My initial exposure to research at USC Upstate ignited an interest in solving problems using scientific methods that I still have today. I am certain that these experiences helped strengthen me as a scientist by giving the proper foundation for performing tasks in a laboratory.

**Dr. Jason Clark**
Research Chemist
USC Upstate Alum, Class of 2000
# Table of Contents

The Stäubli Corporation, Sponsor of this Journal ................................................................. iii
Message from the Editorial Board .......................................................................................... iv
The Editorial Board ................................................................................................................. v
USC Upstate Alumni Researchers ......................................................................................... vi
Honors Student Spotlight ...................................................................................................... vii
Grant Writing: Recent Big Winners! ...................................................................................... viii
A Spotlight on Women’s and Gender Studies ...................................................................... x

**The Effects of Exposure to Domestic Violence on Child and Adolescent Development** .......... 1
*Vernette Porter, Dr. Jennifer Parker, and Dr. Stefanie Keen*

**Towards Voice-Guided Robotic Manipulator Jogging** ......................................................... 5
*Benjamin Overcash and Dr. Sebastian van Delden*

**Talkin’ ’bout South Carolina: Addressing Dialect Diversity in Middle School Classrooms** ........ 13
*George Reed and Dr. David Marlow*

**Implementation of the North American Amphibian Monitoring Program** .......................... 19
*in the Upstate Region of South Carolina*
*Alexsis Ferguson and Dr. Melissa Pilgrim*

**Race and Class Identity in *The Great Gatsby* and *Passing*** ............................................. 26
*John Crocker and Dr. Celena Kusch*

**Focusing on the Spill: A Study of Karen Kasmauski’s Photographs** ............................... 32
*of the Alaskan Oil Industry*
*Ryan Crawford and Dr. Rachel Snow*

**What’s on the Burner?** .................................................................................................... 38
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MESSAGE FROM THE EDITORIAL BOARD

USC Upstate is proud to announce the publication of the second volume of the USC Upstate Undergraduate Research Journal. This Journal provides a glimpse into a few of the many high quality research activities conducted by the talented faculty at USC Upstate. The Journal is a compilation of outstanding papers from numerous disciplines submitted by undergraduate students who have been involved in faculty-mentored research, scholarly, or creative activities. Undergraduate students involved in faculty-mentored extra-curricular projects enter the work-force with an enhanced skill set, including better problem solving, critical thinking, and team-working skills. Since many students who are educated at USC Upstate become employed in the region, support of academic research has a direct and positive impact on the Upstate of South Carolina.

We would like to express our sincere thanks to Stäubli for their generous funding of this Journal. We would like to especially thank David Arceneaux, Joe Gemma, Chad Henry, and Jim Cook for their continued support. Many thanks also to Susan Hodge for her support in securing this funding. Such support from prominent regional businesses and organizations is greatly appreciated and essential for the advancement of academic research in the Upstate. Stäubli is a mechatronics solution provider with three dedicated divisions: textile machinery, connectors, and robotics. With a workforce of over 3000, the company generates a yearly turnover surpassing 1 billion Swiss francs. Originally founded 1892 as a small workshop in Horgen / Zurich, Stäubli today is an international group with its head office in Pfäffikon, Switzerland. To learn more, please visit www.staubli.com.

We would like to thank all the contributing authors for providing such a rich variety of outstanding articles on a broad range of exciting topics. A special thanks to Bridget Kirkland, Graphic Designer in the USC Upstate University Communications Office, for designing the outstanding cover of this volume of the Journal. Thanks also to Les Duggins for taking many of the pictures of the contributing authors. Many thanks to Elaine Marshall, Director of Sponsored Awards, for making the grant writing process at USC Upstate a smooth and often fruitful process. Finally, we would like to take this opportunity to thank Dr. Marsha Dowell, Senior Vice Chancellor of Academic Affairs at USC Upstate, who is dedicated to enhancing faculty and student research efforts at USC Upstate.

If you have any questions or comments about the Journal, or would like to receive a printed copy of the most recent volume of the Journal, please contact Dr. Sebastian van Delden, (864) 503-5292, svandelden@uscupstate.edu. The Journal is also available online, please visit the following website: http://www.uscupstate.edu/ResearchJournal.

Enjoy!
The Editorial Board
THE EDITORIAL BOARD

Dr. Sebastian van Delden
Editor-in-Chief

Dr. van Delden is an Associate Professor of Computer Science. His research interests include Natural Language Processing, Computer Vision, and Robotics. He has published works in the Language and Computers book series; The Journal of Data and Knowledge Engineering; The International Journal of Artificial Intelligence Tools; the Lecture Notes in Artificial Intelligence book series; and several others.

Dr. June Carter
Associate Editor

Dr. Carter is a Professor of Spanish and Interim Chair of the Department of Language, Literature, and Composition. Her research interests include Latin American narrative and film, Afro-Hispanic literature, Latin American female writers, and US Latino/a literature. She has published works in Anuario de Letras; Latin American Literary Review; Caribbean Quarterly; The Rocky Mountain Review; Prísmal Cabral; Studies in Afro Hispanic Literature; and several others.

Dr. Lilly Lancaster
Associate Editor

Dr. Lancaster is a Professor of Business Management. Her research interests include Operations Management and Statistics. She has published works in Interfaces; the European Journal of Operational Research; the Production and Inventory Management Journal; the Socio-Economic Planning Sciences Journal; and several others.

Dr. Gamal Elnagar
Associate Editor

Dr. Elnagar is a Professor of Mathematics. His research interests include Optimal Control Theory in Climate Modeling and Economic Applications, and Numerical Solutions of Nonlinear Conservation Laws. He has published works in the following International Journals: Computer Mathematics; Numerical Functional Analysis & Optimization; Computational & Applied Mathematics; Differential Equations & Applications; and several others.
Brandon Steelman was a freshman biology major working in a tire factory when he asked to volunteer in Vince Connors’ Parasitology Laboratory. Brandon credits his time in Professor Connors’ Lab with sparking a passion for biomedical research. “I didn’t realize it at the time, but I had an unparalleled opportunity: Dr. Connors helped me design my own experiment, execute it independently, present my data at regional and national conferences, and publish an article in the Journal of Parasitology—all as an undergraduate!” After just one year of working in Dr. Connors’ lab, Brandon was able to leave his job at the tire factory for a National Science Foundation research fellowship at the Medical University of South Carolina.

While taking an Organic Chemistry course from Ron Sobczak, Brandon fell in love with the rigor of chemistry. “I was torn between the excitement of studying diseases and the rigor with which Chemists approached their problems. In the end, I decided to study both, and I can’t be more grateful to the Chemistry faculty for everything that their training has added to my research.” Brandon graduated from USC Upstate with a B.S. in Biology and a B.S. in Chemistry, and subsequently attended Medical School at the University of South Carolina, where he continued to work in research labs. When Brandon graduated from medical school, he still maintained his passion for biomedical research that was sparked in Vince Connors’ parasite lab. To develop his research skills, Brandon delayed Residency to study molecular epigenetics as a Postdoctoral Fellow at Stanford University’s School of Medicine, where he recently represented the 1,500 postdocs at Stanford as Co-Chair of the Stanford University Postdoc Association. “I’ve made it a point to seek out labs that can match the excitement and intellectual curiosity that I encountered in Dr. Connors’ lab. It was thrilling to develop and explore my scientific interests, and it’s been rewarding to build on what I learned as an undergrad.”

