefficients were found between lateral displacement and questionnaire scores (R= -0.476 and -0.506; p<0.05). As ankle instability increased, self-reported ankle function decreased in a moderately correlative relationship. It appears that increases in ankle laxity as measured by the LigMaster are associated with impaired ankle function.

Introduction

Physical exercise provides people across the world with a means of personal growth, relaxation, healthier living, and pleasure; but it also carries an inherent risk of injury. Reviewing injury reports compiled by the National Collegiate Athletic Association, Hootman et al. (2007) found ankle sprains to be the most prevalent type of injury among college athletes with an incidence rate of about 15%. The high number of patients suffering residual effects from ankle sprains such as pain, swelling, feelings of instability, and recurrent sprains remains important to the community of biomechanists, athletic trainers, clinicians, and researchers. The condition of recurring symptoms after an initial sprain has been coined Chronic Ankle Instability (CAI). The incidence of recurrent sprains has been as high as 73.5% in athletes (Yeung et al. 1994). To date, the exact cause of this condition has eluded researchers and physicians alike.

Most acute lateral ankle sprains are thought to occur through a similar mechanism. Excessive inversion and internal rotation of the rear foot coupled with plantar flexion and external rotation of the lower leg place an individual at the greatest risk of suffering a lateral ankle sprain (Hertel 2002). This movement of excessive plantar flexion and inversion most commonly affects the anterior talo-fibular ligament (ATFL) and the calcaneofibular ligament (CFL). When the strain on these ligaments exceeds the tensile strength of the tissue, the ligaments become damaged and a sprain occurs. The mechanism by which ankle sprains leading to CAI occur is believed to be the same as that of all ankle sprains. Symptoms of CAI, however, have been shown to develop after improper healing of the ankle joint complex (Hintermann 1999). This improper healing may result in one or both of two different conditions contributing to CAI: mechanical ankle instability (MAI) or functional ankle instability (FAI).

Generally, MAI is characterized by an ability to achieve a range of motion beyond the normal, physiological range. MAI is attributed to the following mechanical insufficiencies: 1) pathologic laxity of the lateral ligaments 2) impaired arthokinematics 3) synovial inflammation and impingement and 4) degenerative changes (Hertel 2002). FAI was most recently described by Delahunt et al. (2010) as being characterized by frequent episodes of “giving way” of the ankle joint and feelings of ankle joint instability. FAI is most commonly attributed to the following functional insufficiencies: 1) proprioception 2) neuromuscular control 3) postural control and 4) strength. (Hertel 2002). Initially, these two characterizations were meant to act as mutually exclusive groups; however, current research suggests that they may actually operate as part of a continuum (Hiller 2011).

In an effort to accurately characterize ankle sprains and the contributions of mechanical and functional instability to chronic ankle instability, researchers previously sought relationships between certain variables including, balance, strength, laxity, self-
reported measures of ankle function, and degree or type of impairment (Delahunt et al. 2010). However, they failed to reach consistent agreement in results (Delahunt et al. 2010). The lack of consensus among past studies may be attributable to the inconsistencies among terms and inclusion criteria used by independent researchers (Delahunt et al. 2010).

In order to standardize definitions and inclusion criteria, certain objective measures and their relationships to other variables in subjects with CAI need to be assessed. These include measures of laxity, self-reported ankle function, and postural stability. The present study is part of a longer, on-going research objective within the University of Georgia’s Department of Kinesiology that will evaluate relationships between all of these variables. These efforts are aimed to assess relationships between ligament laxity as measured by the LigMaster and self-reported ankle function as measured by questionnaires. Significant correlations between these two variables would aid researchers in establishing objective characteristics of individuals with CAI. In turn, the causes of CAI may be identified and proper rehabilitative or preventive measures implemented. This will effectively decrease the incidence of CAI and allow athletes to resume rigorous activity sooner and with optimal ankle function.

The first measure of this study assesses ligament laxity using the LigMaster. This is a portable ankle arthrometer based on the Telos device, which allows researchers and clinicians to objectively measure ankle joint laxity without the use of stress radiographs. The device has been previously reported as a valid and reliable tool for measuring ankle joint laxity (Docherty 2009). The LigMaster contains a six-degrees-of-freedom spatial kinematic linkage system that can measure talar tilt in degrees and lateral displacement in millimeters during an inversion test. Calculating talar tilt and lateral displacement allows a quantitative laxity measurement to be determined for the lateral ligaments of the injured ankle and for that measurement to be compared to self-reported ankle function.

The patient’s perspective throughout the course of a chronic disease has been established as an important criterion in evaluating the efficiency of a treatment (Parker 2003). To this end, patient self-evaluation of ankle function in CAI is a crucial measure in characterizing the condition. Different groups distinguished by self-evaluation will allow researchers to relate more objective measurements, like laxity, to a predetermined model patient. The Foot and Ankle Disability Index (FADI) and Foot and Ankle Disability Index-Sport (FADI-S) are questionnaires that allow individuals to quantitatively describe how difficult it is for them to perform daily or sports related activities, respectively, in lieu of limited foot or ankle function. Lower scores on the FADI and FADI-S have been shown in groups of individuals with CAI when compared to uninjured controls (Wikstrom 2009).

The aim of this study was to determine the relationships that exist between self-reported measures of ankle function as assessed using the FADI/ FADI-S and measurements of ankle laxity using the LigMaster. We hypothesized that laxity values from the LigMaster would have a strong negative correlation with self-reported measures on the FADI and FADI-S.

**Methods**

**Participants**

The study examined 24 recreational athletes (Height: 172.3 ± 8.67cm, Mass: 77.15 ± 14.17kg, Age: 22.29± 3.68 years).

**Instrumentation**

We employed a portable ankle arthrometer known as the LigMaster. This machine has been determined to be a valid and reliable joint laxity measure, comparable to the gold standard stress radiograph (Nauck, Docherty 2009, Hubbard 2004). The LigMaster measures the joint translation, or rotation, in response to an applied force, while the accompanying software calculates the laxity (motion) based on data collected by electronic sensors. The device contains a six-degrees-of-freedom spatial kinematic linkage system that measures talar tilt in degrees or lateral displacement in millimeters in response to a force applied at the medial aspect of the ankle joint. The accompanying Windows-based software displays the data and diagnosis both in a clinical format and a time-series graph of force against strain. The LigMaster system is based on the Telos GA-II/E stress device, which has a long history of clinical use (Kovelski 2002, Hubbard 2004, Hubbard 2007, Docherty 2009).
Inclusion Criteria
To qualify as “recreationally active,” the subject must consistently participate in 90 minutes or more of physical activity (walking, running, or general athletics) per week.

Exclusion Criteria
Exclusion criteria consisted of the following: 1) Bilateral complaints of ankle instability 2) history of lower extremity surgery or fracture 3) signs or symptoms of an acute ankle sprain including swelling, discoloration, heat, or pain 4) pregnancy, as associated hormonal changes may affect ligamentous laxity and interfere with the screening procedure 5) diagnosis of a vestibular disorder, such as Charcot-Marie-Tooth disorder, Ehlers-Danlos disorder or other nerve or connective tissue disorders which could influence test results.

Test Procedures
Upon volunteering, participants were screened by an investigator over phone or email and scheduled for a testing session in the Biomechanics Lab. They were briefed on the study before providing informed consent as approved by the University of Georgia’s Institutional Review Board. Next, participants completed a screening questionnaire to determine if all inclusion/exclusion criteria were satisfied. They then received instructions and completed the Foot and Ankle Disability Index and Sport sub-scale (FADI and FADI-S). The researchers read the instructions for each of the questionnaires aloud and addressed any concerns.

ATFL and CFL ligament laxity was measured using the LigMaster. Measurements were performed in a randomized order and by a rater whose reliability had previously been established as high. Each participant sat on a cushioned pad in the beach position supporting him/herself on outstretched arms behind his/her back.

The participant extended the affected leg while flexing the opposite leg at the knee. The ankle holding device was positioned, and the heel was fixated against the ankle holder with an ankle-joint angle of approximately ninety degrees. A counter bearing was placed near the knee to prevent translation of the knee joint during testing. A cushion was situated under the upper part of the leg in order to keep the knee slightly flexed during testing (Kovaleski 2008). The positions of each side arm of the LigMaster and the pressure actuator were recorded. A small 0.1 dN force was applied and then slowly reduced until the displayed force read 0.00 dN. The measuring device was then nulled on the computer. The pressure was increased by turning the pressure handle slowly and consistently using both hands. This ensured that the increase in pressure was smooth and even during the testing period. The pressure was increased by no more than 1 dN every 2-3 seconds, so that the entire test did not last more than 45 seconds (Docherty 2009, Kovaleski 2002, Hubbard 2009, Hubbard 2004). The exam was stopped if the participant experienced discomfort or pain. Once 15 dN of force was recorded, the test was concluded and the pressure released as quickly as possible. The test was repeated three times, and an average value of maximum talar tilt and maximum lateral displacement was calculated. The procedure was then repeated on the opposite limb for comparison. Ankle joint laxity is joint specific and unrelated to generalized joint laxity, and thus an appropriate measure of ligamentous laxity following injury (Pearsall 2006).

Statistical Analysis
FADI and FADI-S scores were calculated, and talar tilt and displacement scores were recorded from the LigMaster. Means and standard deviations are reported in Table 1. A bivariate Pearson R correlation was performed (Table 2). A Bonferroni correction was performed because the same variables were used to make multiple comparisons. The established statistically significant p-value was 0.0125, and a two tailed significance test was conducted on the data. The correlation between FADI-S scores and lateral displacement was the only significant correlation reported ($r=-.506; p=.012$).

### Table 1. Means and standard deviations for FADI, FADI-S, displacement, and talar tilt. (n= 24)

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FADI</td>
<td>96.08 %</td>
<td>8.91 %</td>
</tr>
<tr>
<td>FADI-S</td>
<td>90.63 %</td>
<td>12.23 %</td>
</tr>
<tr>
<td>Lateral</td>
<td>50.34 mm</td>
<td>6.62 mm</td>
</tr>
<tr>
<td>Talar Tilt</td>
<td>42.64°</td>
<td>11.76°</td>
</tr>
</tbody>
</table>
Correlation coefficients between FADI, FADI-S, lateral displacement, and talar tilt.

**Results**

Lateral displacement as measured using the LigMaster during the inversion test correlates to self-reported ankle function as assessed by the FADI and FADI-S. The only significant correlation was observed between lateral displacement and the FADI-S (r = -0.506; p = 0.012). The strength of this r-value indicates that these two variables have a moderate correlation, and the sign indicates that there is an inverse relationship between ankle function and ankle ligament laxity. These results support the original hypothesis that as laxity of the lateral ligaments increases, ankle function decreases.

There was a slightly weaker correlation between lateral displacement and FADI scores (r = -0.476; p = 0.019). Although the p-value was not statistically significant it still merits further investigation as it remains small enough to suggest a meaningful relationship. The moderate correlations observed between displacement and self-reported ankle function indicate that lateral displacement may prove useful as an objective measure of ankle function.

**Discussion**

Measuring ankle laxity using the LigMaster provided a noninvasive method by which to evaluate the condition of the lateral ligaments. By comparing the condition of these ligaments to an individual’s self-assessment of ankle function, we identified relationships that may help characterize certain types of ankle sprains. The hypothesis that self-assessed ankle function is inversely related to ankle laxity was supported by the results of our study.

The data suggests a relationship between ankle laxity and ankle function may exist. Specifically, the stronger correlation between FADI-S scores and lateral displacement, when compared to FADI scores and lateral displacement, supports the idea that activities requiring a greater amount of intensity, strength, and/or balance (i.e. sport-related tasks) are affected more by ligament laxity than are daily activities such as walking and stair climbing. The decreases in ankle function accompanying the increase in ankle laxity have been attributed to deficits in mechanoreceptors in the ankle joint and dysfunction in general proprioception (Bonnel et al. 2010). Excessive stretching of the ligaments during a lateral ankle sprain may result in both structural damage of the fibers holding the ligament together (causing an increase in laxity) and damage of the mechanoreceptors and proprioceptors within these same ligaments and tendons (causing a decrease in stability). These deficits likely have a greater impact when performing sport-related tasks than when performing tasks of daily living due to the increased demand for balance and cognition that is required for sports (Rahnama et al. 2010). These results are consistent with previous studies that have found sensorimotor impairments present in individuals with CAI and suggest an underlying cause for the impairments (Munn et al. 2010).

In addition, destruction of mechanoreceptors in lateral ligaments following an initial sprain may explain the difficulty in differentiating between groups of individuals with MAI and FAI. While some individuals may incur structural damage along with mechanoreceptor damage (resulting in MAI), others may undergo no such structural damage and only experience deficits in mechanoreceptors in the ankle joint and proprioception (resulting in FAI). This observation may explain why individuals with MAI, FAI, or some combination of the two present a continuum of symptoms.

Self-reported ankle function was quantified using the FADI and the FADI-S. The mean scores observed on the FADI (96.08 ± 8.91%) and the FADI-S (90.63% ± 12.23%) surveys indicate that the majority of the participants included in the study had relatively functional ankles, and that the results of the surveys were similar to means from previous studies (Wikstrom et al. 2003). The FADI-S specifically asks about difficulties performing rigorous activities, so it can recognize limited ankle function in athletic individuals. Thus, lower mean scores on the FADI-S may be attributable to
the fact that decreases in ankle function become more pronounced during rigorous activities.

The FADI-S may have shown a broader range of scores and correlated more strongly with laxity because it allows for the detection of subtle differences in function. By contrast, the FADI resulted in a narrower range of scores and a decreased correlation with laxity due to its inferior sensitivity when measuring deficiencies in higher functioning athletes (Hale 2005). It appears that there may exist a threshold of ankle function required to complete activities of daily living without pain resulting in higher scores on the FADI. This creates a ceiling effect when using the FADI on a recreationally active population. This effect prevents the FADI from differentiating between subjects that have ankle function above the threshold required for daily activities. As proposed by Hale and Hertel (2005), CAI is typically only present during performance of rigorous or athletic activity and does not usually limit every day functions. The results of this study agree with those of previous studies, in that it suggests the FADI-S is a better evaluation of CAI than the FADI.

There were several limitations to this study. First and foremost was the relatively small sample size of twenty four. Because this study assessed self-reported ankle function and laxity in individuals with many different histories and types of ankle problems, a small sample size did not allow for a thorough examination of such a heterogeneous population. The majority of participants had no history of past ankle problems and thus skewed the data. The current study could be improved by increasing the overall number of participants and additionally increasing the proportion of participants with past ankle problems. The next significant limitation in this study was patient positioning and ankle evaluation using the LigMaster. Inconsistencies in patient positioning according to procedures described by past studies (Docherty 2009) and amongst software and manufacturing engineers made it difficult for our study to achieve consistent and proper patient positioning. Furthermore, several patients reported discomfort from the calcaneus clamp. While subjects were instructed to stop at any point if the experiment became too painful, no subjects ever discontinued the experiment. In addition to the discomfort of the clamp, the “beach” position placed an unnatural amount of pressure on the elbow. This compounding discomfort often led to patient movement despite the fact that subjects were instructed to remain as still as possible. Also, because an electromyography device was not used, complete muscle relaxation could not be confirmed. Any slight contraction of the muscles could have resulted in decreased laxity measurements. Overall, the effectiveness of the LigMaster in isolating ankle ligaments to test laxity needs to be examined further. Specifically, a standardized method for patient positioning, a control for muscle activation, and a way to secure the heel firmly would help to yield better results.

Conclusion

This study provides preliminary evidence that the LigMaster can detect the subtle increases in ligament laxity correlated to self-reported ankle function in rigorous or athletic activities. Furthermore, these increases in laxity accompanying ankle function may be useful in detecting and characterizing CAI in a recreationally active population. Further research into this relationship needs to assess how laxity may affect ankle instability and what role, if any, damage to mechanoreceptors and proprioceptors plays in contributing to MAI and/or FAI. Once the causal relationship is identified, clinicians may implement appropriate rehabilitative and preventive measures to decrease the risk of developing CAI after an acute lateral ankle sprain.

REFERENCES


Elijah White, Samantha Frigerio, Jeff Hepinstall-Cymerman, Ph.D., Michael Conroy, Ph.D., Robert Cooper, Ph.D. and John Maerz, Ph.D., Warnell School of Forestry and Natural Resources and Odum School of Ecology

ABSTRACT. In the Southern Appalachian Mountains, two salamander species, *Plethodon shermani* and *Plethodon teyahalee*, hybridize across an elevation gradient. With studies showing that the upper bounds of this hybrid zone have been expanding, we hypothesized that this upward movement is affected by differing water loss rates between species; specifically, we hypothesized that *P. teyahalee* (located at lower elevations) has lower water loss rates than *P. shermani* (located at higher elevations). A reciprocal transplant field experiment was conducted in which water loss rates of salamanders were measured in varying environmental conditions. Using linear mixed-effects models, we found that an interaction between body size and hybrid level was the most accurate predictor of salamander water loss rates. A lab experiment was also conducted in which water loss of individuals from the ends of the hybrid zone was measured with relatively constant environmental factors. We analyzed this data using repeated measures of linear mixed-effects models and analysis of variance (ANOVA), finding that body size was the most important predictor of water loss, and that there was a significant difference in water loss rates between the two species ($F_{30,930} = 2.325$, $P < 0.001$). Future studies may involve determining how water loss affects behavior, what other factors may be contributing to the hybrid zone shift, and projecting possible dynamics of this zone in the context of climate change.

Introduction

Salamanders are important organisms in ecosystems around the world. They play a key role in predator-prey relationships, offering high-quality prey for tertiary consumers (Burton and Likens, 1975). They also alter both terrestrial and aquatic ecosystems through burrowing and local migrations, and are indicator species for the health of a system (Davic and Welsh, 2004). Plethodontid salamanders in particular are good indicators of ecosystem change, as they are tightly linked to ecosystem processes such as moisture and nutrient cycling (Welsh and Droge, 2001).

Salamanders of the family Plethodontidae are especially prone to water loss due to their morphology (Spight, 1968). Because they are lung-less and breathe through their moist skin, water loss is a serious limitation to the behaviors of Plethodontid salamanders (Feder, 1983). Feder and Londos (1984) describe the “water limit time” or the “release time” in which salamanders cease foraging and reproductive opportunities and return underground to replenish water. Salamanders tend to cease foraging and retreat underground when approximately 3-8% of their body mass has been lost due to water loss (Feder and Londos, 1984), and their performance is affected when they lose 12%, with the lethal water loss amount varying from 18-26% of their body mass (Littleford et al., 1947).

At the Coweeta Hydrologic Laboratory in the Nantahala mountains of North Carolina, Hairston et al. (1992) noted that *P. shermani*, the Red-legged Salamander, is found at higher elevations (1,052 m and above); *P. teyahalee*, the Southern Appalachian Salamander, is found at lower elevations (up to 685 m); and the two species hybridize at intermediate elevations (685 m to 1,052 m). In the past 80 years the hybrid zone between these two terrestrial salamanders in the Coweeta basin has been expanding upslope at a rate too quickly to be explained by diffusion alone (Hairston et al., 1992). Hairston et al. (1992) proposed that selection of *P. teyahalee* traits has been driving the dynamics of this zone. More recent research has suggested that the upward expansion of the hybrid zone is likely due to increases in air temperature (Walls, 2009), and while the dynamics of similar zones have indicated as much (Chatfield et al., 2010; Weisrock et al., 2005), a conclusive explanation for the hybrid zone expansion remains elusive.

Terrestrial amphibians have a number of physiological adaptations for reducing water loss, such as cutaneous grooves and mucus (Toledo and Jared, 1993). Such physiological differences between species could cause differences in water loss rates. Learning about these differences in water loss rates is important in the context of climate change. Scientists have projected future climate change models of global circulation and
potential CO₂ emissions of the Appalachian Mountains, and predicted warming and reduced precipitation (Milanovich et al., 2010). This may indicate a decline in suitable habitat for Plethodontid salamanders, and lower water loss rates may be advantageous to survival in these conditions. Lower water loss rates may give certain hybrids a competitive advantage by allowing them to remain above ground longer and obtain more resources. In our first experiment, we hypothesized that water loss would be greatly affected by environmental conditions influenced by climate change, such as relative humidity, temperature, and wind velocity. We designed a reciprocal transplant field experiment to measure the water loss of hybrids across an elevation gradient. We focused on measuring the water loss rate differences among low, medium, and high elevation samples of salamanders with respect to natural, variable environmental conditions. Determining which environmental factors contribute most to water loss may illuminate how these species will react to projected changes in temperature and precipitation patterns due to climate change.

Because we hypothesized that environmental factors greatly influence water loss in the first experiment, we decided to perform a second experiment in which we controlled for these three environmental factors, to more carefully examine individual, physiological variation in the hybrids. We also hypothesized that there is a difference in water loss rates between \( P. \) shermani and \( P. \) teyahalee hybrids; specifically, hybrids with phenotypes closer to pure \( P. \) teyahalee would have lower water loss rates than hybrids with phenotypes closer to pure \( P. \) shermani salamanders. This hypothesis was tested in a laboratory environment, in which we measured the water loss rates of individuals that displayed phenotypic characteristics of nearly pure individuals. This experiment eliminated extra environmental factors such as wind velocity, elevation, and large variations in relative humidity and temperature. It also provided data about water loss across a finer time scale. By comparing the rates of water loss among the hybrids of \( P. \) shermani and \( P. \) teyahalee, we may be able to learn about the potential role of climate change in hybrid zone shifts.

**Methods**

**Study Area**

Research was conducted at the Coweeta Long Term Ecological Research site, located in the Nantahala Mountains in southwestern North Carolina. Sites for the field experiment were located on Ball Creek Road as follows: high transects were located at approximately 990m and 1000m, intermediate transects were located at approximately 870m and 880m, and low transects were located at approximately 830m and 810m. All transects had a deciduous canopy, but the high sites had considerably fewer rhododendron plants (\( Rhododendron \) maximum) and more shrub ground cover than the other two elevations. The majority of the ground of both intermediate and low transects was covered in only leaf litter. A few scattered dead hemlock trees were located at the high and the low sites. The two plots used for the collection of salamanders in the lab experiment were located at 747m (low) and 1005m (high) in elevation. Both plots had mostly deciduous cover with leaf litter on the forest floor.

The laboratory experiment was conducted in a controlled, indoor setting, and the two groups were
compared side-by-side on the same bench top. During the trials, there was relatively constant temperature (within a degree in each trial) and relative humidity (on average from all four trials, varying within five percentage points) and no wind.

Figure 2. The containers used in Part II were hard-sided to prevent any wind from blowing across the salamanders. They also had mesh covers that allowed moisture lost by the salamanders to leave the container.

Part I: Water Loss of Hybrids Along an Elevational Gradient (Field Experiment)

Experimental Methods

In this reciprocal transplant experiment, we tested for differences in the rate of water loss among hybrids of the salamander species *P. shermani* and *P. teyahalee* across an elevational gradient. This experiment was carried out in the field, so as to mimic the actual environmental conditions a salamander experiences. There were six 30m-long transects, with two transects (transects A and B) at each of the three elevations: low, intermediate, and high. Both end points of each individual transect were located within 10m elevation of each other.

Trials were run approximately twice per week for nine weeks, alternating between transects A and B; the first trial was located on the A transects on the first night and the second trial on the B transects two or three nights later. By alternating between the two transects at each elevation, we allowed captured individuals to have a period of recuperation before recapture and reuse, which reduced possible stress on the animals. We performed a visual encounter survey walking along both sides of the transect and collecting all *P. shermani* and *P. teyahalee* hybrids before placing them in individually labeled bags. Of the salamanders collected, six from each site were randomly selected (using a random number table) for use in the experiment, and all others were immediately released. Physiological measurements were then made of the individuals designated for use in the experiment, including mass (using an Ohaus Scout Pro Electronic Balance), snout-to-vent length (SVL), total length, sex (male, female, or juvenile), and hybrid score. Research provides evidence that the phenotypic characteristics of *P. teyahalee* and *P. shermani* may be applied to characterize genotypic levels of hybridization (Hairston et al., 1992); the Wiley (Hairston et al., 1992)

<table>
<thead>
<tr>
<th>Name</th>
<th>AIC</th>
<th>delta AICc</th>
<th>Weight</th>
</tr>
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<td>0.00000</td>
<td>0.914</td>
</tr>
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</table>

Figure 3. Field experiment linear mixed-effects models, arranged by descending value of weight. Asterisks indicate interactions between two variables. Wiley stands for the Wiley composite score. All models include an interaction with time, which is not shown. For models containing interactions, the main effects of all interacting factors were also included in the models.
and Maerz (unpublished) hybrid scores represent an estimation of the proportion of *P. teyahalee* and *P. shermani* genes on the population level. We applied the same two scoring systems to each individual for our research. After physiological data were collected on the six salamanders to be used in the experiment, we standardized the hydration levels of the salamanders, placing them on a paper towel doused in 10 mL of water in a sealed plastic container for one night (at least 12 hours), so as to ensure that each individual started at a standardized hydration level during the field experiment.

After allowing the salamanders to hydrate for a night, but before entering the field, we measured the mass of each salamander chosen for the experiment for an initial hydrated mass measurement. The salamanders were then placed on top of paper towels moistened with 3 mL of water in sealed plastic containers (to prevent immediate water loss during transportation) and were transported to the field sites. A reciprocal transplant design was used, in which we randomly selected two salamanders from each elevation (low, intermediate, or high) to be placed at the centers of the transects for a total of six salamanders maximum at each elevation. This design was chosen to expose the different hybrid levels to environmental conditions at other elevations not necessarily their own. Because of this, we were able to compare water loss rates of individuals from different elevations under standardized environmental conditions at each site. On nights where we only captured 3-5 salamanders at a certain original elevation, we randomly chose which elevation(s) would receive fewer than two salamanders from that original elevation.

Upon arrival at the center of a given transect, we placed the salamanders into containers designed for the assessment of water loss. The salamanders were contained in sewn mesh envelopes sealed with a bag clip, and the envelopes were anchored inside plastic containers with the sides removed, leaving a plastic skeleton (Figure 1). In previous studies, behavioral issues tended to interfere with the measurement of water loss, including the tendency of salamanders to burrow under the paper towel to avoid water loss (Servidio and Brown, unpublished). Placing the salamanders inside mesh envelopes eliminated their ability to retreat underground or burrow under the paper towel and forced the salamanders to be exposed to environmental conditions without the confounding factor of behavior. The paper towel dampened with 3 mL of water (from the initial measurement of hydrated mass) and was also placed between the mesh envelope and the bottom of the plastic container to avoid immediate water loss of the salamanders and to provide similar conditions to their natural habitat: the moist leaf litter on the forest floor.

Every 20-30 minutes, we arrived at the center of either the A or B transect located at each elevation, depending on the set of transects from which the salamanders were originally collected. Upon arrival at a transect, we measured current temperature, maximum wind velocity, and relative humidity using a Speedtech by WeatherHawk SM-28 Skymaster Wind Meter Digital Weather Station. We removed the salamanders from their mesh envelopes and measured their masses in a

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**Figure 4.** Lab experiment linear mixed-effects models, arranged by descending value of weight. Asterisks indicate interactions between two variables. Wiley stands for the Wiley composite score. All models include an interaction with time, which is not shown in the names. For models containing interactions, the main effects of all interacting factors were also included in the models.
large plastic container (to remove effects of wind on the scale). If an individual lost 10% or more of its hydrated mass, we removed it from the experiment, placing it in an individual sealed bag with fresh, moist leaf litter. This percentage of water lost is related to the “water limit time” corresponding to the retreat of salamanders to underground burrows (Feder and Londos, 1984), and we wanted to assess the water loss rates in conditions in which salamanders forage on the surface. If the salamanders did not lose 10% or more of their hydrated mass, we placed them back in their mesh envelopes and proceeded to the next elevation. We cycled through the three sites, collecting data for a minimum of four hours. When we finished the water loss experiment, we rehydrated the salamanders for one night (at least 12 hours) by placing a paper towel doused in water into the bags to replenish their water reserves. The following night, we released them at their original elevations, in their original transect (A or B). We did not collect salamanders again from that transect until the following week.

Statistical Analysis

We analyzed the data in the statistical program R (R Development Core Team, 2011) using linear mixed-effects models with repeated measures. Repeated measures allows monitoring of changes in a characteristic of an experimental unit (here, an animal) over time (Potvin et al., 1990). In this case, fluctuations in mass within each individual salamander were measured in terms of varying environmental factors and physiological characteristics. We built a series of models in R in which the response variable was the percent change in body mass of an individual salamander, indicating overall water loss between time intervals. The varying predictors of water loss in each model were as follows: temperature, relative humidity, maximum wind velocity, Wiley composite score (subtracting Wiley P. teyahalee scoring from Wiley P. shermani scoring), and an individual’s hydrated mass to SVL ratio (mass-to-length ratio, or MLR). MLR is a more standardized measure of overall body size than SVL, because it accounts for salamanders that may have the same SVL but different masses, altering the surface area-to-volume ratio and, therefore, water loss rates. The composite scores were used to provide one overall score per scoring method per individual, which is an index of the hybrid level. Two interactions between the relative humidity and temperature and MLR and Wiley composite scoring were also considered for a total of seven models. We included time, MLR, and an interaction of the predictors with time in every model, because these predictors are influential in water loss. The purpose of these models was to determine which factors most greatly affect water loss in hybrids in their natural habitat- environmental factors, physiological traits, or an interaction among these factors. We compared the delta Akaike information criterion (ΔAIC; Akaeke, 1974) values as well as weight among the competing models to determine which had the most support.

Part II: Water Loss Rates of Two Salamander Species in a Controlled Environment (Lab Experiment)

Figure 5. Graphical illustration of the mass-to-length ratio (MLR) versus percent change in body mass. Individuals with smaller MLR values lost a greater percent body mass (a greater negative percent change) than individuals with higher MLR values.
Experimental Methods

The purpose of this experiment was to compare water loss rates between the species *P. teyahalee* and *P. shermani* under controlled environmental conditions. Thus, the experiment was conducted in a single location where it was possible to measure salamander body mass frequently and collect very precise data to detect minute trends. Such trends provided more detailed results which enabled us to more confidently compare water loss rates between *P. teyahalee* and *P. shermani*.

Study subjects were collected from the extremes of the hybrid zone, so as to collect specimens of nearly pure *P. teyahalee* and nearly pure *P. shermani*. The salamanders were collected on and around two 10m x 10m plots used in Katharine Servidio’s removal experiment. We walked the plots for 30 minutes, collecting all hybrids visible on the leaf litter within the plot. Six from each plot were randomly selected (using a random number table) to be used in the experiment. If fewer than six individuals were collected from a plot, the remaining salamanders were collected from around the plots choosing the first individuals encountered until we collected six in total. As in Part I, we recorded physiological measurements on the salamanders, including SVL, total length, mass, hybrid score, and sex. To standardize their hydration levels, the collected salamanders were placed in plastic containers with paper towels moistened with 10 mL of water for a night (at least 12 hours).

Wind velocity is one of the many factors that increases the amount of water lost over time (Spotila 1972). Therefore, each salamander was placed inside a Mason (Ball) jar with a mesh lid (Figure 2) in order to control for wind velocity and to prevent water loss from occurring as rapidly as in the first water loss experiment in the field. The mass of the containers and salamanders was measured prior to placing the animals inside, and the jar and salamander were weighed every 10 minutes during the experiment for 5 hours. The salamanders were taken out of the experiment if they lost 13% or more of their body mass. This greater percentage loss than in the field experiment was chosen in order to acquire more data and to ensure specimens reached the limit at which their performance was affected but before their lethal limit was reached (Littleford et al. 1947). At the conclusion of our experiment, the salamanders were rehydrated for at least 12 hours with fresh leaf litter and a paper towel doused in water. They were then released at the approximate location where we collected them.

Statistical Analysis

As in Part I, we used the statistical program R to analyze data collected in Part II. We developed linear mixed-effects models and used ΔAIC and weight to assess the models. Again, the response variable was water loss, which was measured by the percent change of total body mass. An interaction between every predictor and time was included in all the models, as we were interested in measuring the effect of the factors over time. MLR was also included in each model, as body size plays an important role in water loss rates. Therefore, the varying predictors were Wiley composite score, temperature, relative humidity, and a variety of interactions among these variables, creating six models overall.

In addition to the models, we used a repeated measures ANOVA test to compare the water loss rates of these two species. This statistical analysis allows for the comparison of factors between groups (Liu et al., 2012). Size is thought to play an important role in interspecies differences in water loss rate (Spotila, 1972), and in our analysis, smaller salamanders had greater rates of water loss than larger salamanders simply because of the difference in their surface area-to-volume ratio. Therefore, we performed an analysis of variance on salamanders with SVL greater than or equal to 45 mm separately from salamanders with SVL less than 45 mm. Time, original elevation, and an interaction between the two were considered in those specific models, because they were significant factors in the determination of percent change in mass.

Results

Part I: Field Experiment

The field experiment took place from 16 May 2012 to 11 July 2012 and used 220 individuals over the course of fourteen trials. During the course of the experiment the recorded ranges for temperature and relative humidity were approximately 14.0-21.0 ºC and 74.5-96.5 % respectively, but there was never that much variability in a single night. Generally, within a night, the variability in relative humidity ranged between 10 percentage points and temperature ranged between 1.5ºC.
Part II: Lab Experiment

In total, 47 salamanders were used in the lab experiment, which was conducted 4 times between 31 May 2012 and 3 July 2012. The model with the greatest weight was the interaction of MLR and time (weight = 0.871). Figure 5 shows the relationship of MLR to percent change in body mass. Generally, individuals with smaller MLR values lost a greater percent body mass over time than did individuals with higher MLR values.

For the ANOVA of the adult individuals (those with SVL ≥ 45 mm), the interaction between time and elevation of origin is significant ($F_{30,930} = 2.325, P < 0.001$). The graph of the time versus group means of percent body mass change shows that the salamanders from the high elevation lost mass at a faster rate than the group from the low elevation (Figure 6).

Discussion

The analyses show that the size of a salamander, represented by hydrated mass-to-length ratio (MLR), is a very important predictor of water loss for a salamander. This is evidenced by the fact that the MLR was included in the top model for the field experiment and the top model for the lab experiment. The graph of MLR to percent change in body mass further illustrates this point (Figure 5). The interaction of time was included in all of the models, which means that the effect of the predictor(s) interacting with time changes over time.

The field analyses along with the analysis of variance (ANOVA) for the lab experiment also show that the hybrid level of an individual may play a role in water loss as well. The top model for the field experiment included the three-way interaction of Wiley score, MLR, and time, which shows that the effect of the Wiley score changes with the effect of the body size. Thus, the hybrid level of an individual is more important in determining water loss for salamanders of certain body sizes than for others.