After his research training as a postdoc, Brandon will specialize in Medical Genetics, where he will combine biomedical research and patient care—a career goal that he solidified 10 years ago in Vince Connors’ Parasitology Lab.

April Dove graduated in May 2005 from USC Upstate with a B.A. in Sociology. She began graduate school in the Department of Sociology at the University of South Carolina, Columbia in the fall of 2005. She received her M.A. in Sociology from USC in 2009. Her thesis centers on the framing techniques utilized by two anti-illegal immigration social movement groups operating along the U.S.-Mexican Border. April has a forthcoming publication titled “Framing Illegal Immigration at the U.S.-Mexican Border: Anti-Illegal Immigration Groups and the Importance of Place in Framing” which will appear in Research in Social Movements, Conflict and Change, Volume 30 in the fall of 2009. She is currently a PhD Candidate and anticipates graduating in May 2011. Her areas of interest include social movements, social control, collective and cultural memory and museum creation. April is also researching the emergence of civil rights museums during the 1990s in the American south with Dr. Lizabeth Zack. Dr. Zack and April have been involved in museum research for several years and have presented papers together at regional and national sociological conferences. They have a co-authored paper currently under review for publication.

“I would like to extend thanks to the Sociology Department at USC Upstate for preparing me for graduate school. My years at USC Upstate provided for a solid foundation on which to begin advanced graduate level work. I am much indebted to my mentor, Dr. Lizabeth Zack, for her unconditional support and encouragement while pursuing my Ph.D. at USC-Columbia.”
Chad Camara graduated in December 2007 from USC Upstate with a B.S. degree in Informatics. Chad went on to graduate school at the University of Indiana in Bloomington, where he is currently pursuing his Master's degree in Human-Computer Interaction Design in the School of Informatics and Computing. While at USC Upstate he collaborated with Dr. Ron Fulbright in studies of TRIZ as an innovation, education, and design tool. Now at Indiana University he is currently working with Dr. Shaowen Bardzell with a study of user engagement and embodied interaction with the Mitsubishi Diamond Touch Table. He has also worked with Ph.D. candidate Kevin Makice studying visual phatics with Twitter avatars. I would like to thank all of the faculty in the Department of Informatics and the Department of Fine Arts and Communication Studies at USC Upstate for their dedication and for genuinely caring for their students. All of the professors and support faculty in both schools are considerate and encouraging of their students, and I especially would like to thank Dr. Ron Fulbright, Dr. Richard Routh, and Dr. Tyrone Toland for their individual insight and guidance that was so instrumental in helping advance my academic and professional goals.

Ricky Farr graduated in May 2007 from USC Upstate with a B.S. degree in Mathematics. Ricky also graduated from Clemson University in August 2009 with a Masters degree in Mathematics where his research was in numerical analysis. Now, Ricky is pursuing a PhD in Computational Mathematics at the University of North Carolina at Greensboro. His research interests include hierarchical matrices, which is a class of matrices that are data-sparse meaning they take up less memory in a computer when stored, and the finite element method, particularly complexity analysis of algorithms in these fields. Ricky has published two papers and is working on a third at this time. “I am very proud and thankful that I graduated from USC Upstate with my degree, it prepared me very well for graduate school and the knowledge that came with it allowed me to be competitive against my peers. I would like to thank Dr. Kelly Waters, Dr. Sebastian van Delden, Dr. Gamal Elnagar, for all of the great memories and also for all of the late nights bashing my head into a wall...it paid off.”

Jaquawna Terry is an outstanding Honors Student at USC Upstate majoring in English with a minor in Criminal Justice. While at USC Upstate, she has been the President of the Residence Hall Association, an Orientation Leader, a Peer Leader, a Resident Advisor, a member of the Gospel Choir, and the Financial Secretary of Delta Sigma Theta Sorority, Inc. She has volunteered for the Girl Scouts of America, Charles Lea Center which works with adults who suffer from disabilities, and Habitat for Humanity. She also volunteers for a local organization in her community called the Distinguished Women of Walterboro, which focuses on educating young females about the endless opportunities they have although they are of a lower socioeconomic background. This group also fosters creativity, service, and sisterhood. Jaquawna plans on continuing on to law school at Harvard where she will focus on obtaining a degree in corporate law.

The Honors Program at USC Upstate provides an enriching educational opportunity for motivated students committed to academic excellence by offering a challenging curriculum of honors courses, exciting seminars, student-faculty conversations, extracurricular activities and other honors opportunities. For more information please contact Dr. Thomas McConnell. (864) 503-5681, tmconnell@uscupstate.edu, or visit http://www.uscupstate.edu/academics/honors.
Universities benefit tremendously when their faculty members are awarded external grant monies for research or service projects. Applying for grant opportunities is a very time consuming and tedious process and often times goes unrewarded since most opportunities are highly competitive with only a small percentage being funded. Grant monies are often used to support student research assistants and thus can have a very positive impact on a student’s academic experience. We would like to congratulate all USC Upstate faculty members who have recently been funded, and take this opportunity to spotlight two individuals in School of Education who have been particularly successful in such endeavors: Dr. Tina Herzberg and Dr. Holly Pae.

Dr. Tina Herzberg’s grant, entitled Preparing Highly Qualified Personnel to Serve Children with Visual Impairment, was recently funded by the US Dept of Education. During the award period of August 2008 to August 2012, a total amount of $746,956 will be received by this project which will accomplish the following:

- Recruit, prepare, and support a total of 48 candidates in becoming highly qualified, certified teachers of students with visual impairments.
- Recruit new and veteran teachers from underrepresented groups and support their pursuits to obtain their master’s degree and endorsement in visual impairment.
- Continue collaborative partnerships with agencies and area school districts that maximize the effectiveness of program services.
- In collaboration with the members of the SC Vision Education Partnership, enhance the quality of support to pre-service and in-service teachers by increasing professional development opportunities and assisting in the establishment of a high-quality mentoring program and resource cadre.
- Conduct project and program accountability and quality assurance evaluations.

Dr. Holly Pae’s grant, entitled USC Upstate Learning Disability Program: Preparing Highly Qualified Learning Disability Teachers to Close Student Achievement Gaps, was also recently funded by the US Dept of Education. During the award period of July 2009 to July 2014, a total of $499,861 will be received by this project which will improve the USC Upstate School of Education’s Bachelor of Science degree in Learning Disabilities (LD). This special education certification category represents the greatest teacher shortage in our tri-state region (i.e., Georgia, South and North Carolina). The Project will achieve four goals, each alleviating critical training needs of the LD field:

- Increase recruitment of candidates from underrepresented groups, including African-Americans, Hispanics, and individuals with disabilities, in order to supply greater diversification in the special education workforce.
- Restructure the LD Program to include training in the content areas defined under the HQ certification requirements (i.e., Reading, Mathematics, Social Studies, and Science) and culturally responsive practices to better prepare candidates to close well-documented achievement gaps.
- Provide a Mentorship program for LD candidates and LD induction teachers (first three years teaching) to bridge pre- and initial teaching experiences.
- Create and implement an improved Teacher Work Samples (TWS) Response to Intervention (RTI) field-based assessment system in multiple settings.