While the models including the environmental factors of temperature and relative humidity had small weights in both the field and lab experiment, this does not mean that these factors are not important to water loss of salamanders. An experiment comparing the water loss rates between species with manipulated temperatures (current temperature means, and predicted
temperature means with climate change) would provide insight into how hybrids may respond to climate change. The slower water loss rates of *P. teyahalee* than those of *P. shermani* may play an important role in the upward expansion of this hybrid zone. However, it is not likely that the difference in water loss rates between species is the only factor contributing to the dynamics of the hybrid zone. Other possible factors could be differences between species’ aggression levels (Nishikawa, 1985), previous geographic isolation (Hirston, 1992), and climate change, including increasing air temperature (Walls, 2009). If water loss rates are indeed an important factor in competition between hybrids, changes in mean seasonal environmental factors, such as temperature and relative humidity, could give individuals which exhibit physiological characteristics closer to those of *P. teyahalee* a competitive advantage. Because *P. teyahalee* is more resistant to water loss, warmer temperatures may select for physiological characteristics more closely resembling *P. teyahalee*, which could cause further expansion of the upper bounds of the hybrid zone. Future studies determining other factors influencing the hybrid zone will generate a clearer picture of this system.

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Kathoey: Dress—the Only Opportunity for Success

Nicole Armbrust and Katalin Medvedev, Ph.D., Department of Textiles, Merchandising, and Interiors

ABSTRACT. In present-day Thailand, there are over 100,000 transsexual males, termed Ladyboys or Kathoey, to whom dress and beauty play significant roles in displaying their true identities. The Kathoey believe themselves to be women trapped inside male bodies and consequently dress and exude female personas (Forbes, 2002). Although Thai society is said to be accepting of transsexuals, Ladyboys are still denied political and legal rights to their womanhood in addition to being frequently discriminated against and stereotyped. Through a review of the literature examining Thai religion and culture in relation to societal attitudes towards the Kathoey and an analysis of journal articles and media depicting the Kathoey lifestyle, I have concluded that dress, appearances, and beauty are the most essential aspects of Kathoey life and acceptance into Thai society. Throughout every stage of a Ladyboy’s life, dress plays a vital role in the realization of their true identity and in the transformation into their desired female form. The pinnacle of success for a Ladyboy is transformation into a completely convincing woman in every possible way, which is an extremely difficult process and can only be accomplished through dress practices. After a review of studies of the Kathoey of Thailand, it is evident that respect and acceptance is only attained once they are able to project perfect feminine beauty. Without these dress practices, the ostracism of transsexuals in Thailand would significantly worsen. It is clear that the Kathoey, labeled as “different” by Thai society, are only one example of a group which uses dress as a means of acceptance among many other groups in many other societies facing similar challenges. I have ultimately found that dress and appearance play integral roles in societal approval across many cultures.

Introduction

In present-day Thailand, there are over 100,000 transsexual males, who are termed Ladyboys or Kathoey. Dress and beauty play significant roles in displaying their true identities (Sarbil, 2011). The Kathoey believe that they are women trapped inside male bodies and consequently act, dress, and exude extreme female personas (Forbes, 2002). It is because of this belief that dress, beauty, and appearances play such integral roles in their lives. Every day, Ladyboys must alter their appearances to look like genuine women and will go to extreme lengths to hide their male bodies, using both body modifications and supplements to achieve this goal.

Findings

Thailand, Not Fully Accepting

Thailand is home to more transsexuals than any other country in the world, and Thai society is considered to be one of the most accepting of transsexuals (Forbes, 2002). This acceptance may be attributed to the pervasive Buddhist influence on Thai culture. Peter Jackson (1997), one of the foremost experts on the Thai Kathoey states, “If Buddhism was not the source of the popular Thai conception of Kathoey then at the very least it has reinforced a markedly similar pre-existing Thai cultural concept” (para. 29). Thai Buddhists believe that gender is not permanent. In one life you may be a male, and in another a female; therefore, transsexuality in Thailand is more widely accepted than in many other cultures (Sarbil, 2011).

Furthermore, Thai acceptance of Kathoey may also be rooted in the Buddhist belief of karma in connection with rebirth. According to this belief, if a person committed a negative sexual act in a past life, such as prostitution or sexual abuse, this person would likely be reborn as a Kathoey in the next life as a consequence of bad karma (Totman, 2003). Therefore, it is believed that Kathoey are destined from birth to be transgendered. They are not considered to be at fault for their Kathoey lifestyle, which is the consequence of karma (Totman, 2003). Totman explains that all people suffer from karmic consequences throughout their many lives. Being a Kathoey is just one of these consequences. In other words, the concepts of reincarnation and karma enable the Thai people to more easily accept the Kathoey, as opposed to the religious beliefs common in some Western cultures that do not offer similar explanations as to why people are transgendered.

Although Thailand is said to be an accepting society, Ladyboys are still denied many political and legal rights to their womanhood in addition to being discriminated against and stereotyped frequently. Many Kathoey are reluctant and scared to reveal their true selves and are sometimes discouraged, even threatened,
to give up their feminine ways in order to uphold the family honor (Aldous, 2008). It seems as if Thai society at large is generally accepting of Kathoey, but that Thai families are extremely reluctant to accept their own kin as Kathoey. In Thai culture, the concept of “saving face” is paramount and is sometimes valued above all else. This concept encompasses the belief that you never lose respect for yourself or your family. “Saving face” and honoring the family are two of the most important ideals in Thai society. Matzner (2001) comments, “In a society, which places a high value on appearances and social approval, loss of face can be very damaging” (p. 78). This belief greatly hinders a Ladyboy from dressing and modifying her body to become a female, an action that could actually garner respect from, and for, her family in the long run.

When analyzing the Kathoey and their place in society, it becomes apparent that the most beautiful and feminine Ladyboys are the most respected. “In the higher echelons of Thai society a handful of particularly feminine and socially skilled Kathoey …become fully accepted and nationally acclaimed as singers, actresses, and even businesswomen” (Forbes, 2002, para. 11). It often takes Ladyboys dozens of years to achieve this high status, but most never attain it due to the rigorous work and dedication it requires. The Kathoey journey to womanhood through dress and body modification is difficult, but it is one they are willing to endure in order to be true to themselves and to gain respect from society. Therefore, dress, appearances, and beauty are the most essential aspects of Ladyboys’ lives and acceptance in Thai society.

Realization and Early Stages of Ladyboy Dress

In “Thai Transgenders in Focus: Demographics, Transitions and Identities,” Winter (2006) finds that 95.2% of Kathoey felt different from their male peers by the age of eight, and 99.5% of Kathoey felt that their minds differed from those of other males by age eleven (p. 20). This data indicates that, from a very young age, many Kathoey do not identify with their biological male status. For many, the first inclination that they were different from other little boys was the innate desire to dress and act like girls (Aldous, 2008). In addition, expressing themselves through effeminate dressing at a young age was the initial clue to their peers that they were Ladyboys (Aldous, 2008). One Kathoey states, “I showed my femininity from an early age. While other boys used banana stalks as imaginary horses, I tore the leaves into strips and wore them as a skirt” (Aldous, 2008, p. 20). Others would steal their female family members’ makeup and clothes to play dress up. For Ladyboys, the initial transition into womanhood is a liberating one, and their first female dress experience affects them greatly (Aldous, 2008). In the book Ladyboys, one Kathoey shares her first experience by explaining, “…with our skirts on and our lipstick-stained lips we were mesmerized by our reflections” (Aldous, 2008, p. 97-98).

Using Body Modification to Transform

As Ladyboys mature and grow, they yearn to be even more feminine and to become extremely beautiful. The measures they take to transform their bodies are
drastic, time consuming, and painful. After initiating their transformations by dressing in feminine clothes and applying makeup to their faces, they usually further this process by consuming hormone pills (Aldous, 2008). Many continue the use of hormone pills despite suffering extreme side effects. To Ladyboys, attaining their desired feminine image is worth all of the suffering. As one Kathoey states, “Despite the negative side effects and the fear of getting cancer…I now take the pill daily. I had to get over the fear because I knew that the end result would be worth it for me” (Aldous, 2008, p. 57). Another recounts, “These Ladyboys think contraceptive pills possess magical powers—the more they take, the faster they will attain beauty, and the more exquisite that beauty will be” (Aldous, 2008, p. 77). Hormone use is initially started at a very young age, often during the teenage years. The hormones are often abused, as many do not yet understand the harmful effects of the pills when not taken as medically directed (Aldous, 2008). In “Thai Transgenders in Focus: Demographics, Transitions and Identities,” Winter finds that 93.8% of the Kathoey began taking hormone or contraceptive pills around the age of sixteen (p. 20).

In addition to hormone use, Ladyboys also undergo a process called “taeping,” in which the penis is hidden and taped down so that they might appear to be “real” women (Aldous, 2008). Learning how to taep correctly is difficult and requires experience. The practice is extremely painful: “If you go to the toilet while taep-ed, you have to endure the agony of peeling the adhesive tape off only to have to reapply it when you are finished” (Aldous, 2008, p. 134). Some take their transformations even further and undergo surgery. Whether it is breast implants, shaving down an Adam’s apple, or sexual reassignment surgery, all surgical body modifications are major steps of self-alteration for Ladyboys. Many believe that sexual reassignment surgery is the only way to achieve their desired femininity. They believe that only after this surgery will they be considered “real” women and be respected and treated as such. Because of these beliefs, many choose to undergo surgery in their teenage years (Aldous, 2008). “Many doctors believe sex change surgery is most successful in younger patients…it’s easier for them to look feminine and easier to find acceptance” (Sarbil, 2011). The relationship between looks, money, and respect in Thailand is a strong one and Ladyboys intensely long for all three. Aldous (2008) explains:

The urge to be even more feminine than a biological woman is strong. And the desire to succeed materialistically also plays a role. Many Ladyboys undergo the operation in order to sell their bodies for more money. Money and material goods earn you ‘face’ or respect in Thailand, and that kind of respect is not something Kathoeys are used to. (p. 34-35)

Finding Acceptance through Total Transformation

The most accepted Ladyboys are those who are the most convincing and beautiful women. Some exceptionally beautiful and talented Kathoey have become international models, airline stewardesses, and spokespeople (Forbes, 2002). However, the most accomplished Ladyboys aspire to compete in a world-famous beauty pageant for transsexuals called Miss Tiffany’s Universe in hopes to win money, fame, and most importantly, respect. In the article, “Always Fabulous,” the most recent winner explains how she only found acceptance with her family after winning this pageant. In addition to family acceptance, the Miss Tiffany pageant has thrust Thai Ladyboys into the spotlight- in a positive way. In the article, “New Miss Tiffany Universe Crowned in Pattaya,” Tesorio (2011) explains, “Miss Tiffany Universe jumpstarted the career of some winners and contestants like Treechada ‘Poy’ Malayaporn, who is now the image model of the Thai mobile phone brand G-Net and has appeared in several television shows and a number of movies” (para. 10).
Conclusion

Although much holistic research on the dressing practices of the Kathoey of Thailand remains to be completed, I have been able to come to several conclusions about the relationship between the Kathoey lifestyle and Thai culture. From my analysis of the relevant literature, I have concluded that the Kathoey’s journey through life is a perpetual struggle for respect and acceptance that is only attained through perfect feminine dress and appearance. A Ladyboy’s profound connection to dress begins in childhood, initiated by playing dress up in women’s clothing or wearing makeup recreationally. This stage is made even more significant by the fact that it is often the first indication of the desire to dress in feminine clothing and practice womanly rituals. As Ladyboys grow older, their relationship with dress develops into a struggle to become beautiful, authentic women. They must master how women dress and apply makeup, as well as learn how to walk in high heels and perfect their feminine mannerisms. The most extreme practices take the form of body modifications, such as hormone injections, plastic surgeries, the process of taeping, and sexual reassignment surgery. All of these dress practices are endured in hopes of being a respected member of Thai society and in order to honor their true identities. Only when Kathoey appear as completely convincing women are they truly accepted, and this is only possible through sartorial practices and body modifications.

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PHOTOS


High-Resolution Behavioral Economic Analysis of the Relationship between the Cost of Cigarettes and Smoking Cessation Motivation

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ABSTRACT. Tobacco use is the single largest cause of mortality in the United States, and understanding the factors that contribute to smoking cessation success is a priority for research. Previous research suggests that the cost of tobacco products plays an important role in successful smoking cessation. The purpose of this study was to better understand the relationship between cigarette price and motivation to try to stop smoking. A large sample of community smokers (N = 1074, 60.4% male, 67.5% Caucasian) were assessed using the Probability of Smoking Cessation Measure (PSCM), which assessed the estimated likelihood that an individual would make a smoking cessation attempt at a variety of prices ranging from free to $10/cigarette ($200/pack). The study focused on three indices of motivation: intensity (baseline motivation to attempt to quit smoking), P50 price (the cigarette price corresponding to 50% quit attempt probability), and Breakpoint (BP; the cigarette price corresponding to 100% quit attempt probability). In addition, the relationships between quit probability and demographic variables, measures of nicotine dependence severity, and self-reported smoking cessation variables were investigated. As predicted, quit attempt probability increased as a function of escalating cigarette price, but it exhibited unexpectedly large increases at pack price transitions, reflecting “left digit” effects. These results provide further evidence that price plays an important role in smoking cessation motivation, and that this relationship between price and cessation motivation is nonlinear, especially at pack price transitions.

Introduction

More deaths are caused each year by tobacco use than by all deaths from human immunodeficiency virus (HIV), drug/alcohol use, motor vehicle injuries, suicides, and murders combined (CDC, 2011). Thus, factors that lead to successful smoking cessation are a high priority for research. It has been found that cigarette price can be directly linked to cigarette consumption, and that increases in price directly influence an individual’s decision to begin the process of smoking cessation (Chaloupka, et al., 2011; Chaloupka et al., 2000). California Tobacco Survey data from 1996 (N = 6,211) and 1999 (N = 2,798) displayed a significant increase in percentage of self-reported quit attempts after cigarette retail price and the state excise tax increased (Reed, et al., 2008). Excise tax increases in New Zealand on both cigarettes (10% increase) and Roll-Your-Own tobacco (25% increase) led to more serious quit attempts. After being adjusted for ethnicity, gender, age and income, the odds of making a quit attempt post-tax increase in New Zealand compared to the odds of making a quit attempt pre-tax increase in New Zealand was 1.5 (p=0.08). Cost was also reported to be more than twice as likely to be cited as a reason for quitting smoking in 2010 compared to 2009 (MacFarlane, et al. 2011). Smokers living in areas with higher cigarette prices and taxes are significantly more motivated to quit. In addition, price and tax increases over time may also increase quitting motivation, though the results in this particular study are not statistically significant, probably due to the lack of significant price changes during the period of interest (Ross, et al, 2010). Prior research has also shown that implementing an increase in excise taxes on tobacco will drive calls to the state tobacco control programs’ free quitline services, indicating an increased motivation to quit.

Table 1. Participant characteristics. (N=1074)
quit smoking (Bush, et al., 2012; Harwell, et al., 2007; Campaign for Tobacco-Free Kids, 2009).

Behavioral economics is the integration of the fields of psychology and economics to better understand an individual’s values, preferences, and choices (MacKillop et al., in press). Behavioral economic approaches often use decision-making tasks to systematically examine individual’s preferences. For example, the relationship between the price of cigarettes and consumption has been extensively examined using cigarette purchase tasks (CPTs) (Bidwell et al., in press; Few et al., 2011; MacKillop et al., 2008, in press; Murphy et al., 2011). The goal of the present study is to use behavioral economics to better understand the relationship between price and smoking cessation motivation in a community sample of smokers. Specifically, participants were assessed for their estimated probability of attempting to quit smoking at escalating prices, from very low to very high. The association between quit probability and demographic variables, measures of dependence severity, and self-reported smoking cessation behaviors were then analyzed. The broader goal of this study is to provide both legislature and the public with specific price points and their quit probability, based on our sample.

Methods

Participants
A sample of 1,124 were recruited and enrolled from three sites: Athens, GA (85% of the sample), Providence, RI (11% of the sample), and Aiken, SC (4% of the sample). The sample was 60% male, 40% female, and the median age was 31.62 years. In addition, the sample was predominantly Caucasian (68%) and African American (25%), had a mean education of 12.81 years, and smoked an average of 16.31 cigarettes per day. To qualify for the study, participants needed to be 18 years or older, smoke at least 5 cigarettes per day, and have a minimum 8th grade education. Participants were excluded for improper responding (i.e., greater than 100% probability, n=4), missing data, and inconsistent/erratic responding (n=46). Individuals who reported hand-rolling their own cigarettes were also excluded from the analysis, bringing our sample to an N=1,074.

Assessments
A variety of assessments were administered during the session. First, participant characteristics were assessed using a demographics questionnaire. The Fagerström Test for Nicotine Dependence (FTND) was also administered, which is a validated self-report assessment of cigarette consumption and nicotine dependence severity (Heatherton,

![Figure 1. Overall PSCM performance, where pack price is indicated on the x-axis and the probability of a quit attempt is on the y-axis. Note the sharp increases in probability of a quit attempt that correspond to “left digit” effects.](image)
et al. 1991). The Probability of Smoking Cessation Measure (PSCM) assessed the likelihood of individuals to attempt to quit smoking (e.g., quit probability) at a variety of cigarette prices, ranging from free cigarettes to $10/cigarette ($200/pack). Dependent variables from the PSCM included Intensity (baseline quit motivation), \( P_{50} \) price (cigarette price corresponding to 50% quit attempt probability), and Breakpoint (BP: cigarette price corresponding to 100% quit attempt probability).

### Procedure

Prior to enrollment, participants completed a phone screening to verify eligibility. After enrollment, participants completed a packet of paper-pencil questionnaires during 90-minute group assessments, which held an average of 10 participants per session. Carbon monoxide was measured using Bedfont’s piCO* smokerlyzer, providing an objective biological measurement of nicotine dependence (where the FTND gauged self-determined dependence). Participants provided informed consent prior to enrollment and were compensated with either $30 or psychology course credit. This study was approved by each of the corresponding university institutional review boards.

### Data Analysis

Associations between PSCM performance and demographic and smoking variables were examined. Group comparisons based on FTND score (median split) were also investigated.

### Results

As anticipated, quit probability escalated as a function of increasing cigarette price. The largest increases took place across the transition in pack price from one whole number dollar amount to the next whole number dollar amount (e.g., $4.60 to $5/pack), revealing clear “left digit” effects for pack price. See Figure 1 below.

Intensity, Breakpoint, and \( P_{50} \) price were significantly correlated with each other \((r = .13-.45, ps < .05)\). A number of other significant correlations were also found (Table 2): 1) African Americans had higher intensity; 2) Older individuals had higher Intensity and lower BP price; 3) Higher education was associated with lower BP; 4) Higher nicotine dependence (FTND) was associated with lower Intensity and higher \( P_{50} \) price; and 5) Longer duration of smoking was associated with higher Intensity.

Figure 2 depicts a follow-up categorical analysis based on FTND score. All FTND scores of 4 were excluded for the current analysis, as it is difficult to place these individuals into either the “high” or “low” FTND group. When individuals were grouped by FTND score, the high-FTND group had significantly lower Intensity \((p < .01; \text{Figure } 3A)\) and higher \( P_{50} \) Price \((p < .01; \text{Figure } 3B)\) indicating lower price sensitivity.

Examining the projected effects of a $1.00 increase in pack price from the current Georgia average (i.e., $4.40/pack to $5.40/pack) resulted in 7% of individuals indicating that they would definitely try to quit (i.e., 100% quit probability), and 20% of individuals indicating that they would be more likely to quit than not (i.e. >50% quit probability) from our sample (Figure 4). These values are particularly notable as no participants reported being at those levels at the current price average.

### Discussion

The current study provides further evidence to support the idea that price plays an important role in smoking cessation motivation. Meaningful differences in price sensitivity may also exist as a function of nicotine dependence severity. In this study it was found that individuals with a high FTND score had significantly lower intensity, which is motivation to quit at price “free” \((p<.01)\), and that they also had significantly lower \( P_{50} \) prices \((p<.01)\). From the standpoint of public policy, these results also suggest that relatively modest increases

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in pack price from current levels may have substantial impact on smoking cessation likelihood. The observed “left digit” effects also indicate that this phenomenon may be used to deter smoking in the same way that retailers use it to promote the behavior. For example, tax increases that move increase prices from “$4.99” and “$5.99” to “$5” or “$6” respectively, may decrease demand and increase the likelihood of smoking cessation (MacKillop, et al., 2012).

A limitation of this study is the lack of diversity in participant demographics. Also, this study is contingent on estimated behavior rather than actual behavior, although previous research has found a high correspondence between estimated and actual behavior (Amlung, et al. 2012). Another important priority is thus determining the extent to which self-reported quit probability corresponds to actual smoking cessation success. Participants were referring to whether they would “try” to quit not whether they would succeed in quitting. An optimal tobacco control environment would optimize the probability of attempting to quit, but also maximize access to high-quality evidence based treatment options. In addition, with the majority of the sample being collected in the same geographical area, the generalizability of our data to other regions where income, average cigarette price, etc. may differ is limited. For future directions, additional analyses should include other smoking history variables (e.g., negative health consequences) as well as financial and social consequences associated with smoking. Another important priority is determining the extent to which self-reported quit probability corresponds to actual smoking cessation success. Future studies are also needed in order to replicate and extend these findings to a variety of geographic areas with more diverse samples.

Figure 2. Follow-up categorical analysis by FTND group

Figure 3. Intensity and P50 price grouped by FTND score.

Figure 5: Effects of a $1.00 increase in pack price on smoking cessation motivation. Data points reflect % of participants at >50% (black) and at 100% (red) quit attempt probability for each price.
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Mothers’ Perceptions and Responsiveness to Malnutrition among HIV-positive and HIV-negative Children in Ghana

Tanya Dieumegarde and Alex Kojo Anderson, Ph.D., Department of Foods and Nutrition

ABSTRACT. The objective of this study was to assess mothers’ perceptions of the causes of their child’s malnutrition and thus their responsiveness to the child’s condition. This was a qualitative study. In-depth interviews were conducted with mothers of children diagnosed with organic (n=2) and inorganic (n=6) malnutrition, as well as reviewing their medical chart for data extraction in the Children’s Hospital in Ghana. This was done in concurrence with the nutritional rehabilitation program of the Nutrition Rehabilitation Clinic. Of the eight observed and interviewed mothers with malnourished children, only one correctly acknowledged poor nutrition as the cause of malnutrition and admittance to the hospital. The remaining seven mothers were unaware of the importance of proper nutrition. Overall, mothers of the children with organic cases were more responsive to the nutritional care of their child at the clinic, while some mothers of children with inorganic cases withheld from the child the PlumpyNut supplied by the clinic. This observation was consistent with data from the children’s medical charts, which displayed a faster rate of recovery of the two children with organic malnutrition, compared to the six children who suffered from inorganic malnutrition. Observation and interaction with the mothers suggested a lack of nutrition knowledge and awareness in child feeding. There is, therefore, a need for nutrition education in the area of child feeding in resource-poor areas, as well as a rehabilitation program that strictly requires the involvement of mothers or primary caregivers.

Introduction

Even with numerous international initiatives that emphasize quality nutrition in African nations, nutrition remains a much-neglected issue by governments of Sub-Saharan Africa countries. Ghana is no exception. Development agencies are working to provide practical solutions. UNICEF has numerous programs targeting improved sanitation and access to potable drinking water in developing countries, as well as provision of ready-to-use therapeutic foods (RUTF). RUTF is provided to meet the nutrition needs and wellbeing of children during humanitarian emergencies, such as wars and famine (UNICEF, 2012). Save the Children and the World Food Program provide education and other resources, including agricultural implements and techniques to fight hunger and alleviate poverty in various African countries (Fighting Hunger in Africa, 2012). Other non-governmental organizations with a public health focus—such as the Bill & Melinda Gates Foundation—are funding innovative efforts in the creation and delivery of vaccines to fight HIV/AIDS, malaria, and other infectious diseases in these countries (Global Health Program Overview, 2010). Country-specific policies to improve nutrition and overall well-being are also an important focus.

Despite policy focusing on several different aspects of nutrition—such as improving exclusivity of breast feeding, complementary feeding, and reversing micronutrient deficiency—the Ghanaian government has shown inadequacy in addressing its health issues, both financially and in its coordination and provision of assistance and resources (Ghartey, 2010). Another aspect of Ghana’s nutrition policy is community-based growth monitoring, a program that focuses on reducing malnutrition amongst children under the age of five by incorporating early detection and management techniques. Amongst all of the policies mentioned, this community-focused approach promises to have the most impact. As in other areas of Ghana’s nutrition policy, very little attention is given to childhood malnutrition hence its high rates (Ghartey, 2010). La Côte d'Ivoire, a nation currently suffering from political instability, has malnutrition rates of 17% (Ramamonjisoa, 2009). Ghana, on the other hand, is enjoying both political and economic stability, but the country has a staggering 21% malnutrition rate (Encyclopedia of the Nations, 2011) amongst children under 60 months.

Childhood malnutrition is one of the leading causes of death among children living in developing countries like Ghana (Agble, Bader, et al, 2010). This is typically a result of the lack of access to food and inadequate intake. In this part of the world, the mortality rate of children under 5 years is worsened with the double burden of malnutrition and HIV/AIDS.

Malnutrition in developing countries could also be attributed to poor sanitation, inadequate hygiene,
infectious diseases, or illnesses. In West Africa, the rates of malnutrition are quite grave. Every year over 6 million children die of malnourishment worldwide; over a third of those children are in West Africa alone (Bekele, 1998). Additionally, 58% of Ghanaian children under 60 months are either stunted, underweight, or severely anemic (Hamburg-Germa, 2005). Thus, malnutrition is a problem throughout West Africa, and Ghana is at the heart of the problem.

Two main types of malnutrition, namely organic (with an underlying medical condition) and inorganic (with no underlying medical condition) malnutrition, negatively affect the development and overall well-being of Ghanaian children. Past research findings show that HIV-positive children are at a higher risk for malnutrition, other opportunistic infections, and impaired growth (Vetter, Gaston, Zadi, Diaby, Brattegaard, Timite, Andoh and Adou, 1996). HIV is often the cause or one of the main contributing causes of malnutrition in the organic cases, due to a higher caloric expenditure in HIV-affected patients. The increased energy expenditure could be 10% or more above the usual energy expenditure of HIV-negative individuals of similar characteristics. However, the antiretroviral medication and associated mouth soreness negatively affect the patient’s appetite, resulting in reduced caloric intake. HIV affects the lining of the gastrointestinal tract, resulting in persistent diarrhea and a decreased absorption of food nutrients (Wanke and Tang, 2011).

Methods

Study Site Description

The study was conducted in Ghana, West Africa. Ghana, a country whose population totals over 24 million, is bordered by La Côte d'Ivoire to the west, Burkina Faso to the north, Togo to the east, and the Gulf of Guinea to the south. In 1957, Ghana became the first sub-Saharan country to gain independence from Great Britain. Although Ghana boasts of numerous indigenous languages, English remains the official language. Ghana has ten administrative regions, which are comprised of metropolitan, municipal, and district assemblies. The city of Accra in the Greater Accra Region is the capital of the country and hosts a population estimated at over two million people. Additionally, Accra is the main economic hub of Ghana and the site of the only Children’s Hospital in Ghana. The Children’s Hospital—also known as the Princess Marie Louise Hospital—was named after the grand-daughter of Great Britain’s Late Queen Victoria (Bush, 1999).

The Children’s Hospital is located at the heart of the business district of Accra and close to the coastal towns of Jamestown, Korle Gonno, Chorkor, and Mamprobi, as well as other indigenous Ga communities. The majority of families residing in the coastal towns engage in artisanal fishing activities, while those from the indigenous communities engage in petty trading, usually spending most of the day outside the home. These communities also have higher rates of illiteracy and food insecurity. Because parents in these areas of the capital city spend a good part of the day outside the home on their fishing and trading activities, children are left with no adult supervision. This situation predisposes children under age five to malnutrition. Older children are often left with the responsibility of caring for younger siblings, and they are therefore likely to consume a significant portion of the food available in the home—at the expense of their younger siblings. This makes the site of the Children’s Hospital at its present location in Accra very appropriate in catering to the health care needs of the community.

Specializing in pediatric malnutrition, the Princess Marie Louise Hospital gained historical significance in 1929 when Dr. Cecily Williams first identified severe protein malnutrition (Craddock, 1983). She named the condition Kwashiorkor, which comes from the Ga language spoken by the people of the Greater Accra Region. It means “the disease that the first child develops when the second child is born.” Since the 1930s, both inpatient and outpatient pediatric malnutrition cases have been referred to the Children’s Hospital, making it the treatment and management center for all cases of childhood malnutrition in Ghana. Being the only children’s hospital in the country, as well as the discovery site for Kwashiorkor, this facility holds much importance both medically and historically.

Study Design and Participants

This cross-sectional study used qualitative methods and patients’ medical charts for data extraction and collection. Participants in the study consisted of mothers over 18 years of age and their malnourished children less than 60 months old that were receiving
treatment at the Nutrition Rehabilitation Clinic of the Children’s Hospital. Depending on the level of literacy and language preference, the interview was either conducted in Twi (a local Ghanaian language) or in English, with the mother as the main interviewee. The child’s medical charts were reviewed, as well as information on anthropometrics, specific medical condition, date of admission and weekly visits, and history of the pregnancy. Several cases of malnutrition were observed. However, for the sake of this paper, only eight cases are presented, six of which are inorganic (pure Kwashiorkor or Marasmus) and two of which are organic (Kwashiorkor/Marasmus with an underlying pediatric HIV/AIDS). These select eight were chosen for analysis due to their completeness and their scope of valid, useful information. They presented further qualitative insight into the mothers’ perceptions of the causes of their child’s malnutrition and thus their responsiveness to the child’s condition. The study was approved by the Institutional Review Board of the University of Georgia and the Princess Marie Louise Children’s Hospital as part of a student summer service-learning project. Mothers provided oral consent before participation. Confidentiality was ensured by interviewing participants in a private location within the Nutrition Rehabilitation Center of the hospital.

Findings

In Ghana, childcare is primarily the responsibility of mothers and other female family members. Although these female caregivers may not contribute financially to the running of the home, they are responsible for preparing and purchasing food. Although they are responsible for the nourishment of the household, most of these female figures lack adequate nutrition knowledge to be able to prepare wholesome meals that meet nutritional needs. The rehabilitation clinic of the Children’s Hospital in Accra is thus designed to enable mothers to learn appropriate skills in child care and nutritious cooking. Supported by the government, these programs promote healthful meals that use local staple foods. In partnership with the Ghanaian government, UNICEF provides funding to the Children’s Hospital (PMLH) to provide free RUTF (i.e. PlumpyNut, a small 92 gram sachet of peanut paste containing added micronutrients) to patients at the Nutrition Rehabilitation Clinic. The Ministry of Health of Ghana also provides Zidovudine, a free antiretroviral drug given to HIV-infected patients, as part of their share of the Millennium Challenge Account provided by the George W. Bush administration to fight HIV/AIDS.

Participants included children ranging from ten to forty eight months of age and their mothers. They were comprised of two types of patients: organic malnutrition (malnourished and HIV-positive; n=2) and inorganic malnutrition (malnourished and HIV-negative; n=6). The diagnoses of malnutrition consisted of Kwashiorkor (n=3), Marasmus (n=3), and Marasmic-Kwashiorkor (n=2) and ranged from moderate to acute/severe. The organic cases were one male and one female, whereas the inorganic cases consisted of two males and four females. Half of the children (n=4; 1 organic and 3 inorganic) were reported to be the only child living in the household, while the other half lived in a household where there were other children (ranging from one to four).

Both mothers of the children diagnosed as organic cases and three mothers of the children diagnosed as inorganic cases were unemployed. Interestingly, none of the children with organic malnutrition had fathers present in the home (nor in their life), whereas two-thirds (n=4) of the children suffering from inorganic malnutrition had fathers present in the home. Evaluation of the household food security status of the cases revealed that all but one was from a food insecure household.

Of the eight mothers interviewed, all but one was found to be food insecure and poor. The seven food insecure mothers reported persistent food insecurity throughout the life of the child, with no support from the government. These mothers are also below the poverty level with the associated challenge of access to nutritious foods.

Conclusion and Recommendations

Overall, only one mother correctly associated poor nutrition as the cause of her child’s malnutrition and admission to the hospital. The other mothers attributed malnutrition to teething, vomiting, fever, diarrhea or even being cursed. Nonetheless, after going through the rehabilitation program, they were all able to associate poor nutrition as the cause of malnutrition. There was a higher responsiveness observed among mothers of the organically malnourished children than
the mothers of the children with inorganic malnutrition. There was also a high level of nutritional knowledge observed with a mother of one of the inorganic subjects. She was able to correctly recognize the cause of her child’s weakness, as well as some of the challenges her child faced from her being HIV-positive. She identified these challenges as her inability to breastfeed (due to the possibility of HIV transmission) and social stigmas. These community-induced sentiments of dishonor may prevent her from being able to work and thus provide for her child. Despite encouraging free and confidential HIV testing, Ghana still faces discrimination in employment and the socio-economic repercussions that accompany an individual living with HIV/AIDS (Chijioke, Preko, Baidoo, Bayard, Ehiri, Jolly, and Jolly, 2008).

Of the mothers who could not identify the cause of their child’s malnutrition, some exhibited similar behaviors—such as sharing the PlumpyNut intended for the malnourished child with other healthy children in the household. Others kept the PlumpyNut for themselves or even sold it for money. In other instances, fathers were no longer present in the household, making it difficult for mothers to have access to adequate and nutritious foods, given the financial restrictions an absent father poses to their household.

There is a dire need for satellite facilities around the country to address childhood malnutrition, since Ghana currently has only one children’s hospital to handle all pediatric malnutrition cases. Building satellite clinics will aid in reducing the frequency of the children relapsing. This is important both for the care and tracking of these children, as evidence at the Children’s Hospital suggests that children experiencing relapses returned with far worse conditions than at the time of their initial admittance. Such satellite clinics would therefore improve the efficiency of Ghana’s healthcare staff in managing malnourished children. Although mothers of the malnourished children are taught appropriate child feeding and food preparations, as well as effective use of food, the Nutrition Rehabilitation Program, most of the mothers do not have access to adequate and nutritious foods. Once the child is discharged from the hospital, the government of Ghana needs to implement policy programs that increase access to nutritious food for low-income households. The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and Supplemental Nutrition Assistance Program (SNAP) in the United States are two examples of successful policy programs that could provide Ghana with a model of improvement. Policies that mandate fathers to financially provide for the well-being of their children are also necessary in the prevention of childhood malnutrition. Substantial changes and enforcement of current and future policies can help reduce the rate of pediatric malnutrition and increase the quality of life among Ghanaian children.