All of the grant winners in the 2008-2009 academic year are listed on the next page.
<table>
<thead>
<tr>
<th>PI Name</th>
<th>Award Title</th>
<th>Total</th>
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<tr>
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<td>The College of Educational Enrichment</td>
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<td>Stockwell, John</td>
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<td>Globally Convergent Algorithms for Solving Inverse Problems of Marine Electromagnetics and Their Applications</td>
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<td>The Annual SC Upstate Research Symposium</td>
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<td>Zhong, Wei</td>
<td>MGS: An Intelligent Decision-Tree based Model for Predicting Type-2 Diabetes Clinical Charge Profiles</td>
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Total: $1,878,198
A SPOTLIGHT ON WOMEN’S AND GENDER STUDIES

While many students at USC Upstate were preparing for exams, getting those last few papers written, or catching up from all of the procrastination that took place earlier in the semester, students affiliated with the Center for Women’s & Gender Studies geared up for a whirlwind conference season. During March and April, five WGS minors presented papers at local, regional, and national conferences, with generous funding from the Vice Chancellor of Student Affairs, Laura Puckett-Boler.

The first excursion was a quick trip to our flagship institution in Columbia on the weekend of March 19-21. Two extremely promising Upstate seniors, Lindsay Harris (English major, WGS minor) and Andrea Miller (IDS major, WGS concentration), joined Dr. Lisa Johnson on the opening panel of the biannual Feminist Epistemologies, Methodologies, Metaphysics, and Science Studies conference. Keynoting was the founding scholar of feminist epistemology, Dr. Sandra Harding. While Harding’s work originates in the hard sciences, Harris and Miller drew on the concept of standpoint epistemology in the context of the social sciences and humanities. Their papers garnered them the Sister Spit Award for 2008-2009 for best feminist theory presentation by an Upstate student or faculty member, and Miller took home the Emma Goldman award for Outstanding Interdisciplinary Women’s Studies Major, while Harris took home the Lucy Stone Award for Outstanding Minor in Women’s and Gender Studies.

Miller analyzed Toni Morrison’s 1973 novel Sula and the contemporary HBO series True Blood, using these texts as vehicles through which to discuss the problems and possibilities of representing black female desire, and more specifically the open question in feminist narratology of how to bring a culturally suppressed narrative—such as black lesbian desire—into the realm of the visible. This project stems from a research paper produced by Miller for Johnson’s course in Women Writers in Fall 2008. Miller has continued to flesh out this exciting work for her senior seminar project, synthesizing a rich mixture of theoretical frameworks.

Harris made an equally exciting inquiry into bisexual epistemology, reading against the grain of third wave feminist Jennifer Baumgardner’s memoir of bisexuality Look Both Ways, asserting that the social sanctions against female speech about sexuality remains so fully intact that even an out bisexual and prominent feminist activist like Baumgardner writes in relatively indirect ways about alternative pair bonds. Harris has been exploring representations of bisexuality in both her formal academic scholarship and her creative writing for over a year, following this thread through several courses in the WGS and literature curricula.

The second trip took student presenters and members of Pride Upstate to UNC Asheville for their conference on Queer Art, Queer Activism: The Politics of Possibility. The panel from USC Upstate presented papers on Queer Theory and contemporary media culture to a packed room. Seniors Adrienne “AJ” Jones (Non-Profit major) and Andrea Miller, and alumni Tatianna Hunt and Stacey Haney dazzled the audience with insightful readings of Dirty Sexy Money, Transamerica, The L Word, and Dexter, respectively. Upstate students Jason Funderburk, Treva Camp, Lindsay Harris, and Candace Lamb were among the audience.

A smaller group headed to Boone for a third conference weekend in a row to present papers at the Southeastern Women’s Studies Association Conference. Tatianna Hunt continued her exploration of blaxploitation film history and representations of the black lesbian, and Andrea Miller mounted a Marxist critique of the Showtime series Weeds.

All in all, our students made a name for themselves, and for the campus, across the Carolinas. For more information on WGS at USC Upstate, please contact me: Dr. Lisa Johnson, (864) 503-5724, mjohnson@uscupstate.edu.

1 This spotlight originally appeared in Volume 1, Issue 1 of the Spark! Newsletter which can be accessed at the WGS website: http://www.uscupstate.edu/academics/arts_sciences/womens_studies/. Many thanks to Dr. Lisa Johnson for allowing us to also include it here.
The Effects of Exposure to Domestic Violence on Child and Adolescent Development

Abstract. Domestic violence is prevalent in the United States as well as other parts of the world. Prior research has indicated that children and adolescents who are exposed to domestic violence are at greater risk of developing behavioral, cognitive, and social problems. Although these problems can affect children and adolescents into their adulthood, research on short term effects has mixed results. This study will evaluate the short term characteristics of children and adolescents exposed to domestic violence and assess whether factors associated with exposure to domestic violence affect their development.

Keywords: Children, Adolescents, Domestic Violence

Vernette Porter. As an undergraduate student, I met with Dr. Parker to discuss my interest in obtaining research experience. She informed me that she and Dr. Keen were conducting a study to investigate how domestic violence affects the development of children and adolescents. Following our meeting, I was invited to work on the project. Working with Dr. Parker and Dr. Keen was a great experience and helped me gain insight into every aspect of the research process. Additionally, they gave me the opportunity to make this study my own. The experience increased my interest in graduate school and I plan to apply to graduate programs in Community/Agency Counseling. I am grateful for having the opportunity to work on this important study.

Dr. Jennifer Parker. Dr. Parker is an Associate Professor of Psychology and Assistant Dean of the College of Arts and Sciences. She has earned a Ph.D. from Virginia Tech and has published articles in several Journals, including: the North American Journal of Psychology, Adolescence, the Journal of Child and Youth Care Work, Family Therapy, and the International Journal of Neuroscience. Her research areas include examining the effects of exposure to domestic violence on children and adolescents, and also investigating leadership development and civic skill building with adolescents. Dr. Parker in her spare time enjoys running and recently completed a half marathon. “Engaging undergraduates in research is a top priority for me. As an undergraduate, I had the opportunity to work closely with a professor on research projects. This experience was very influential in my decision to obtain a Ph.D. and pursue an academic career.”

Dr. Stefanie Keen. Dr. Keen is an Assistant Professor of Psychology. She earned a Ph.D. in Clinical Psychology from Indiana University. Dr. Keen currently teaches a variety of undergraduate courses including Child Abuse and Neglect, Developmental Psychology, and Abnormal Psychology. She is also engaged in an active research program related to the psychological effects of traumatic stress including intimate partner violence and child maltreatment, and has published articles in Clinical Psychology Review and the Journal of Rehabilitation Research and Development and a book titled Child Abuse and Neglect. Dr. Keen enjoys spending time with her family, including her two young daughters – “I’m often horrified by what young children are forced to suffer, and amazed by their resilience.”
I. INTRODUCTION

Domestic violence (DV) refers to violent behaviors that one intimate partner perpetrates to threaten, intimidate, or control another. Women are more likely to be victims of DV; although, there have been some incidents in which men have been abused by their partners. In recent years, this type of violence has become an epidemic in communities across the nation. According to the South Carolina Coalition Against Domestic Violence & Sexual Assault (SCCADVASA) [1], four million women are abused by their partners each year. Moreover, the SCCADVASA [2] estimates that one in four women will become a victim of DV during her lifetime.