REFERENCES


ABSTRACT. Forced by ongoing government persecution to leave their homeland in Burma, Karen refugees residing in Athens, Georgia continue each day the process of remembering and reaffirming their cultural traditions while seeking meaning and belonging in their new environment. Through engaging in interviews and gardening practices with the Karen people, this project seeks to examine the anthropological phenomenon of the ‘landscape of the interior’, particularly as experienced from a transnational perspective. Recognizing the value of preserving genetic biodiversity alongside culturally situated knowledge, it aims to record—through the process of memory banking—ethnobotanical traditions of the Karen and their cultural relationship to the natural environment. As an outcome, this project seeks to create a register of Karen plant species, including their characteristics, methods of cultivation, uses, and religious/cultural significance. Additionally, it explores the role of ‘interior landscapes’ in shaping relationships with a new inhabited environment. This investigation seeks to benefit the Karen people and the community at large by encouraging the continuation of traditions, creating senses of ‘rootedness’ and preserving ethnobotanical knowledge and biodiversity. This research is approached with the belief that practices of remembrance and resilience are often the strongest means of combating forces of oppression.

Introduction

“Every man [or woman] carries within him [or her] a world which is composed of all that he has seen and loved and to which he constantly returns, even when he is traveling through, and seems to be living in, some different world.” – David Sutton (Sutton, 73)

“They lie in me like underground water; every well I put down taps them...why does that early imprinting, rather than all later experience, so often dictate my dreams’ form?” – Wallace Stegner (Van Noy, 163)

So, you thought we were composed of atoms? I am here to tell you we are not. We are actually made up of thousands of tiny stories. Ok, maybe we are muscle and bone, but we are also layers upon layers of experiences, dreams, and memories. We are the product of our surroundings and our creative interpretation of its materiality. We are that first breath of crisp dawn air and split neck sunburn on a summer night. We are the way our teeth sink into the red flesh of the strawberries, and the sulfuric smell of marsh mud. We are the embodied delight of seeing our father there with his gift of fruit in a bright plastic cup, and our own imagination of the time Uncle John sank into the swamp with boards tied to his feet. We are history and hope, folklore and imagined future. We are sight and smell, and taste and touch, and the strange way these congeal in the organ of the memory. We are all that we have ever known and that
which we have not known but have received, via story, via blood, via the ephemeral inheritance of cultural imagination. We are that which we have gazed upon, dreamed up, dwelt upon, and tried to drown out. We are all these things that we carry within us, which inform our actions, our identity, and our perception of the world as it exists. This is the ‘landscape of our interior’. This is what we are really made of.

Now that we have so hastily dispensed with our tried and true understanding of the very nature of existence, let us consider the possibility that ‘place’ is not as we know it either. Perhaps it is not merely the material world that surrounds us, but rather, the reciprocal relationship between physical space and imagination. Recently, “a range of disciplines have begun to conceptualize space and place as complex socio-cultural constructions, rather than simply physical locations.” (Gustayson, 2001; Meethan, 2001) The tangible aspects of our environment serve as the building blocks of our cultural imagination. This sense of ordering, in turn, comes to shape the very landscape from which it is formed. Thus a ‘place’ is not static or even universal to all who would come to know it. Rather, to a large degree, it is culturally conceived, personally engaged, and perpetually dynamic.

This organic constitution of place becomes even more fluid in the transnational context, when a worldview cultivated in a distinct milieu is confronted by a new and foreign lived environment. Thus, “spaces cannot be reduced to a single discourse with prescribed meanings...space represents an individual’s dynamic dialogue between the past and the present.” (Sahlins, 1985: 144). In this context, complex transnational discourses of place emerge, which seek to ‘find the connections’ between past memory and present experience; in so doing they reorder space and imagination to create ‘places’ that are altogether new. We witness that in transnational spaces, “stories transform spaces into places by providing spatial organization, opening a legitimate theatre for ‘practical actions’ and ‘authorizing the establishment, displacement and transcendence of limits’” (De Certeau, 1988: 125).

Immigrant gardens and the food that they produce are particularly powerful makers of ‘place’. They quite literally transplant the forms and perceptions of home onto a newly inhabited space. These sensory elements of the landscape--experienced through taste, touch, smell and sight--cross the divide between the interior and the exterior, dissolving the distance between person and place. ‘Transnational’ gardens are thus locales “where reality is made exactly equivalent with memory” (Van Noy, 2003: 152).

What is the relevance then of these nebulous theoretical conceptualizations of some of the most basic ingredients of life? The reply is that these abstract notions of place and identity quickly gain salience when encountered in their embodied state: in this case, in the faces of Burmese refuges of the Karen Ethnic group, around whom this investigation is centered. Through my work with the Karen, I desire to present agricultural knowledge and biodiversity as it exists in its truest state: nestled within a larger context of cultural imagination and sense of place. I seek to preserve not only botanical variety and agricultural wisdom, but also to salvage the ‘structures of feeling’ enmeshed for the Karen in natural artifacts. To actively give life to such objects and the worlds they carry with them is, in a small way, to fight against the hungry jaws of modern ‘narratives of loss.’

I came to know this small group of Karen individuals, residing in Athens, Georgia, through a friend who had begun tutoring the children of two Karen families attending his church. He described to me his respect for these individuals who, day after day, faced the myriad challenges of learning English, navigating the complexities of U.S. life, and conquering the night’s homework assignments.

I began going on occasion to tutor and visit the Karen people. I was immediately overwhelmed by the beauty of their culture and the kindness of their disposition. Over time, my relationship with the Karen people evolved to include that of inquisitor, fellow gardener, and friend. Along the way I undertook the task of recording aspects of their ethno-botanical knowledge and cultural memory. In so doing I also sought to witness their emerging construction of a transnational sense of place. Throughout this time that I engaged with the Karen families in creating a produce market garden, I intended to benefit the Karen community as well as the community at large.

The Karen people, as I came to know, are here in the U.S. because they were forced to flee their homeland of Burma. They come as victims of government persecution and political violence that has been ongoing
for roughly 43 years. With the burning of entire Karen villages and countless other atrocities enacted by forces of the Myanmar military regime, tens of thousands of Karen have fled with their lives to teeming refugee camps in northern Thailand on the Burmese-Thai border.

From a camp such as this, the Karen families made their journey, similar to that of countless other Karen political refugees to the United States, that eventually lead them to the unassuming town of Athens, Georgia. Although the ability to wake each morning free from the gripping terror of uncertainty is a peace beyond comparison, it is not to say that their lives here have been easy. Beyond the perpetual challenge of navigating the perplexities of the mundane, the Karen have gone from a day to day life oriented around family, community and agriculture, to a routine characterized largely by separation from nature and one another.

In their homeland the Karen practice an age-old tradition of swidden agriculture or rotating cultivation, in which fields are used for no more than one to two years. They are then allowed to lie fallow for as many as nine to eleven years. Their staple crop is rice, known to the Karen as ‘the sustainer’. It is the terraced rice fields, nestled in a verdant valley of the hill country, which serve as the iconic image of the Karen landscape. Here the Karen employ an adaptive strategy that importantly combines agricultural production, vibrant home and community gardens, and a vast utilization of forest resources (Anderson).

However, recent decades have witnessed drastic changes in the relationship of Karen people to their land and agricultural practices. This is due to a crippling cocktail of political persecution, forces of market integration, industrialization, and expansion of the general Burmese population onto Karen lands, international agricultural ‘development’ initiatives, and an increased state control of the forest. Unsurprisingly, the combination of these factors has driven the Karen ethnobotanical tradition to the brink of disappearance. As human geographers working in the region have witnessed, “The Karen… have been significantly impacted by global and environmentalist discourses. The Karen, traditionally viewed as conservationists, have had to abandon much of their local knowledge… Minorities such as the Karen have only limited access to political power and thus to ways of actively influencing environmental policies according to their own ideas of a viable future. Instead their local farming practices involving the use of forests and forest products have been marginalized as a result of state control over forest areas” (Tomforde 348).

Along with such an erosion of agricultural practice and biodiversity comes the endangerment of Karen cultural tradition and social identity, tightly interwoven in their relationship to the landscape. The threat of this double loss presents an incredibly critical situation. For as anthropologist Virginia Nazarea so eloquently puts, “Genes and cultures have something very important in common: both are repositories of coded information essential to adaptations and survival.” (Nazarea, 73) These two forces, cultural knowledge and biodiversity, are not only beautifully similar in this regard; they are utterly co-dependent. Since their conception, they have existed intertwined. To separate them would mean death to both. C. Nadia Seremetakis paints a disquieting portrait of just such amnesia in the wake of globalization and industrial agriculture. She states, “Sensory premises, memories and histories are being pulled out from under entire regional cultures and the capacity to reproduce social identity may be altered as a result.” (Serem AK 3).

Thus, we can clearly observe the critical need to document the culturally situated ethnobotanical knowledge of the Karen people alongside that of their genetic biodiversity if there is to be a viable hope for the preservation of this rich inheritance. Through this research, I seek to carry out such a process of cultural and biological documentation: a ‘pickling’ if you will, of both plants and memory, in a manner that gives preference to ‘embodied experience’ and memory. My intention is to record aspects of plant diversity and the memories that accompany it, not as ‘distilled elements of value’ but rather as vital threads, which together form the rough texture of a ‘life-world’ garment. The ultimate goal of this project is closely mirrored by the fanciful image crafted by Salmon Rushdie, in which his preservation-minded protagonist explains his strange and all-consuming occupation, saying, “And my Chutneys and Kasaundies are, after all, connected to my nocturnal scribbling, by day amongst the pickle-vats, by night within these sheets, I spend my time at the great work of...
preserving. Memory, as well as fruit, is being saved from the corruption of the clocks” (Rushdie; Ray,130).

In a similar manner, I aspire to undertake a ‘mad scribbling’ and sprouting of ‘in-situ’ conservation. Based around the notion that if it is not possible to preserve plants and cultural tradition in their place of origin, then it is only logical to ‘meet these things where they reside’, in the pockets and memories of their keepers, the immigrants and refugees in our own communities (Nazarea).

Theoretical Foundations

"Truth Serum
We made it from the ground-up corn in the old back pasture.
Pinched a scent of night jasmine billowing off the fence, popped it right in.
That frog song wanting nothing but echo?
We used that.
Stirred it widely. Noticed the clouds while stirring.
Called upon our ancient great aunts and their long slow eyes
of summer. Dropped in their names.
Added a mint leaf now and then
to hearten the broth. Added a note of cheer and worry.
Orange butterfly between the claps of thunder?
Perfect. And once we had it,
had smelled and tasted the fragrant syrup,
placing the pan on a back burner for keeping,
the sorrow lifted in small ways.
We boiled down the lies in another pan till they disappeared.
We washed that pan.”
-Naomi Shihab Nye (Nye,23)

This research project examines the phenomena of ‘landscapes of the interior’ and transnational senses of place from an embodied, phenomenological perspective. The Karen people represent a highly unique window into both ends of this inquiry, with their extensive knowledge of an ethno-botanical world on the brink of disappearance and the liminality of their situation as those displaced from their home; struggling to reconcile interior landscape with lived environment. Through the plants of the Karen people’s home garden, and the ‘fruits’ born of a newly begun Karen market-garden project, we can glimpse images of the interior landscapes which they carry within them, and simultaneously enact a practice of preservation through ‘active remembering’, as means of resistance to forces of hegemony and oppression.

I have conducted this investigation utilizing the theoretical perspective of phenomenology. This approach emphasizes the importance of ‘embodied experience’, recognizing forms of knowledge and perception beyond the strictly empirical. Through this framework I have sought to describe “human consciousness in its lived immediacy before it is subject to theoretical elaboration or conceptual systemizing” (Stoller, 25). I have centered my inquiry around aspects of sensory experience or ‘embodiment’, which holds as one of its central tenants a “rejection of the Cartesian separation of mind and body” (Stoller 75). I express cultural memories not as stagnant artifacts but rather as fundamental elements embedded in the continual processes of day to day performance, perception and re-imagination. To better understand the thought behind such an approach, I employ the words of Yi-Fu Tuan. He states,

“Sense of place is made up of the experiences, mostly fleeting and un-dramatic, repeated day after day and over the span of years.  It is a unique blend of sights, sounds and smells, a unique harmony of natural and artificial rhythms such as times of sunrise and sunset, of work and play.  The feel of a place is registered in one’s muscles and bones” (Van Noy, 2003: 152).

In a further extension of this, we see that “the interior landscape influences the practical, scientific one. In short, the sublime influences the empirical” (Van Noy, 2003:117). The embodied approach acknowledges the role of sensory experience in perceiving, making sense of, and remembering place and focuses not solely on the empirical but on that which is heard, felt, smelled, and tasted. It recognizes that while “knowledge of place can be historical… it is also grounded in those aspects of the environment that we appreciate through the senses, such as the sound and feel of the wind” (Van Noy, 2003: 152).

Along with sights and smells, food plays an integral role in anchoring memory and constructing sense of place. In fact, food, because of its distinct
connection with the land itself, plays a particularly potent role in place-making: linking “the land to the hearth and the hearth to the heart through the mediation of produce” (Ray, 2004, 132). Serematakis, in her work “Senses Still”, presents the potent idea of “Counter Memories” as “Sensory-perceptual dispositions” embedded in everyday objects, such as a particular variety of peach and other subtle, distinctive agricultural products. Here we see the way in which biodiversity is a fleshy, physical encapsulation of memory- an anchor for personal narrative and collective experience. Along with the disappearance of botanical variety comes a disappearance of enmeshed memory and collective experience.

This collective experience and the unique ‘way of seeing the world’ can be referred to as ‘cultural imagination’. The concept of cultural imagination highlights the reciprocal relationship between landscape and human creativity in processes of place-making and identity construction. In this relationship cultural imagination is fomented through place and place, in turn, is shaped by cultural imaginary. As Rick Van Noy explains in his illuminating text “Surveying the Interior”, place differs from space in that…

“What begins as undifferentiated space becomes place as we get to know it better and endow it with value. That value can be objective and empirical, defined by a border or survey marker, but it can also be imaginative and phenomenological, if writers of place can be believed, defined by memory and affection” (Van Noy, 2003: 7).

Arjuan Appadurai as well offers insight into this subject in his discussion of cultural imagination in “Transurbanism”. He states, “Culture is the dimension of social life and of collective identity in which the material conditions of actors, of subjects and agents, are constantly transformed by the work of the imagination” (Appadurai 3).

Another element at the heart of this inquiry is recognition of the powerful state of ‘liminality’ as created through displacement and transnationalism. This distinct and fluid sphere of perception, as seen through the eyes of the Karen refugees, allows for a deconstructed view into the very nature and construction of the ‘landscape of the interior’. Thoreau extols the immense privilege of the liminal perspective in regards to landscape when he fervently exclaims, “Not till we are lost in other words, not till we have lost the world, do we begin to find ourselves and realize where we are and the infinite extent of our relations” (Van Noy, 2003: 62). Similarly Robert Abrams asserts, “Being lost takes us out of familiar coherent structures into what flickers and wavers at the edges of perception” (Van Noy, 2003: 64). As we speak with the Karen and witness first-hand the congealing of past memory and present experience, we are privy to the beautiful and rarely witnessed process by which place and identity are simultaneously constructed.

Through the use of ‘memory banking’ (recording of stories and emotions in connection with plants) I have sought to create a holistic painting of Karen ethnobotany and the life-world that it encompasses. In carrying out this practice I have recorded plant diversity and agricultural practices alongside cultural associations ranging from rituals, folklore, dreams, smells, poetry, recipes, and narrative. I employ this approach in the attempt to find, as described by Van Noy, the “middle ground between realistic/scientific contact and an ‘imaginative/mythological’ contact [with one’s surroundings]” (Van Noy, 2003: 145).

I believe that narratives in particular exhibit a distinct ability to capture ‘sense of place’. This opinion is supported by Van Noy’s references to the power of stories to communicate the numina or ‘spirit of place.’ As he states, “Narratives about place ‘map’ landscapes better than maps can” (Van Noy, 2003:142) and stories give visibility to those “deeply lived in landscapes that we carry in our minds” (Van Noy, 2003: 166). Thus, in the compendium of Karen tradition plants presented in this text, there are to be found, alongside each plant, associations of the plants personal and cultural significance. These simple vignettes hold the ability to open up whole realms of comprehension, not conveyed by a strictly biological, ‘scientific’ representation.

My concern with the disappearance of biodiversity and traditional agricultural knowledge and the implications this holds for cultural memory are underscored by numerous texts. One particularly striking expression of the personal and cultural loss associated with the erosion of biodiversity is that of C. Nadia Seremtaki’s heart wrenching tale of a vanished peach in “The Senses Still”. She sorrowfully relates, “The disappearance of Aphrodite’s peach is a double absence; it reveals the extent to which the senses are
entangled with history, memory, forgetfulness, narrative and silence” (Seremtakis, 1996: 2). This passage illustrates the principle of ‘narratives of loss’ to which, through this research, I seek to give voice and, in the cases where it is not too late, prevent.

By the phenomenological nature of my research I seek not to serve some utilitarian end of static, ‘petrified’ preservation of either plants or culture. Rather I hope to present memory and lived experience as the ultimate object of ‘value’ deriving from a project such as this. I approach this investigation with the firm belief that “to treat knowledge as currency in the world system is to commodity and thereby trivialize these memories” (Nazarea, 1998: 114). In a concurrent vein, I maintain that the difference between self and other, as Emanuel Levinas so eloquently states, is “no less reducible than relative, such that it can be meaningfully engaged, but not finally resolved” (Stoller 72). Ultimately, I consider that it is not some distilled ‘meaning’, but the texture of the story-- the grainy details of lived experience-- that bears the greatest power and significance. (Stoller)

**Methods**

The methods I employed in undertaking this investigation consisted primarily of in-depth semi-structured interviews, complimented by some physical gardening activities. The latter of these approaches served greatly to elucidate aspects of embodied knowledge existing outside the realm of verbal communication. The interviews, conducted on various occasions over a span of two months, principally took place in the home of Mo Paw’s family. To provide a picture of the context in which our discussions took place, the Karen people’s place of residence is a townhouse style apartment complex, whose owner, instrumental in bringing the Karen families to Athens, has generously allowed them to stay rent-free for the past two years.

As my first relationship with the Karen was people that of tutor, or ‘teacher’ as the mothers refer to us, I made it my routine to visit in the early evenings on weekdays to tutor first and afterwards gradually slip into the reminiscent conversation of our interviews. My initial intention was to primarily engage Mo Paw, mother of one of families and most avid gardener (in her mid-fifties) and her eldest son Ta He (20 years old) who is highly enthusiastic and well-suited to serve as interpreter. However, it is interesting to note that, as the activity of the evening would shift from homework and tutoring towards discussions of the Burmese landscape and plant memories from home, the entire family would physically draw inward around me, until we were all sitting together on the floor in a close circle. Plates of food surrounding us in perfunctory Karen hospitality, we would lean in towards one another, feeling the energy in the room blossom as everyone eagerly partook in the sharing of stories and memories.

There was, at first, the problematic fact that plant names did not inhabit for us a common vocabulary. However, this was resolved as we developed a unique process of translation that allowed us to arrive at a mutual understanding of the plant in question. This amusing system employed pantomime, drawing, and description of the plant’s physical appearance, uses, odor, feel, taste, etc. The immense gratification of the ensuing ‘ah ha’ moments of illumination was virtually incentive enough for engaging in the interview. Additionally, once a certain level of comprehension had been conferred, I would write the plant’s name in English and Ta He would write its Karen name beside it in the beautiful curved script of the Karen alphabet, which looks like a serpentine series of infinity marks.

Often times, when a verbal-pantomime understanding could not be reached, one of the Karen people would lightly sketch the vegetable they were attempting to describe on the page of my notebook. Then, frequently it would become apparent that the fault lay not with our abilities of communication but with my utter ignorance, the form not being one that I recognized. Such drawings, as in the case of the Daikon Radish or the Jackfruit, would come in handy for future reference as I consulted with others whose Asian plant knowledge was more extensive than my own. Some of the greatest sources of excitement between myself and the Karen people were our impromptu episodes of ‘show and tell’ in which an object of discussion that had proved unfamiliar to me would suddenly be materialized from the kitchen or some mysterious location, to my obvious wonderment and the great delight of all.

During these lively evening of interviewing, the types of questions which were posed included:

- “What plants and/or plant species are prominent in your memory of your home in Burma?”
“In what ways did gardening activities and/or interaction with plants and nature characterize your daily life in Burma? How are these experiences different in your new home in the United States?”

“How do aspects of the natural environment (or semi-natural environment) of Athens, Georgia compare with those of your homeland?”

“What significant personal memories do you have connected to specific plants and/or natural landscapes?”

As a counterbalance to the verbal, analytical approach of the interviewing process I sought to obtain insight in the Karen people ‘landscapes of the interior’ from a different vantage, by engaging in physical gardening activities. These activities were illuminating in numerous ways; largely that they conveyed the Karen people’s embodied knowledge in relation to plants and gardening. While Mo Paw maintains a small but impressive box garden at the apartment complex, these particular activities were carried out at the sight of the newly created market-garden, located a few miles away from downtown Athens.

This market garden was begun with the goals of providing an adequate space for the expression of the Karen people’s gardening aspirations with the added benefit of providing much needed additional income to the families and fresh, ‘unique’ produce to the Athens community. The quarter acre plot served as a space where the Karen people could grow a greater variety of their traditional plants, and in larger quantities, than their small home garden space allowed. Additionally, the rural landscape of the garden provided a treasured respite from the daily scenes of apartment complex and city streets. Simply being in this space evoked in the Karen great joy and relaxation and called forth songs, stories and movements of home.

It was interesting to observe the immediate response of Mo Paw and San Ni, the two mothers of the families, upon seeing the market-garden plot for the first time. They took to the space like fish to water. Something in the relatively flat green tract of land must have sparked the recollection of a rice field, for excitedly, of their own accord, the two women began demonstrating the movement of sowing rice. They called the attention of my companions and I, pantomiming the way one stands in a fixed spot and extends their arm towards and away from the body, letting fall a gentle cascade of imaginary rice seed on the surrounding soil.

Like seeing a dancer move in their element, the natural resurgence of the embodied movement of gardening work flowed forth from the women with the utmost grace. The speed and ‘effortlessness’ with which they tackled the tasks was awe-inspiring. After a long session of rigorous gardening, when someone remarked to Ta He that they were sorry for it being such a hard day’s work, his immediate response was, “No, don’t be sorry! We like this. This is life. This is what we do!”

Fascinating to behold was the manner in which hidden memories, hidden seeds, and hidden enthusiasms slowly emerged with the accrual of trust and time. At first, disheartened at what seemed to be a total absence of any Burmese seeds among the Karen families and very little reticence to impart stories of plants and gardening, I began to think that the excitement for the subject was mine alone.

However, just when I least expected it, the seeds and the stories-- as if from some magical spring-- began to flow forth. Though I still do not fully understand the process by which it happened, I found myself taken from a role of ‘pulling’ to one of hastily being led by the hand. Just days after my inquiries concerning the presence of Karen seeds were met with blank stares and shakes of the head, I received word that Mo Paw had unexpectedly shown up to the garden plot with numerous bags of traditional seeds, excitedly asking when they could be planted. My only explanation for the mysterious apparition of the seeds and stories is, perhaps, that cultivating fertile soil is the necessary first step in the reception of such precocious cargo.

Findings

Register of Significant Karen Food Plants and Cultural Associations

"Food is particularly potent as a place-making practice because it links the land to the hearth and the hearth to the heart through the mediation of produce" -Ray (132)

a. Banana – different colors and sizes-- and type of ‘noodles’ made from banana tree, not eaten the way people in the United States would eat a
banana (raw/whole), used more in ‘making things’, many of these edible. However, here, the Karen families do eat bananas in ‘American fashion.’

b. Betel nut – chewed all throughout the day, some people smoke, turns teeth red, related to why ‘father is weak’, Mo Paw talks about how “mother, father say come back, eat bittle nut.”

c. Corn – known to the Karen in many colors and varieties

d. Cucumber – much loved and talked about, particularly high sentimental attachment, eaten with many things. Great ‘comforting connection’ between new and old environments. Important role as ‘anchoring’ factor between past memory and present environment.

e. Long bean – Karen variety can grow to be very long, around four feet in length

f. Jackfruit – found only in more ‘marginal spheres’ of the U.S. (immigrant markets, the Vietnamese store in Atlanta) demonstrates great importance of seeking out ‘fruit and memory’ in excitement/intentional activity of seeking out such hard to find elements of home.

g. Mango – 3 mango trees in back yard in Burma-produced much fruit - immense joy and excitement in recounting the bounty of Mango’s in Burma, and delight stemming from its status as something so rare and prized in the U.S., serves as a ‘bragging point’ for Burma.

h. Mint – Planted ‘in the margins’ in fields, also in home gardens, eaten with many meals and important component in dishes and flavoring. ‘Bridge plant’ with the American south.


j. Peanut – ‘bridge plant’ between Burma and U.S., used in certain Karen dishes

k. Pineapple – Also appreciated for its ‘prized’ status and recognition in the U.S.

l. Potato – Great variety in size and color

m. Pumpkin – leaves as well as flesh uses, pumpkin leaves used to make spicy, watery curry that is a ‘defining staple’ of Karen diet (this dish often eaten for breakfast)

n. Rice – ‘the sustainer’, eaten with almost every meal both ritual and every day, embodied motion of rice planting

o. Squash – grown on trellises, ‘whimsical’ shape of leaves, present in Mo Paw’s home garden

p. Tomato – somewhat similar to tomatoes found in the U.S., numerous varieties, numerous sizes and flavors (Mo Paw, 03 2012; Ta He, 03 2012)

“Sense of place is made up of the experiences, mostly fleeting and un-dramatic, repeated day after day and over the span of years. It is a unique blend of sights, sounds, and smells, a unique harmony of the natural and artificial rhythms such as times of sunrise and sunset, of work and play. The feel of a place is registered in one’s muscles and bones” (Tuan, ‘Space and place’; Van Noy, 183)

As briefly touched upon earlier in this paper, if physical aspects of environment are important in the construction of ‘landscapes of the interior’, so too are the daily rhythms of lived experience. This dimension of place is worth examining as it plays out in a transnational context. Critical to note is that, “The political and poetic have to be synthesized at the level of the everyday experience” (Seremetakis 14).

As described to me by some of the youngest member of the Karen families, “in Burma everybody works in the fields, every day, even the little kids!”

How might a reality where the day-to-day activity consists of farming alongside your brothers and sisters, father and mother and extended relatives stack up against a daily routine of going off before dawn to school or to work in a chicken plant (the Karen father’s place of employment), where the entire day is spent inside, removed from your family, from which you return home in the evening to a mountain of homework and the buzz of satellite TV, only to wake up the next morning and enact it all over again? Or, perhaps even starker to consider: How might a mother’s life of gardening, weaving, and rice milling centered firmly in the family/community round, translate to being home alone in a dark apartment for the better part of each day? Where is the ‘connection’ that allows past experience to make any sense out of this new reality? Ray, in “The
Migrant’s Table”, states, “To work the soil is to produce a place. The problem becomes how to produce a home in a land that is not yours” (Ray, 135). These are the factors to explore and consider when examining the way in the politics of the everyday, and the way in which embodied routine constitutes place.

“Home was where my parents lay buried and where the smells were the smells of home” (Rushdie, 1999:246; Ray, 142)

Through research activities with the Karen people it has become starkly apparent that landscape and gardening hold a strong association with family. Whenever I would begin an interview session, introducing the topic of nature or gardening, almost invariably the immediate response of Mo Paw would be to begin telling me of her mother and father, currently living in a refugee camp in Thailand. On numerous occasions, speaking with a quiet, heart-wrenching emotion, she told me of her elderly father, ‘the gardener’, who was now very old and growing sickly, such that now some days he did not feel well enough to garden. “Some days yes, some days no” she would explain, and it was understood that for this man to forgo gardening for even a day was a strong sign of aberration.

Whatever the exact association in the mind of Mo Paw, whenever I would bring up the topic of plants she would echo the same phrase, repeated each time with the same practiced cadence like, deep creases folded into sheets- “Mo-t hung, Fa- ther, in Thai-land, call…cry, cry, say Mo Paw come home, come home.” It could be simply the connection of her father’s affinity for plants and gardening, passed on to her, that links plants to family for Mo Paw, or it could be something more complex. In either case, the obvious association between the two highlights, on the most basic level, the ability of landscape to encode the lose threads of memory and emotion, wanting only for something solid to cling to.

Conclusion

“There is no escape from home and its flavors”
– Krashindath Ray (Ray 146)

“I think you don’t choose between the past and the present, you try to find the connections” - Wallace Stegner (Van Noy 162)

Perhaps if there is one seed of understanding to be taken away from this study of the Karen people and their transnational constructions of place, identity and perception, it is what I shall refer to as ‘the phenomenon of the unknown fruit’. This is the idea that plants and place have the means to serve as anchors of alternate reality. The Karen are caught between two distinct worlds, each one both physical and imagined. Like anyone caught in the precarious sphere of liminality, they are in search of some thread of continuity that might permit a nod of recognition from one to the other.

Especially for the children of the Karen, growing up utterly ‘between the cracks’ of two realities (that of the Karen and that of the American), not fully cemented in either, yet belonging to both, there is an intense desire for some shard mutual legitimization. I would argue that this long-sought ‘scrap of connection’ makes itself present in the flesh of the ‘unknown fruit’ – known to the Karen, unknown to the U.S, but also tangible.

Alas! There it finally is... the ‘unknown fruit’, ultimate proof of the existence and validity of that alternate universe, which has persisted for too long, solely at the realm of the interior. Like Seremetakis’ Rodathkino peach, the ‘missing fruit’, whose existence moved in the opposing direction, the ‘unknown fruit’ is a physical encapsulation and resurrection of cultural memory.

I am led to this belief, largely by the intense fervor with which the Karen, especially the children, introduced me to that which I did not know. Such enthusiasm, over a plant of all things, surely had to be telling in some deeper regard. Presentation of the cultural artifact of the unknown fruit was as if to say triumphantly to me and to themselves alike, “See, this U.S. world can’t be everything, because it doesn’t know long bean- but it exists, and it is tasty!”

The unknown fruit stands as a testament to unheard voice of the marginalized and misunderstood, that which wishes to cry, “I have regions of my interior that I can’t talk about, because you do not have words for them- but they are there none the less, and they burn in their silence.” When seen in this light, biodiversity which encapsulates memory can no more be trivialized as shallow and sentimental. It is, rather, a powerful icon and embodied experience that encodes, memory, identity, and alternant truth. Here, in this muddy terrain
of the transnational, the internal/external, real/imagined, present/past congeal and, in so doing, form an altogether new means of perception. This perception, as real as embodiment and ephemeral as memory, is woven from the silken hairs of the softest fruit.

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Individual Environmental Awareness and Urban Water Conservation in Kunming, China

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ABSTRACT. Although the majority of water use in China occurs in the countryside, the responsibility for water conservation flows from the urban population centers outward. This research employs surveys of urban residents in Kunming, Yunnan Province in order to illustrate the growing impact of China’s urban centers on water conservation. This study determines what contributes to effective environmental awareness and analyzes the relationship between an individual’s awareness and his or her in-home water conservation methods. The results show that first-hand environmental awareness is significantly more effective in encouraging conservation than is traditional environmental education. In addition, the survey reveals a pervasive lack of awareness in urban Kunming, with only 4 percent and 13 percent of respondents correctly identifying the price and source of their water, respectively. Only 59 percent of those surveyed believed they could have any influence in solving China’s water crisis—a statistic that must change in order to promote greater urban water conservation.

Introduction

For hundreds of years, the ability to control water in China was directly related to the Mandate of Heaven and the legitimacy of the ruling power. From massive flooding foreshadowing the overthrow of the dynasty to current Chinese President Hu Jintao’s South-North Water Diversion Project, the manipulation of water has been imperative to national success. Energy can be created, crops can be grown, and metals can be imported, but the management and conservation of water is a domestic challenge with few foreseeable solutions. The scarcity of water in China poses serious national and international ramifications; increasingly wealthy residents of Chinese cities such as Kunming must play an important role in resolving this widespread challenge. A greater level of first-hand environmental awareness and a deeper understanding of long-term environmental consequences are vitally important to a lasting resolution of China’s water crisis.

The Context in Yunnan Province

Though the ideas of “huan bao” (environmental protection) and “fei zhengfu zuzhi” (nongovernmental organization, NGO) were unheard of in Yunnan just twenty years ago [1], the province is now home to the most influential and greatest number of environmental NGOs in the country, including many focusing exclusively on water conservation [2]. This budding green movement came into full bloom when President Jiang Zemin designated ecological construction and environmental protection as one of the five pillars of the “Go West” campaign to start in 1999 [1]. With the approval1 of the government, new environmental NGOs quickly formed throughout western China, particularly in Yunnan Province.

While part of Yunnan’s environmental distinction is the result of a genuine desire to protect the environment, it is also due to the new2 development of eco-tourism and the commercialization of ethnic minority culture [4]. These two industries are unique to Yunnan, home to the greatest variety of ethnic minorities and some of China’s most impressive natural settings, including China’s Shangri-La3. With both a history of and economic reliance on environmental protection, Yunnan is an exception to the rule of most Chinese provinces.

Despite its abundant water supply from three of China’s most important rivers, in 2010 Yunnan province suffered southwest China’s worst drought in more than sixty years [5]. As a result, the need for water conservation is fresh in the minds of government officials, NGOs, and citizens alike, creating an ideal context in which to analyze this issue.

The National Perspective

1 And in some cases, in cooperation with the government; see [3] for an examination of the role of government-organized non-governmental organizations (GONGOs) in Yunnan Province.
2 This industry emerged in earnest during the latter half of the 1990s. See [4].
3 Formerly Zhongdian, the town’s name was changed to attract more tourists.
Although the majority of China’s water usage occurs in rural areas, water conservation first requires the commitment of the urban population. The scarcity of water in Chinese cities is no longer a projected possibility, but rather an immediate threat. As the demand for water increases, “China is facing major water shortages in 500 of its 700 major cities, aquifers are running dry, and cropland is turning to desert” [6, p. 13]. The water conservation movement must include urban areas, where more than half of the population will live by 2015 [7].