DV is a prominent public health issue. Approximately four million dollars are spent on medical and mental health services to treat victims each year [1]. Victims of DV may experience a variety of health problems including stomach ulcers, gastrointestinal problems, chronic neck and back pain, and migraines and frequent headaches [11]. In addition, victims of DV may suffer from psychological problems such as depression, anxiety, and posttraumatic stress disorder (PTSD) [11]. For some of these victims, their injuries are so severe as to be fatal. Each year, up to 1,600 women die from DV-related injuries [12].

DV is especially prevalent in South Carolina. The state is ranked 7th in the nation for women murdered by their intimate partners, and has ranked in the top 10 since 2000 [9]. In 2006, 35,301 incidents of DV were reported, of which 81.6% of the victims were women [10]. Spartanburg County is certainly no exception to this serious issue; 1,723 incidents of DV were reported in 2006, of which 81.1% of the victims were women [10]. With these figures in mind, the current Attorney General for South Carolina has named DV as the number one problem in the state [10]. DV not only affects the lives of the women who are abused, but also impacts the development of the children and adolescents who are exposed to the abuse.

Graham-Bermann and Edleson [13] state that an estimated 10 million children and adolescents witness acts of DV each year. Prior research has documented the negative long-term effects of exposure to DV on child and adolescent development. Some of these effects include anxiety, depression, PTSD, as well as behavioral, cognitive, and social problems [3-8]. In addition, children and adolescents living in homes with DV have a greater risk of becoming victims of abuse. According to Graham-Bermann and Edleson [13], the co-morbid rate of child maltreatment and DV is between 30 and 60%.

Although there is a substantial body of research regarding the negative effects of exposure to DV on children and adolescents, there remain several gaps in the research literature that need to be addressed. First, much of what we know about the effects of DV exposure on children has come from maternal reports and not from the children and adolescents themselves [4]. Second, the majority of the studies are conducted with children and adolescents living with their mothers in battered women’s shelters [4]. There is less research on the exposure and effects of DV on children and adolescents living outside of shelters. Given these gaps, one goal of the present study is to include direct assessments of children exposed to DV. Another goal is to identify the effects on children and adolescents who are living outside of shelters. Furthermore, this study will examine whether exposure to community violence and substance abuse have differential effects on these children and adolescents.

II. METHOD

PARTICIPANTS – Approximately 50 children and adolescents between the ages of 6 and 16 and their mothers are expected to participate in the study. The participants are recruited through Safe Homes-Rape Crisis Coalition and P.A.C.E. Center in Spartanburg, S.C. While preliminary, the current sample includes 7 mothers and 12 children (5 male and 7 female). The mothers’ ages range from 28 to 45, and the families represent diverse ethnic backgrounds.

PROCEDURE – Data collection is ongoing. Participants are provided detailed consent forms and, once they agree to participate in the study, they are administered a series of questionnaires over a two hour period. The child and adolescent measures assess exposure to violence, depression, anxiety, anger, self-concept, trauma symptoms, coping, emotion regulation, and social support. The adult measures evaluate violence exposure,
The Effects of Exposure to Domestic Violence on Child and Adolescent Development

depression, anxiety, trauma symptoms, and alcohol/drug abuse. After the participants complete their assessments, the mothers receive $25 and the children and adolescents receive a gift card.

MEASURES

Child and Adolescent

- Beck Youth Inventory-II (BYI)
- Trauma Symptoms Checklist
- Conflict Tactics Scales-Parental DV (CTS-DV)
- Juvenile Violence Questionnaire (JVQ)
- Self-Report Coping Measure (SRCM)
- Social Support Appraisals Scale (SSAS)
- The Emotion Questionnaire (EQ)

Adult

- Beck Depression Inventory-II (BDI)
- Beck Anxiety Inventory (BAI)
- Conflict Tactics Scales-2 (CTS-2P)
- Conflict Tactics Scales- General Violence (CTS-G)
- PTSD Checklist/Life Events Checklist (LE)
- Michigan Alcoholism Screening Test (MAST)
- Drug Abuse Screening Test (DAST)

III. PRELIMINARY RESULTS

In the present study, seven mothers and twelve children were evaluated. Although the preliminary sample is too small for statistical analysis, the data thus far indicate that many of these children have high levels of anxiety, anger and trauma related symptoms. Additionally, the sample appears to have high exposure to familial and community violence. All of the children reported exposure to violence in the past year, and the majority reported exposure to multiple acts of violence.

Each of the twelve children completed the Beck Youth Inventory (BYI); a self-report multi-scale measure that assesses self-concept, anxiety, depression, anger and disruptive behavior. National norms by gender and age were used to score each measure. Anxiety scores were elevated for six of the children and two reported moderate to extreme elevations on the anger scale. One child reported a moderately high score on the depression scale. Eleven of the children have above average self-concept and one child has very low self-concept. The mothers when rating their children on the Trauma Symptom Checklist for Young Children reported similar findings.

In the assessment of the mothers, they all reported severe levels of anxiety. Furthermore, they all reported high levels of posttraumatic stress symptoms, with five of the mothers reporting clinically significant levels. Reports of depressive symptoms were less consistent, as two mothers reported symptoms in the severe range, two in the moderate range, and three reported minimal depressive symptomatology. Four of the mothers reported high levels of problematic alcohol use. High levels of alcohol and drug use were reported for five of the partners.

IV. CONCLUSIONS

DV is a serious crime that affects the lives of everyone involved. Recently, children and adolescents who are exposed to DV have become a subject of interest for researchers. Recognition of this high risk population is
important because DV can have a great impact on their development. Therefore, children and adolescents who witness acts of DV or who are victims may become violent during adulthood whereas other children and adolescents may show resilience toward DV during adulthood.

Although researchers are interested in children and adolescents who are exposed to DV, they often experience problems in working with this population. One problem is that researchers may not have the availability of assessing these children and adolescents. Many DV cases do not get reported; therefore, children and adolescents do not get the opportunity to discuss their experiences. Another problem is that some children and adolescents may not be willing to share their experiences, and as a result, they do not receive the help that they need. Currently, more efforts are being made by researchers as well as practitioners to provide help for children and adolescents who are exposed to DV. They often suffer in silence, but with the help of intervention programs and therapy, they will receive the services that they need so that they can get their lives back together.