The extent of China’s water problems stretch far beyond the issue of surface water scarcity. Water pollution is pervasive and threatens the way of life for millions of people. As a result of surface water pollution, residents of cities are forced to rely on rapidly diminishing groundwater as their only source of water. Farmers who once used shovels to construct wells now must dig wells which “extend more than half a mile before they reach fresh water” [8]. Feeding the surface waters are China’s mountain glaciers, which have lost significant water volume as a result of global warming: “Since the 1980s, the country’s glaciers have lost nearly 587 billion cubic meters of water capacity, comparable to 10 times the annual runoff from the Yangtze River” [9]. Perhaps the most serious problem is the harm to agriculture as a result of drought and desertification. These threats, though not clearly visible to urban residents, make conserving water even more imperative.

Another reason to focus on the urban residents of China is the disparity between observations of one’s surrounding environment. The personal experience of a farmer differs greatly from that of a middle class, urban citizen. Eighty-two percent of rural residents believed the nation’s environmental problems were “serious” or “very serious” and only 3.5 percent were unsure whether the problems were serious or not [10, pp. 47-48]. On the other hand, only 54.1 percent of urban residents believed environmental problems were “serious” or “very serious,” with 17.1 percent of respondents indicating they were not sure [p. 47]. In rural areas, residents see the severity of environmental problems, but they are unaware of how to respond and have no means to take action because of more directly pressing matters. In urban areas, residents have a higher level of general education and average income, but they have not personally observed the dramatic changes that rural residents have experienced. Urban residents, therefore, do not think environmental problems are as serious. One might assume that, as rural migrants travel to the cities, they bring their first-hand environmental experiences with them. However, the majority of those migrating to the cities are youth who have not spent an extended period of time in the countryside observing environmental change. In addition, migrant workers face economic conditions that do not allow for conservation. By focusing on improving conservation in urban areas where the scope of problems is not as clear, China will be more successful in solving its water crisis.

A survey of urban residents conducted by the author in Kunming, Yunnan Province reflects the importance of first-hand observation in understanding environmental problems. Respondents of various ages, levels of education, and incomes were asked to evaluate the severity of water pollution and desertification by completing two statements with the responses “very serious,” “somewhat serious,” “not serious,” or “I do not know.” The majority (92 percent) of Kunming residents believed water pollution was “very serious” or “somewhat serious.” Though a majority of respondents did believe desertification was “very serious” or “somewhat serious,” 13 percent were unsure about the issue. Though not apparent in most cities, desertification is a serious problem in China, affecting more than 400 million people in an area which covers more than 33 percent of the nation [9]. The survey response is not a matter of education—urban residents in geography class have studied the meaning of the term “desertification”—but rather an issue of impact in one’s own life. Though approximately 30 percent of China’s population experiences the effects of desertification daily [9], for most urban residents in Kunming, it is a phenomenon to which they cannot relate.

### Education

Improving the Chinese environment is contingent upon enhancing public education of the long-term impact of environmental crises. The urban-rural

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4 N = 63
5 In a survey of 45 third-year middle school students conducted by the author, 44 were able to correctly explain the term “desertification,” including the key notion that what was once arable land has begun the process of becoming desert.
divide is clarified when examining the disparity in education. More than 90 percent of rural residents believe their environmental knowledge is “very little” or “relatively little,” compared to 78 percent for urban residents [10, p. 48]. Lee [10] highlights the clear difference in education: “Only 8.7 percent of urban residents admitted that they had never heard of the problem of global warming, whereas 44.1 percent of their rural counterparts stated that they were ignorant of such an issue” [p. 48]. In rural areas, people are observing phenomena but don’t understand what is occurring or how to respond, primarily due to inadequate education. On the other hand, people in urban areas are generally familiar with the definitions of phenomena associated with global warming. They do not respond, however, because their lack of first-hand observation keeps them unaware of the importance of the problem. Although education based on accurate information may be difficult to achieve, environmental education which focuses on long-term ramifications and individual impact is the only way people will be accountable for themselves and for others.

Level of general education and degree of environmental knowledge were both topics of inquiry in the Kunming resident survey. To determine the extent of one’s environmental knowledge, respondents were asked whether or not they knew the price and source of their water, if they were familiar with various conservation projects, if they believed Kunming faced a drought last year, whether or not China faces a national water shortage, and whether or not meat consumption is related to water use. The more correct the responses were, the greater the extent of one’s environmental knowledge.

The lack of a strong correlation⁶ between level of education and the extent of one’s environmental knowledge suggests that one’s effective environmental awareness is based primarily on first-hand experiences, rather than on information acquired from textbooks. This theory is further supported by analyzing one’s source of information. The survey asked how one’s environmental knowledge was acquired—from their own research, speaking to their friends, or government programming. Ninety three percent of respondents claimed some of their knowledge was self-acquired, 59 percent said they had received some information from the government, and 17 percent said their friends had discussed environmental conservation with them. Noting that 92 percent of respondents rely on their own familiarity with environmental issues (38 percent rely solely on their observation) and the lack of a positive correlation between level of school completed and environmental knowledge, it is likely that one’s own experiences lead to greater environmental awareness than information acquired in school.

Very few residents were aware of the two primary questions regarding the price and source of their water. Only 4 percent of respondents were able to correctly identify the price of their water: 3.45 Yuan per cubic meter [11, p. 70]. The source of Kunming’s water, Song Hua Ba, was correctly identified by only 13 percent of respondents. Perhaps most indicative of a lack of environmental awareness amongst the Kunming population, three residents⁷ believed their water source is Dian Chi Lake. However, “Dianchi ha[s] water rated Grade V, the most degraded level, rendering it unfit for [any human consumption, including] industrial or agricultural use” [8]. Responsible water use in urban China is contingent upon an understanding of at least the most basic of water-related information.

Although very few respondents were aware of the price and source of their water, the majority (87 percent) knew that Kunming faced a serious drought in 2010 and all respondents except for one believed China faced a water shortage. However, there was less awareness of government projects. Only 13 percent of residents surveyed were aware of the Yunnan Nu Jiang River Project, and 68 percent were familiar with the national South-North Water Transfer Project. When completed, the Nu Jiang River Project will create 13 dams and generate 12 times the hydroelectric output of the Three Gorges Dam [12]. Despite its significant impact on Yunnan Province, public awareness—in part due to the nature of the project—is quite limited. The South-North Water Transfer Project is more familiar to respondents, since its progress and importance is more frequently highlighted by the media. The evidence

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⁶ R²=0.08

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⁷ It is worth noting that these three Kunming residents all received comparatively high levels of education: one a high school graduate (age 25), one with an undergraduate degree (age 24), and one with a graduate degree (age 24). This further enforces the theory that formal education does not necessarily increase one’s environmental awareness.
provided by the survey further supports the theory that Kunming residents are most familiar with and most likely to act upon information that has a clear, direct impact on their own lives.

**Economics**

China’s recent economic development and the growing middle class have changed the nature of water use in urban areas, where demand for water is expected to increase by 85 percent before 2050 [6, pp. 5-7]. The higher economic status of millions of Chinese results in greater demand for animal products such as meat, eggs, and milk, which leads to growth in the animal husbandry industry. The need to raise more animals requires more grain for which farmers need more water [pp. 10-11]. While this leads to a faster rate of water depletion, it also allows for new means of conservation, such as consuming fewer animal products. As the price of water and high-water-use products increases, citizens must decide to what extent they are willing to pay for the convenience of not conserving water. For those who do save water, it is important to determine if their conservation practices are based on the desire to protect the environment, save money, or both.

Respondents were very unfamiliar with the relationship between meat consumption and water conservation. While 57 percent believed some relationship existed, only 8 percent of respondents correctly identified the relationship between increased consumption and increased water use. However, those who were aware that some relationship existed, including those who properly identified that relationship, did not eat meat fewer days than those who believed no relationship existed. This lack of correlation suggests a minimal level of awareness regarding the importance of conserving water by eating fewer animal products.

Although the data collected did not reflect a strong direct correlation between salary and the number of days per week meat is consumed, there was some correlation between one’s opinion of the price of meat and how often he or she consumed meat. Those who felt meat is very inexpensive ate meat, on average, 7 days per week while those who believed meat is expensive ate meat, on average, 4 days per week. This discovery, along with the lack of correlation between understanding the meat-water relationship and the days per week one eats meat, further supports the theory that Kunming residents are acting based on what directly impacts their life, not abstract textbook-acquired knowledge. One’s own perception regarding the price of meat was more likely to have an effect on conservation than understanding the environmental relationship between water and meat.⁸

The relationship between salary and one’s purpose for conserving water was not clearly identified by the data. However, those who indicated they believed the prices for water were expensive were more likely to rank saving money as more important than protecting the environment. Of those who said water was expensive, 69 percent said saving money was more important than protecting the environment, while of those who thought water was neither expensive nor inexpensive, only 37 percent said saving money was more important than protecting the environment. This data further emphasizes the need to find ways to show how environmental change personally affects one’s life. One’s personal thoughts regarding his or her environment are a greater indicator of conservation than is one’s general knowledge.

**Household Conservation Methods**

The means of combating the problem of water scarcity lie in the home with individual Chinese people. In the survey of Kunming urban residents, respondents could choose from six options and could also write in additional methods in a seventh “other” option. Those six options include: saving cold water that comes out of the shower when initially turned on, saving water by taking shorter showers (less than five minutes), turning water off and on while showering (just using water when necessary), using recycled water to flush the toilet, recycling washing machine water, and recycling water used to wash vegetables. The results from the survey show a wide range of people employing various forms of household water conservation, with using recycled water to flush the toilet the most common form of conservation.

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⁸ I.e. respondents who understood the relationship between meat and water but thought meat was inexpensive ate meat 7 days per week. Those who thought there was no relationship but believed meat was expensive ate meat, on average, 4 days per week.
The survey does show a limited positive correlation\(^9\) between one’s environmental knowledge and the number of different household conservation methods employed. However, no such correlation existed between number of household methods used and salary, age, or level of education. The high levels of Kunming residents that employ water conservation methods may be due, in part, to last year’s drought. In addition, as a result of the presence of NGOs and importance of ecotourism in Yunnan Province, Kunming residents may have higher levels of environmental awareness than residents of other cities.

The importance of an individual’s actions should not be minimized. When asked in the survey whether they believed they could individually make an impact in resolving China’s water crisis, only 59 percent of respondents believed they could. Though a single individual may not have an extremely large influence, with the forces of collective action across a population of 1.4 billion people, great change can take place if people are willing to modify their lifestyles. Even something as simple as using recycled water to flush the toilet, according to [6], can make a significant impact: “A typical Chinese family of five uses 150,000 liters of water per year to flush away human wastes using a conventional water toilet” [p. 15]. If people believe their actions are not important, they will not conserve water for the sole purpose of protecting the environment. Of those who believed their actions would not have any impact, 68 percent indicated that the reason they conserved water was to save money, not to protect the environment.

Conclusion

As the Chinese urban population grows and the standard of living improves, the demand for water will increase unless society takes action now. The conservation practices of urban residents are contingent upon increased awareness of the long-term effects of China’s environmental crises. Water conservation efforts must focus on urban centers where citizens have limited individual environmental awareness. By doing so, a more serious water shortage crisis can be averted.

\(^9\) R\(^2\)=.30 after removal of 2 outliers (those without in-home water conservation methods).

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Social Media's Effect on the Arab Spring Revolutions

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ABSTRACT. Social media has opened up a new realm of journalism, which has been particularly important for the countries of the Arab Spring revolutions. In this study, the government overthrows in Egypt, Libya, and Syria were examined to determine whether these events occurred before the three countries were ready to implement a more democratic form of government. “Democracy” is defined by the presence of three factors: a strong leader, free elections, and an independent media in which citizens can freely exchange ideas. I hypothesize that if the countries were not ready, social media would spur protesters to action, but the resulting revolution would be messy and not have a clear outcome. If the countries were ready, however, I posit that the revolutions would happen quickly, the government would be ousted smoothly, and the outcome would be clear. I reviewed newspaper articles from several local and international sources and classified them in various ways to produce empirical data. Because the outcomes of the Arab Spring revolutions are still unclear and no obvious leaders have emerged, I concluded that the implementation of social media may have caused the Arab Spring revolutions to happen before Egypt, Libya, and Syria were ready to receive democracy, because the outcome in all three is still unclear and no obvious leaders have emerged.

Over the course of 2011, the world watched the upheaval of several Middle Eastern and African countries as citizens banded together and demanded the overthrow of their corrupt government leaders. In a series of peaceful demonstrations that often turned violent, thousands of revolutionaries gathered to protest the unjust government. Some scholars labeled the Arab Spring revolutions “Twitterized,” intimating that the protests were coordinated on the popular social media website, Twitter (Al-Atraqchi, 2011). There has been a great deal of speculation about the effect social media had on these revolutions, and speculators wonder: Did social media cause the uprisings? No, something as simple as the introduction of new websites could not cause a revolution in and of itself (“Tweeting Towards Freedom?”, 2011). These uprisings were a long time coming, as citizens in these countries were deprived of basic human rights and freedoms for decades; the pressure of the citizens to revolt had been steadily building. The questions that remain are when and how, and those questions will hopefully be answered through this evaluation of social media. This study will examine whether the introduction of social media caused the civilian uprisings in Egypt, Libya, and Syria to happen before those countries were prepared to receive a more democratic form of government. In other words, did these revolutions have a chance to be successful? Were the right pieces of the puzzle in place before the government overthrows occurred?

This study includes an evaluation of newspaper articles regarding the use of social media in the Arab Spring revolutions in Egypt, Libya, and Syria. Articles from several international and local sources were compared to determine whether social media caused the uprisings to occur before the societies were prepared. Egypt, Libya, and Syria are included in this study because they exhibit similar characteristics: use of social media, control by oppressive regimes, low Freedom House rankings, and tumultuous histories in which power has changed hands several times in the past century. The methodology of the study is explained in greater detail after the literature review.

Undeniably, social media plays a huge role in today's society, and its importance only continues to swell (Hind, 2011). It is therefore vital that we examine the effects, capabilities, and dangers of this new outlet. In the case of the Arab Spring revolutions, protesters used the tools of social media to organize a coup d’état. This development sounds positive considering the oppressiveness of the old regime; however, there are negative aspects to this new internet activism that may not be apparent at first glance. For example, governments have been able to trace the users of websites such as Facebook and Twitter, causing many social media activists to flee their home countries and cut off ties to their family members for fear of implicating them (Stack, 2011). This is a real topic that may have life-changing consequences for real people, and that is why it is crucial that research be done. To further illustrate why these people are in desperate need of government change, the following paragraphs briefly describe the histories of Egypt, Libya, and Syria.
Gamal Abdul Nasser became the President of Egypt in 1954 after the rebel army overthrew the monarchy in 1952. He promoted Egyptian nationalism using a Cairo radio station, but he really won the hearts of his countrymen and other Arabs during the Suez Crisis, during which he showed adroit leadership and abolished the last traces of English imperialism. After the formation of the United Arab Republic with Syria in 1958, the country began to encounter serious problems. Egypt’s embarrassing defeat in the Six Day War against Israel compelled Nasser to resign, and he died of a heart attack in 1970. He is still regarded as a hero of the Arab world and the voice of Egyptian nationalism (Scott-Baumann, 2010).

Anwar Sadat, Nasser’s vice president, succeeded him. During his presidency, the Aswan High Dam was completed, the Suez Canal was reopened, Egypt and Syria fought with Israel again, the Treaty of Friendship with Russia was ended, and Israel gave the Sinai Peninsula back to Egypt in a treaty that made the other Arab countries shun Egypt. In 1981, Jihadists assassinated Sadat, who was succeeded by Hosni Mubarak (Egypt Timeline, 2011).

Since the mid-nineties, Mubarak has been met with a good deal of opposition, including an assassination attempt. He promised constitutional reform, of which his opponents were skeptical. In March 2007, an overwhelming percentage of voters approved the constitutional changes, but there were arguments that the poll was rigged. Throughout Mubarak’s presidency, Egypt was plagued by terrorist attacks and arrests of leaders of opposition groups (Egypt Timeline, 2011).

The history of Libya is certainly brief, since it was not recognized as a nation until the mid-twentieth century, but it has been plagued by war and conflict since its beginning. Like many of the Arab countries, Libya was controlled by the Ottoman Empire until the Italians invaded it in 1911. The Allied Forces captured the small nation during World War II and controlled it until the UN granted its independence in 1951 under a monarchy (Hanley, 2001).

In the late sixties, an army captain led a successful coup d’état of the King and then promoted himself to colonel. He “proclaimed a Libyan Arab Republic, based on ‘freedom’, ‘socialism’ and, that rare trait in Libyan history, ‘unity’” (Robinson, 2011). After Qaddafi became the leader, Libya was involved in several conflicts with several nations. The United States cut all diplomatic ties to the country in 1972 and proceeded to advocate embargoes and military attacks against the country. During Reagan’s presidency, the United States coordinated “Libya's Pearl Harbor,” in which the military launched a surprise attack in at night in an attempt to kill Qaddafi. Instead, they accidentally killed his adopted daughter. “U.S. President Ronald Reagan justified the attack as being in self-defense” to prevent any more terrorist attacks on American citizens abroad, “and as a 'swift and effective retribution' for the West Berlin discotheque bombing,” which Libya had been blamed for in the previous year (Hanley, 2001). The UN forbade Libya from performing any sort of trade and froze its foreign assets after the Pan Am Lockerbie explosion, which severely hurt the country's infrastructure. These sanctions were in place for almost ten years until they were lifted in 2000 (Hanley, 2001).