**ACKNOWLEDGEMENTS**

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**REFERENCES**


Towards Voice-Guided Robotic Manipulator Jogging

Abstract. Initial steps toward designing and implementing a voice-guided approach to robotic manipulator jogging are outlined in this paper. Even though robotic teach pendants continue to become more lightweight and easy to use, they will always require an operator to have at least one hand occupied by the teach pendant during the development of an automation task. We are developing an intuitive hands-free approach to manipulator jogging and application development that translates English voice commands into manipulator movements and program statements. The system is being implemented and tested on a Stäubli RX60 manipulator and freely available voice recognition packages.

Keywords: Speech Recognition, Robotics, Automation, Natural Language Processing

Benjamin Overcash. Dr. van Delden approached me about an idea to combine new voice recognition technologies with common industrial robotics the summer before my final year at USC Upstate. The project was really interesting to me as it was something very few people have worked on and would give me an opportunity to explore new possibilities in the application of voice recognition technologies never before implemented for practical use. Much of the work went into researching the limits of new voice-recording hardware that is readily available and exploring the abilities of a voice recognition system with minimal training. I was very excited that our project resulted in a working system and hope to have more research opportunities in the future. I currently work as a Programmer/Analyst for CoLinx, LLC and have plans to go to get my Masters Degree in the near future. I often have several programming projects that I work on in my free time but also enjoy hiking, bicycling and other outdoor activities. I consider myself very lucky to have had the opportunity to work with Dr. van Delden on this project and know that the experience I gained will go far.

Dr. Sebastian van Delden. Dr. van Delden is an Associate Professor of Computer Science and has been at USC Upstate since Spring 2004. His research areas include applications of Natural Language Processing and Computer Vision to Industrial Robotics, and he works in the USC Upstate Robotics lab which features several top-of-the-line robotic arms and provides an outstanding teaching and research environment. Dr. van Delden earned a Ph.D. from the University of Central Florida and has published articles in several Journals, including: Language and Computers; Data and Knowledge Engineering; Artificial Intelligence Tools; Lecture Notes in Artificial Intelligence; and Computing Sciences in Colleges. Dr. van Delden grew up on Saba, a small Dutch island in the Caribbean, and he recently became a U.S. Citizen.

The USC Upstate Robotics Laboratory is a unique facility which houses five Stäubli RX60 robotic arms (six joint machines), two four joint robot arms, camera systems, and a fleet of LEGOS Mindstorm NXT (fifteen) and RCX (fifteen) systems. Courses that focus on traditional industrial robotics, artificial intelligence, and computer vision are taught in the lab, and the Mindstorm robots are also used to teach basic Java programming in introductory computer science courses. Summer camps for younger kids are also held in the lab. For more information and to see videos, go to: http://faculty.uscupstate.edu/svandelden.
I. Introduction

The use of robotic manipulators in factory automation is commonplace. “Automate or Evaporate” is the saying in the manufacturing world. Industrial robotic systems improve productivity by increasing throughput and enhancing the quality of manufactured goods. It is amazing that robotic automation has existed since the early 1960s - long before the age of personal computers, the internet and email. Industrial robotic tasks include welding, material handling, and product assembly.

Input sensors are often utilized to bring flexibility to and enhance the capabilities of a robotic system. For example, camera systems can assist robots in performing quality control by visual inspection, or guiding a manipulator's end-effector to a desired pose. Pressure and proximity sensors are also commonly used to determine the location of a part, a tool or the end-effector. Audio input sensors, however, have so far rarely been used in robotic automation.

Even though robotic teach pendants continue to become more lightweight and easy to use, they will always require an operator to have at least one hand occupied by the teach pendant during the development of an automation task. We are developing an intuitive hands-free approach to manipulator jogging and application development that translates English voice commands into manipulator movements and program statements.

Even though there exists a vast array of robotics journals, conferences and workshops, and thousands of published works on numerous aspects of robotic automation, the literature contains very few contributions on voice-guided manipulator jogging. [1] describes some initial work on a voice guided system which was later integrated into a hand gesture recognition system [2] so that the robot could be guided using both audio and visual commands. [3] is most closely related to this work and provides several details on that particular implementation. There are also some recent articles in medical literature on commercial voice assisted robots used in laparoscopic [4] and endoscopic [5] surgeries. Some of the reasons for the lack of voice guided manipulator technology include:

- Original industrial systems were not design to incorporate voice technology into their controller.
  - This however is rapidly changing as very sophisticated robotics programming environments are emerging, for example: Stäubli's Robotics Studio software and VAL3 programming language, FANUC’s Proficy, and ABB’s Robot Application Builder.
- Controllers and robotic environments are typically noisy
  - This is an unavoidable problem, however, modern microphones and voice recognition technology do an adequate job in filtering out background noise.
- Readily available voice recognition packages are still relatively new and not completely reliable.
  - However, several free systems are currently available that do an adequate job recognizing commands in a closed domain once properly trained by their user.

Voice recognition software can be somewhat unreliable when used across an open domain by numerous users for which it as not trained. However, because this system will be use for factory automation tasks by one operator (or perhaps a small group of operators), very accurate voice recognition can be achieved on this closed domain if the system is properly trained.

In this paper, we examine how an audio input sensor can enhance robotic automation tasks by describe the initial steps towards designing and implementing a voice guided system for jogging a robotic manipulator. In particular, we provide a detailed overview, including an informal qualitative and quantitative analysis, of the two speech recognition packages that were used in our experiments.

The remainder of this paper is organized as follows. Section II provides a detailed overview of the two speech recognition software packages that were used in our experiments. Section III describes the components of the initial working system that we have implemented including a portion of the initial grammar, and Section IV concludes the paper which a summary of current and future work.
II. SPEECH RECOGNITION PACKAGES

We have experimented with two speech recognition packages: Sphinx [6] and MSAPI [7]. As part of the contribution of this work we provide specific details on each system and report on the PROs and CONs including ease-of-use and initial accuracy that we experienced with each package.

A. Sphinx

Sphinx is based on the Java Speech API developed with Sun. JSAPI was released on October 26th, 1998. It is not in a ‘finished’ state however it is provided with some support for the benefit of third party developers hoping to add speech recognition to their Java programs.

Sphinx provides wrapper classes for the functions within the JSAPI which are commonly used within speech recognition software. These include the microphone, the recognizer, the dictionary, and the linguistic and acoustic models. It uses XML formatted configuration files for predefining properties of the different parts of the program. The Sphinx system was developed on a Linux platform and therefore any training systems are also implemented on Linux. The classes are included as jar files compiled under Apache Ant Builder. The grammar files are formatted using JSGF or Java Speech API Grammar Format. The Grammar is rule base and supports regular expression capabilities and the importing of external grammar files. Alternate input files for recognition include linguistic files with n-gram support.

Our preliminary implementations were derived from demo examples included with the download and used the Java Speech API in its original form. The second implementation used the Sphinx library to produce the same effects. By using the Sphinx library, we were given easy functionality of an acoustic analyzer and a dictionary wrapper as well as several other components that could easily be managed via the XML configuration file. All of these libraries however use several methods that require an extensive amount of memory, larger than that allocated to a Java program by default and the -Xmx<amount>m switch was needed to increase the default heap size.