Like Libya and Egypt, Syria was under the control of the Ottomans until the early 19th century; it was then occupied by the French (and, for a short time, the British) until the country’s nationalist groups gained control in 1946. The independent Syrian republic was met with great economic achievements at first, but civilian-oriented coups beginning in 1949 led to an eventual seizure of power by an army colonel, Adib Shishakli. He was in power for about three years when he too was deposed. Egypt and Syria merged to create the Arab Republic in the late 1950s, but it was short-lived. Syria seceded in 1961, marking the start of a ten-year political upheaval. In 1970, Minister of Defense Hafiz al-Asad assumed power, and he worked quickly to set up a functional government system. The new constitution went into effect in 1972 and was well-received. The government mimicked the democratic form in that it has three branches, but Hafiz had absolute control, and the socialistic Ba’ath party controlled all three branches. Hafiz remained in power until 2000 when he died, and his son Bashar took over (Syrian Arab Republic, 2003). The citizens of Syria currently possess no power to change their government in any way; they can elect parliament members, but these representatives are incapable of bringing about reform. The other six other political parties, but they exist only as a façade. The Ba’ath party is the only resonant voice in the government, and any opposition is illegal.
Since the beginning of his term, Bashar al-Assad has had poor relations with the United States; he also did not support President Bush's invasion of Iraq after the World Trade Center attacks. Internally, Bashar did not live up to the reputable name that his father had established during his rule (Lesch, 75). Eventually he rallied his countrymen under him, after some reshuffling of his cabinet and the Bush doctrine's failure in Iraq. He was re-elected in 2007 (Lesch, 76).

Examination of the history of the three countries reveals several patterns. In just the past century, all three countries have experienced civilian-led government upheavals and have seen power change hands repeatedly. Often, the leader was not an elected official, but rather someone who took the liberty of promoting himself after a coup had ousted the previous power holder. For a democracy to function properly, “there [must be] open political competition, a climate of respect for civil liberties, significant independent civic life, and independent media” (Puddington, p. 3, 2011). While these countries claim to be democratic in structure, they are really faux-democracies because only one party or ruler actually controls the government. Having six political parties is completely ineffective if it is illegal to oppose the ruling party. Surely that is not democracy. There must be a fair and unbiased court system, which these countries do not have. The combination of a history of turmoil, a faux-democracy, and the lack of unbiased court systems has made the conditions for revolution ripe in Syria, Libya, and Egypt.

The lack of a free and independent media, as in one that is not influenced by the state, is also a recurring trend in all three of the focus countries. In his book, *When Media Goes to War*, Anthony DiMaggio examines media output through a combination of empirics and prose analyses, and he concludes that America's journalists tend to report in accordance with the nationalistic opinion and neglect the public opinion. In the United States, journalists are rewarded for reporting popular opinion, whereas in Britain, journalists tend to think more independently, which DiMaggio explains in the opening chapters. The effect of this phenomenon is that all reporting is similar, and the citizens are left with a lack of dissenting opinions, which in turn does not encourage independent thought. During a time of war, Americans pay special attention to “mass media and political propaganda” because “depictions of dire threats to national security... create an environment that is supportive of military intervention” (DiMaggio, 2010, p. 262). DiMaggio also evaluates the Chomsky and Herman Propaganda Model (CHPM), which, among other things, posits that the media's reporting does not always coincide with the opinions of experts. For example, while experts had determined that Iran was actually not capable of a nuclear war, mass media continued to report that it was. This kind of reporting is frightening because a democracy cannot function without access to information. In *The Elements of Journalism*, Kovach and Rosenstiel define journalism and its societal role in several ways. In their words, “Journalism's first loyalty is to its citizens” (2007, p. 52). It should serve as a watchdog for democratic society, providing clear and accurate information so that people are informed and have the ability to govern themselves (Kovach and Rosenstiel 2007, p. 52). For these reasons, the absence of such a media outlet in Egypt, Libya, or Syria puts them at risk for corruption. Social media websites have allowed citizen journalists to fill this void.

Malcolm Gladwell puts an interesting spin on social epidemics in his book *The Tipping Point*. His theory suggests that there are three rules controlling whether something “tips,” or explodes into widespread popularity. His theories can be applied to the huge increase in the use of social media tools in recent years. The first rule, The Law of the Few, stipulates there are special kinds of people that significantly impact an object’s popularity level. Mavens, who are “information specialists,” have a knack for connecting people with new information and exhibit a guttural drive to solve problems. These Mavens are the people who utilize social media to organize protests. Connectors are social, outgoing people who possess an uncanny ability for meeting and remembering others and bridging gaps between different groups. Salespeople are charismatic, persuasive people who make others want to agree with them. Social media--fueled uprisings cannot happen without these people, and the combination of all three personalities in a team setting is a situation ripe for creating a social epidemic.

Gladwell’s second rule is referred to as The Law of Stickiness. In other words, the social epidemic “product” must have some sort of unique, exceptionally appealing quality that makes consumers crave it. Gladwell cites Sesame Street as an example. This
children's television show had an overwhelming and positive response because it emphasized education along with entertainment, which was a novel concept at the time. Social media websites are sticky because people are curious, and they are especially curious about other people. Status updates, pictures, and check-ins all enable users to know what is happening in the lives of their "friends."

The third rule, The Power of Context, is vital because even if the first two rules have been accomplished, the product will fail if the market is not well-suited for it. The time and place that a product is released on the market are crucial to its success. Gladwell cites the decreasing crime rates in New York as an example of this rule. The zero-tolerance policy, which forced police officers to deal with previously neglected minor crimes such as vandalism, resulted in lower numbers of violent crimes across the city. Egypt, Libya, and Syria were the perfect markets for social media because all three lacked a free and independent media, and social media sites allowed citizens to become the much-needed journalists in their countries.

The Tipping Point outlines a very specific pattern that all social epidemics seem to follow. Gladwell's over-arching spectrum of examples are supported with scientific studies, and his theories are generally well respected in the scientific community. They explain why social media has been so significant in the Arab Spring revolutions this year.

So what prerequisites must exist before a democratic society can be established? And do Egypt, Libya, and Syria possess these prerequisites making them eligible to establish a democracy? Aspects which will be analyzed include: the judiciary system, a strong leader (or party) that represents the voice of the people, and a free press. If the countries of interest do in fact possess these initial requirements, I would hypothesize that the introduction of social media would contribute in spurring a successful and organized civil revolution that produced a clear outcome. If they do not possess the necessary factors, I would hypothesize that the revolutions brought on by the introduction of social media would be unorganized and have an unclear outcome. To evaluate these factors, articles from the Al Jazeera news network and newspaper articles from the focus countries will be examined and compared with the International Herald Tribune. The time frame for the analysis is January 1st to August 31st of 2011, because most of the Arab Spring revolts occurred during this time. Egypt's movement began on January 25th, Libya's on February 25th, and Syria's on March 15th. Ending the analysis in August coincides with the resignation of Libya's dictator, Qaddafi, on August 23rd. Egypt's president, Mubarak, stepped down in February, and Syria's ruling party has yet to resign. The next portion of the analysis will demonstrate social media's role in the uprisings and how it contributed to the onset of the movements.

To analyze the current state of citizen freedom in the respective countries, scores from an organization called Freedom House will be employed. Freedom House produces a yearly rating for each country on the basis of political rights and civil liberties. The country is scored on a scale ranging from one to seven, where a high score represents less political and civil freedom. The ratings are derived from such determinants as citizens' ability to participate in legitimate elections, the existence of accountable government representatives, and freedoms of expression and belief. I will use the Freedom House scores as the determinant of the variables for leaders, court systems, and free press.

Not only were all three focus countries declared "Not Free" on the basis of their scores, but Libya was one of only nine countries "that had been given the survey's lowest possible rating [of seven] for both their political freedoms and civil liberties" (Puddington, 2011, p. 4). Syria did not fare much better; it scored a seven for political freedom and a six for civil liberties, one of only ten countries with those rankings (Puddington, 2011, p. 4). Egypt ranked slightly higher than its Arab counterparts, scoring a six for political freedoms and a five for civil liberties.

Egypt's election in 2005 was not without flaws, but it was the fairest example the country had seen in decades. "The result was a major breakthrough for the forces arrayed against the entrenched ruling group around President Hosni Mubarak. Furthermore, developments in Egypt were hailed as a sign of broad change coming to the Middle East's long-stagnant political environment" (Puddington, 2011, p. 5). However, trends in policy since then have reflected a general decreasing of freedoms, but they were not significant enough to impact the scores from the previous year. The election in 2010, which succeeded in
reinstating Hosni Mubarak, reflected an outrageous percentage of votes in his favor (95%), a result likely embellished. More specifically, the restrictions on opposition candidates for the parliamentary election in 2010 combined with the “widespread crackdown on the media that resulted in increased self-censorship” created the trend moving away from freedom (Puddington, 2011, p. 20). Egypt’s population is almost 83 million, and of those about 71% are literate. The unemployment rate was 9.4% in 2009; the poverty rate, 20% (CIA World Factbook: Egypt, 2011).

Compared to the earlier part of the decade, both Syria and Egypt have experienced decreases in freedom in the last five years. Libya has remained the same; its scores are consistently as low as possible. Libya also ranked 146/178 on Transparency International’s 2010 Corruption Perceptions Index. The government’s democratic structure is a façade. “It is illegal for any political group to oppose the principles of the 1969 revolution,” which represents the year that Qaddafi came into power (Libya Country Reports, 2011, p. 3). There is no freedom of assembly, and many opposition groups rally outside of the country’s borders. Internet providers are controlled by the government, and online independent news sources are banned. Libya’s government also took control of the one independently owned newspaper in the country in 2010, and subsequently arrested twenty of their journalists in November of the same year. Women are technically men’s equals, but there are biased laws concerning marriage, divorce, and inheritance. “Women who have been cast out by their families are particularly vulnerable in Libya. The government considers such women wayward and can hold them indefinitely in ‘social rehabilitation’ facilities, which are de facto prisons” (Libya Country Reports, 2011, p. 3). Libya has a population of about seven million and an 82% literacy rate; it has an unemployment rate around 30%, which corresponds to the approximate number living at or above the poverty line (CIA World Factbook: Libya, 2011).

Much like Libya, Syria also has a government which imitates a democracy, but in truth the Ba’ath party controls all aspects of the government, and it is against the law to oppose them. Additionally, Syria also has no forms of independent media; radio, newspapers, and the internet are state-owned and closely vetted. “In June [2010], authorities arrested a blogger who wrote on a popular independent site for Syrian news and analysis” (Syria Country Reports, 2011, p. 3). The scarcity of internet access is attributed to high costs rather than government control. Satellite dishes are accessible, however, so some Syrians have access to international broadcasts. Both Libya and Syria restrict academic freedoms, although there are some private universities in the latter. Women have fewer rights in Syria than men do, and violence against women is common. Homosexual activity was previously tolerated when done privately, but by July 2010, twenty-five gay men had been arrested (Syria Country Reports, 2011, p. 5). Syria has a population of 22 million and a 79% literacy rate. There is an unemployment rate of 8.5%, and about 11% live below the poverty line (CIA World Factbook: Syria, 2011).

Three trends that seem to reappear in all three focus countries are: a faux democracy in which one person or party possesses all power, an inability to speak out against the government (since the government controls all media sources and bans free assembly), and few civil liberties, especially for minority groups. Based on these facts, Egypt, Libya, and Syria do not appear to be ready to receive a democracy, and any revolutions would be messy with unclear outcomes. To evaluate this hypothesis, I examined newspaper articles from the previously described sources.

For this portion of the analysis, I looked at forty-two articles including ten from Al Jazeera, ten from the International Herald Tribune, eighteen from The Daily New Egypt, three from Syria Today, and one from The Tripoli Post. To locate these articles, I typed “social media and uprising” in the websites’ search engines. All of these articles except five were written from January 2011 to August 2011. To organize the analysis, the articles were classified based on length, article location (front page, lead, or buried), and tone (positive, negative, or neutral). The longest article was nine pages and the shortest was half a page; most ranged from one to two pages. The large majority of the articles’ placements were undeterminable because they were obtained from online sources that did not specify their location in the print edition (or a print edition did not exist). Of the articles classified, five were buried, one was on the front page, and one was lead. Seven were classified as negatively portraying social media, six were positive and
twenty-eight were neutral. One was not classified because it reported citizens' opinions. Eleven of the forty-two articles, 26%, discussed the citizens' frustration in not knowing where to turn to obtain accurate information for news and how social media was helping to fill that gap. Nine articles, 21%, dealt with the danger of tracking activists through social media websites. None of the articles named an individual who stuck out as a leader in any of the three countries, and one article named the Muslim Brotherhood as a leading party in Egypt.

Almost one-fourth of the articles reviewed discussed the inability of the citizens to turn to a reliable news source for information. This reflects the nations' biggest problem. *Syria Today* journalist Julia Wickham writes,

"Expatriates interviewed by *Syria Today* expressed frustration over the difficulty in accessing accurate information about Syria. They said they turn to a variety of media in order to get the fullest picture possible of what is happening, and they turn to resources as disparate as Arabic and international news channels, online news networks and social media such as Facebook and blogs" (2011).

People naturally crave information, and when they cannot get it, there cannot be democracy. Since the revolution, "the feeling of free expression has soared from 25% to 88%" (Elkhair, 2011). This huge surge in opinion represents what the introduction of social media websites has done for these countries. It has given the people an outlet for freedom of assembly, and in that sense social media is merely a tool, not a catalyst, for revolution.

Another hefty portion of my articles dealt with the dangers of social media websites, as they can be used to track the cyber-activists who use them. In particular, Facebook's policy against registering under a pseudonym has proven troublesome. Activists reported instances of logging into Facebook and discovering that the names they were using had been changed to the ones on their birth certificates. The government could now locate and arrest them; they were forced to flee the country and work outside of its borders, cutting off all contact with family to avoid implicating them. Activist Jamil Saeb had to flee Syria and "his family knows nothing about his media activism or his current location … It is safer for them that way" (Stack, 2011). Many appeals to Facebook to modify this policy have been made but the popular website has thus far refused, maintaining that "demanding real names from users makes for a safer environment" (York, April 2011).

The fact that not one of the articles included in the study could name a leader of the revolution is very telling about the condition of the uprisings. The only leaders named were some of the popular cyber-activists whose blogs or status updates were widely read during the early months of this year. There is a huge discrepancy between the cyber world and real political activism, though; simply because someone is a popular blogger does not make him or her a contender for a political party leader or government office holder. Online political participation is not the same thing as voting. Malcolm Gladwell, author of *The Tipping Point*, says,

"Sure, these online tools, Facebook in particular, can increase participation in social movements—if you can call a single click of the mouse participation … What social media are not good at, is providing the discipline, strategy, hierarchy, and strong social bonds that successful movements require" (Tweeting Toward Freedom?, 2011).

The absence of leaders makes the uprisings chaotic and confusing, which is reflected in the standstill they seem to have reached. Citizens in Egypt are frustrated by the protests' continuation and the lack of any real, physical change in the grand state of the nation. "The [citizens'] complaint[s] over the continuing disruption of daily life reflects a growing frustration amid the optimism that was the soundtrack for Egypt's revolution since the ouster of former President Hosni Mubarak in February" (El-Tablawy, 2011). In Libya, there are so many rebel groups that they often clash with each other, losing sight of their original goal. Syria is experiencing similar problems as a full-blown civil war threatens to erupt at any moment. No real progress can be made until a leader emerges because their goals are unorganized, and even social media tools cannot coordinate change on that scale.

One problem with my research is that it may be more relevant to the events in Egypt alone and less focused on the events in Syria and Libya. Egypt is more modernized than the other two countries in many ways.
Although limited, free media sources actually exist in Egypt; they do not in the other two countries. The local news source that was used for Egypt, *The Daily News Egypt*, advertises itself as the only “independent English-language daily” news source. It was almost impossible to find a local source for Libya published in English with search engine capabilities. One that I eventually discovered, *The Tripoli Post*, had very few relevant, usable articles based on the constraints of the study. Also, the search engines on Al Jazeera’s website were not working properly when this research was conducted, so there may be more articles there that are relevant to the study. However, time constraints made it impossible to comb through the website any more thoroughly than I already did. Another area of research that may be biased is the “positive, negative, and neutral” article classification. The determination was based on whether I thought the story put a positive or negative spin on the use of social media, but my opinions may differ from others’. I was working alone, so no research partners were present to agree or disagree with my classifications.

As the conflicts in Africa and the Middle East continue to rage on, social media’s role in the Arab Springs revolutions will make itself more clear. As of now, the uprisings are far from over, which was another troublesome aspect of my research. It will be interesting to see what kind of internet liberties the citizens in these three countries will be given as they attempt to redraw their constitutions. At that point, more research should be done on the capabilities of social media websites versus more traditional media sources. Ideally there will be more access to information in Libya and Syria. Also, it would be interesting to study actual newspapers, as opposed to the online editions that I used, because often the article’s location in the printed version was not listed. Studying article placement would allude to how relevant social media is in these countries. For example, one might conduct a study comparing international newspapers’ allocation to social media versus that of the local newspapers. The result could be very telling as to how much value other journalists place on the value of social media and cyber-journalism.

REFERENCES