The initial Sphinx implementations functioned by loading linguistic files that maintained n-gram information on specified sentences and commands common to the robotic manipulation. The results were quite good and the linguistic file was reworked into a JSGF grammar. Initial tests worked well, however, with the addition of new, and particularly long commands, the recognition quickly broke down. Even with careful wording, certain commands have a very low success rate of recognition. This problem was resolved by manipulating the internal settings for the recognizer within the XML configuration file. In particular, we altered:

- The probability of predicting a false positive.
- The probability of needing to insert a word to get a match.
- The probability of needing to insert a syllable to get a match.

By increasing the probability of getting a match, the system would match more frequently, however would produce odd responses when you spoke something that was not at all a command. False positive responses dropped significantly by decreasing the probability of word insertion and increasing the probability of syllable insertion. This worked quite well with the exception of number recognition. Firstly, numbers such as ‘four’ and ‘two’ have a number of words that sound similar, such as ‘for’ and ‘to’ and ‘too.’ So the grammar had to accept any form to be equivalent to the number in order to recognize it. Secondly, numbers such as ‘four’ and ‘five’ sound alike when spoken quickly. Similar problems exist between ‘three’ and ‘eight’ and ‘two’ and ‘ten’.

With still more tweaking, the program responded correctly about 70 to 90% of the time and was therefore adequate enough for connecting with the robot. The connection, a simple socket connection, carried V+ formatted commands to the CS7B controller which was executing a program which looped the DOS command. For this reason, the Java program required an ad hoc method for breaking down the input string from the user and formatting it to V+. The V+ method used to move the robot was DRIVE which allows for the rotation of a joint by a certain degree, positive or negative, at a specified speed, which we keep at 10% of the robot’s fastest speed which is recognized as a safe training speed.
The commands that we successfully implemented are the DRIVE command, the CLOSEI command and the OPENI command. The ad hoc V+ translation method was quite robust however and no simple solutions were offered.

Overall, the Sphinx-4 Speech Library is very robust. It is fairly easy to implement however requires much extra memory. The recognition abilities are fair but improvement would require much time and a much further explanation of the workings of the libraries. While a training program could be implemented, the official training program suggested by Sphinx is Linux based and would not be an intuitive method for a real-world Windows implementation due to lack of simplicity. The grammar formatting is however quite easy to follow and understand.

B. MSAPI

The Microsoft Speech API was first released around 1995, and was supported on Windows 95. This version included low-level Direct Speech Recognition and Direct Text To Speech APIs which applications could use to directly control engines, as well as simplified ‘higher-level’ Voice Command and Voice Talk APIs. It has since had continued support within the Windows OS. It is designed for implementation among Visual Basic, C++, and more recently C#. The more current versions of Windows contain a speech configuration manager in the control panel which allows you to customize the default text to speech synthesis voice as well as to create recognition profiles. Microsoft has its own built in training program which is well developed.

Microsoft SAPI uses XML formatted grammars. Grammar functionality includes rule defining, property name and value specifications, optional segments, and lists as well as rule referencing.

The MSAPI is built into most Windows systems by default for text-to-speech and voice recognition support. For this reason, it would be a convenient choice because computers would not be required to download any additional software. The Microsoft SAPI also has significant support via MSDN and the SDK comes with its own well sorted and collected set of help files and examples. It was far easier to implement an initial system when compared to the Sphinx API. The Microsoft SAPI is designed for C++ and Visual Basic implementation but can be run from anything with OLE capabilities.

Surprisingly the examples were rather in-depth implementations and we had to examine them very carefully before identifying the common components needed to produce a simple program. The recognizer supports both static and dynamic grammars which can be created in memory or loaded via file or dll. The grammars are formatted in XML and support rule creation, rule referencing, optional sections, and lists. The most important feature being the property name and value support for phrases. This allows the recognized text to hold an extra identifying value. The recognizer is event driven and requires few commands to set up. Within the recognition event it is possible as well to access the property values, which in the grammar we made equal to the V+ command equivalent to the action. For example, rotating a join corresponds to the DRIVE command, one, two, and three correspond to 1, 2, and 3, and open / close gripper commands correspond to OPENI and CLOSEI.

The recognition provided response of similar quality of the Sphinx API at first. However, using Microsoft’s built-in speech configuration dialog control panel, we simply adjusted the recognizer to produce slower but more accurate results and a vast improvement ensued.

Winsock was introduced into the program to function in the same way as the Java implementation and results were about 95-97% accuracy. We then added dynamic rule support to the grammar being used and provided support for adding variables corresponding to the V+ HERE command which remembers a location. The program interface also lists the variables created. The variable names, being outside of the grammar, do not always end up being exactly what was intended, so keeping track of how the computer recorded them is important. With the commands stored in memory within a virtual grammar rule, they can then be easily recalled and recognized in combination of saying ‘Go to’ or something of that nature in order to execute the MOVE command in V+. This worked with large success and would provide support for complex movements and much expansion into saving variables for future loading/use, defining methods at run-time for batch execution, and defining frames at run-time as well.

Overall, the MSAPI implementation is quite successful. There are little extra files required for successful execution of the program and there is much support both within the package and on MSDN however most of it is in C++. The grammar design is rather confusing and would not be easily modified, however, its complexity does provide support for many powerful features. The MSAPI is also far less taxing on memory.
III. Preliminary Results

An initial working system has been implemented and a screenshot of the system is shown in Fig. 1. The three windows are as follows:

- The V+ Voice Command Interface program which controls the recognition and transmission of commands.
- The Debug Window, which is a child process of the V+ Voice Command Program, monitors the V+ Voice Command Program’s variables, and displays the text being received by the CS7B controller.
- The Tera-term Window displaying the CS7B controller terminal.

The first two program windows are explained in some more detail below while the third is simply the Tera-term software and needs no further explanation.

![Fig. 1 Screenshot of the initial working system.](image)

A. V+ Voice Command Interface

The V+ Voice Command Interface is implemented in Microsoft Visual Basic 6.0 for simplicity and lack of overhead. The menu system has components for loading grammar files (*.XML), specifying the socket to monitor for connections, and toggling the display of the debug window.

The upper left text field displays speech recognized by the MSAPI recognition event. If the recognized speech also matches the grammar, then a listing of applicable rules follows. Each rule displays the name of the rule as specified in the loaded grammar. After the rules, the properties are shown. Properties are specified in the grammar as a defined property name and given a value dependant on the phrase matched. The screenshot shows the property value of “JOINT” and its matched phrase’s value is “4”. The program
iterates through the properties and concatenates them into a string which represents the command to be transmitted to the controller. The text field to the right displays variables. When the phrase matching the command “HERE” is recognized, the grammar is set to match any single word phrase the follows. This word is then dynamically added to the grammar that is loaded and the word is added to a variable list to help the user of the program to keep track of stored variables. This is also important because if the recognizer misunderstands what you say and saves the variable as a slightly different word that you expected, you can easily see the difference. For example, the command “set position alpha” may issue the command “HERE although” due to a misrecognition of the work “alpha.” This is a result of the word “alpha” not being part of the grammar, however now that the word “although” has been added, it can be recognized with much higher precision when referring to it later.

The text boxes to the bottom left display status information, including which client is connected and the port currently being used. The status of the connection and send/receive process is also displayed. The last box displays the command being sent to the CS7B controller.

The two command buttons toggle the starting and stopping of the recognizer and the connection / disconnection of the socket. And lastly, the status bar at the bottom shows the loaded grammar, recognition status, and socket connectivity status.

B. Debug Window

The upper part of the debug window displays a listing of the variables and their values. The boolean values include: if the grammar is loaded, if the recognizer is loaded, if the socket is listening, and if it is connected. The other variables displayed include client value, client IP address, port value, and the status. All of the variables belong to debug’s parent window and are referenced publicly.

The bottom text field displays the information being received from the program running on the CS7B controller. This includes notification of connection, and echo of the command sent, and notification of command received.

The last text field provides a way of sending a typed command directly through the socket meant for debug purposes of realignment, etc. The commands allowed are only those executable by the DOS V+ command. Any other command will result in the V+ program incorrectly terminating.

C. Initial Grammar

Fig. 2 outlines a portion of the grammar that we have implemented in XML format which is recognized by MSAPI. The opening definition of the grammar is specified with <GRAMMAR>…</GRAMMAR>. The components of <GRAMMAR> are <RULES>. Rules are given names and within them are the specifications of what defines a recognized rule. Having a TOLEVEL of ACTIVE specifies that a rule is the default entry point of the grammar. Other optional components are the DYNAMIC value which when set to true allows for dynamic appendage to the rule. Inside rules, multiple <PHRASE> properties are specified. A phrase contains the spoken words to be recognized. If all phrases are matched, then the rule is successfully matched and grammar is recognized. Phrases, shortened to <P> can be given values that are returned to the property specified by a parent entity. Values can be specified with “VAL” as a number or “STRVAL” as a string. A phrase consisting of any spoken text can be defined with “…” but cannot be referenced from the recognition event although using <DICTATION> will reference a word which can be further referenced. This latter feature is affective for implementing dynamic grammars.

To make the rules more accessible, three components may be implemented:
- A rule reference defined by <RULEREF> may be implemented which acts as a direct link to the rule specified.
- The <OPT> or <O> component shows an optional phrase for recognition.
- A <LIST> or <L> component allows for a list of phrases where only one of which may be matched. The list can also be given a property name to be matched with a property value of one of its possible phrase matches.
The three components can be combined in many ways to form very powerful grammars. Many more details on XML tags are used by MSAPI can be found here [9].

```xml
<GRAMMAR LANGID="409">
  <RULE name="command" TOLEVEL="ACTIVE">
    <L PROPNAMES="COMMAND">
      <P valstr="drive ">
      <RULEREF name="drive "/>
      <P valstr=" ">
      <RULEREF name="move "/>
      <P valstr="here ">
      <RULEREF name="set "/>
      <P valstr="ready ">
      <RULEREF name="ready "/>
      <P valstr="move ">
      <RULEREF name="move "/>
    </L>
  </RULE>
  <RULE name="drive ">
    <O>....</O>
    <P>rotate joint</P>
    <RULEREF name="joint "/>
    <O>by</O>
    <O><RULEREF name="negative "/></O>
    <RULEREF name="degree "/>
    <L>
      <P>degrees</P>
      <P>degrees</P>
    </L>
    <O>....</O>
  </RULE>
  <RULE name="grip ">
    <O>....</O>
    <L PROPNAMES="GRIP ">
      <P valstr="open open gripper"></P>
      <P valstr="close close gripper"></P>
    </L>
    <O>....</O>
  </RULE>
  <RULE name="negative ">
    <L PROPNAMES="NEGATIVE ">
      <P valstr="negative"></P>
    </L>
  </RULE>
  <RULE name="joint ">
    <L PROPNAMES="JOINT ">
      <P valstr="one"></P>
      <P valstr="two"></P>
      <P valstr="three"></P>
      <P valstr="four"></P>
      <P valstr="five"></P>
      <P valstr="six"></P>
    </L>
  </RULE>
</GRAMMAR>
```

Fig. 2. A portion of the system’s initial grammar in XML format which is recognized by MSAPI.

D. Online Demo

We have captured a short video demo of system which includes sound. A screen shot of the demo is shown in Fig. 3 and the link to the video is also included.

![Video Demo](image)

Fig 3. User interacts with our voice guided robotic system. To view video demos (with sound) please go to:

http://faculty.uscupstate.edu/svandelden and click on “ROBOTICS VIDEOS”.

In the initial online video, the system was not yet trained on the user’s specific voice. With a careful examination of that video demo, you will notice that the system incorrectly recognized “fifty degrees” as “eighty degrees”. Also, one of the instructions had to be repeated twice before the system recognized it. Otherwise, the system recognized all of the other commands perfectly, performing joint rotations, training points, and opening/closing the gripper. In the subsequent videos, the accuracy and functionality of the system have been greatly improved and a wireless microphone has been incorporated in the system.
IV. CONCLUSIONS

Initial results are very encouraging and indicate to us that implementing an accurate voice-guided system for jogging a robotic manipulator can be attained using currently available speech recognition APIs. Overall, we feel that the MSAPI speech recognition package was easier to integrate into the system and gave us better initial results when compared to the Sphinx system.

This initial work is currently being expanded in several ways:

- We are experimenting with an additional C++ based voice recognition system [8] and will be comparing it to the Sphinx and MSAPI systems.
- We are currently working on a completed formal grammar that encompasses all of the commands needed to design any automation task on the Stäubli RX series of machines which uses the V+ system.
- Once a completed grammar is finalized, we will be performing a more detailed and formal quantitative and qualitative analysis to determine if the voice-guided system improved operator productivity during application development.

We will also be adapting the current system to a Stäubli RS20 manipulator which uses Stäubli’s most current programming environment and VAL3 language. We will extend the current system to the VAL3 language and, in the process, work to develop a general system that is easily adapted to new iterations of robotic programming languages.

ACKNOWLEDGEMENTS

We would like to express our sincere thanks to the Stäubli Corporation for making this research possible by generously donating six RX60 manipulators and a RS20 manipulator to our institution. Many thanks to Chad Henry, Jim Cook, David Arceneaux, and Joe Gemma at Stäubli for their continued support.

We would also like to thank USC Upstate’s Research Advisory Council for their partial funding of this work.

REFERENCES

TALKIN’ ‘BOUT SOUTH CAROLINA: ADDRESSING DIALECT DIVERSITY IN MIDDLE SCHOOL CLASSROOMS

Abstract. Discrimination based on dialect is one of the most insidious forms of prejudice in our society. From the beginning of history, humans have judged others according to how they speak, sometimes knowingly, but often without intention. Because change is predicated upon knowledge, dialect discrimination must be confronted through education. This paper describes a work-in-progress which targets dialect awareness and tolerance in 8th grade English Language Arts and Social Studies classrooms throughout our state.

Keywords: Diversity, Dialect, Middle School, English, Social Studies

George Reed. The son of a mother born in Greece and father from a coal mining family, George Reed has long witnessed the influence of a lack of dialectical awareness. Having lived throughout the United States, George has worked in a variety of fields in a broad range of industries and experienced an even greater diversity of America’s people. George’s relationship with Dr. Marlow began when he was a student in Dr. Marlow’s grammar class where George’s insightful papers and enthusiasm for the concept of the diversity project earned him a place as Dr. Marlow’s research assistant. As he finishes his final requirements for a BA in ELA and Social Studies Middle School Education at USC Upstate, George’s belief in the validity of Dr. Marlow’s work continues. George was a single father of three as he has worked his way through the educational system until his recent remarriage to a woman from Gaffney, a town steeped in southern dialect and culture.

Dr. David Marlow. Dr. Marlow is an Assistant Professor of Linguistics and English as a Second Language and has been at USC Upstate since 2004. His primary research interests focus on affective variables influencing students’ involvement in class content – including technological enhancements, teaching students to focus on learning strategies as well as course content, and encouraging diversity and tolerance both inside and outside the classroom. He is currently Vice President/President Elect of the Carolina TESOL organization and has published numerous works in such journals as American Speech, Journal of Southern Linguistics, and Currents in Teaching and Learning. Dr. Marlow’s work on dialect in the classroom grew out of this shared project with George and has received nearly $20,000 in funding from USC Upstate’s Office of Sponsored Awards and Research Support, USC Columbia’s Magellan Scholarship, and The Humanities Council of South Carolina. An application for additional funding is currently under review by the National Endowment for the Humanities.
I. Introduction

“Often, people who hear a vernacular dialect make erroneous assumptions about the speaker’s intelligence, motivation and even morality”

Wolfram and Schilling-Estes, 1998:23

Diversity and tolerance are focal areas for many social initiatives in the US today. While the work progresses through exposing prejudice and openly discussing bias, much room for improvement remains. This paper addresses one of the most insidious forms of bigotry: dialect discrimination. Individuals are all too willing to judge others’ intelligence, initiative, and honesty based on simply listening to short conversations or even simple sentences read aloud often without realizing their bias. These linguistic prejudices are typically subconscious and therefore highly resistant to change. Although this type of discrimination seldom appears on the evening news, it is recognized not only by scholars but also by the US government's bureau of Housing and Urban Development [2]. Business is also affected as demonstrated in a 1973 study which found that while employers denied linguistic bias they were actually quite consistent in assigning tasks based on people’s speech alone [3]. Thus language discrimination must be acknowledged and addressed as a form of social injustice, no less damaging for its subtlety.

II. Overview of Dialect Structure

If it were possible to gather all the readers of this article into one room, we would likely find most of us are native speakers of English who acquired the language at a very young age, yet we would find significant variation in the way we speak. Some of us would pronounce pen and pin in the same way while others of us would not. Some would refer to a carbonated drink as a pop, others as a soda. Many of us would be perfectly comfortable keeping a secret between you and I while others would be tempted to point out that the formal rule requires between you and me. This level of variation in language, although readily discernible, is often overlooked as it carries no significant social stigma. Even deeper levels of variation pass by unnoticed. One example appears in the past tense of regular English verbs as one example. Read the following sentences aloud: She swooned in his arms. They kissed. The story ended happily. Now focus on the past tense verbs swooned, kissed, ended. If you say each one in isolation you will find that the pronunciation of the ending varies in each word, even though it is spelled with an –ed in each case. Without any conscious decision, you most likely placed a -d at the end of swooned, a -t on kissed, and an -ed on ended. Our subconscious minds control these pronunciation patterns and these patterns, acquired during our childhood, are often resistant to change. Furthermore, these same subconscious mechanisms control many of the stigmatized dialect features.

For the student of linguistics, then, dialect is defined simply as a variety of a language shared by a group of speakers. This entails the supposition that no single variety is any better or more valuable than another. Just as the pronunciation of the past tense in Standard English varies based on predictable patterns, the variation in non-standard dialects follows logical and intelligent rules. The Spanish speaking learner of English who says “I like this eskool” employs the same mental processes in pronunciation as the person who says “School has ended for the day.” Similarly, the person who says “Whom may I say is calling?” has violated standard grammatical rules no less than the one who says “Who that?” Sadly, many in our society do not share this view of language variation. As DeBose puts it, “the superior position of the dominant group is justified by its ‘proper’ speech. Similarly the subordinate position of marginalized groups is legitimated by the characterization of their language in such pejorative terms as poor, slovenly, broken, bastardized, or corrupt” (2007: 30). This marginalization is, however, based entirely on socio-political dispositions; non-standard dialects have complex, creative, and regularized structures which are not only logical, but may be more expressive than Standard English in some ways (see Labov 2008 for a condensed overview of the regularity, vitality, and uniqueness of African American Language and Mallison).
Dialect can be defined in many ways. Most innocuously for the non-linguist, dialect may refer simply to people who speak differently. Less impartially, dialect may refer to a stigmatized conception of the way people speak in a certain region of the country. Southerners, for example, are expected to have a drawl and New Yorkers have the reputation of speaking brusquely. Most damaging is the perception that people who say things like "Imma fixin' to" or "She asks for it" are ignorant and uneducated or, worse, uneducatable. Sadly, this final, most damaging stigmatization of speakers of certain dialects is common not only in society in general, but also in our education system. Godley, et al comment on this phenomenon in K-12 schools, citing teachers who say things like “Rajid can’t do challenging work—just listen to the way he talks” [4]. Students need teachers who believe they can succeed without dialect bias.

III. DIALECT IN EDUCATION

The artificial elevation of Standard English has been going on since John Adams’ push for a national language academy in the 1700s, and only in the last few decades have educators, driven by high profile cases involving linguistic prejudice in the Martin Luther King Junior Elementary School in Ann Arbor, MI and the Oakland School Boards Resolution on Ebonics, questioned the exclusivity of Standard English in school. Some now argue that since no given language variety is inherently better than another, all students should have the right to express themselves in their own dialect and would have educators “accept a student paper with nonstandard features of language if the message was clear and the argument well supported” (Smitherman, 2000: 388). Others have maintained that “To tell a student [who] speaks bad English that he is merely suffering from dialect discrimination is so disingenuous and unfair as to be cruel…. To not know the forms of proper English usage is ignorance; to know them and still not use them because of your desire to be ‘culturally diverse’ is attempted murder upon the English language” (Fulghum, 1993 cited in Wolfram, et al, 1999). The compromise solution supported by the National Council for Accreditation of Teacher Education (NCATE) is that we have a dual responsibility to our students. On the one hand, we must train them in the language most valued by business, government, the media, and other educators, and on the other we must train all users of our language (those who speak the Standard from birth as well as those who do not) about the regularity and logic of linguistic variation across our historical and cultural backgrounds. As Adger (2005: 100) puts it, “Curricular attention to dialect awareness is relevant also to the necessity of fostering respect for group differences. In a culturally diverse society like ours, we must guide students to the understanding that respect is warranted by the fact that differences are differences and not defects.” We must embrace language diversity in our classrooms to fight social injustice and promote tolerance and inclusivity in our society.

Issues of dialect discrimination are not limited to isolated communities in other areas of the country. South Carolina is home to high concentrations of several highly stigmatized dialects including African American English, Appalachian dialects, Native American language influence, and Gullah creole. Additionally, the Upstate region has one of the highest immigrant population growth rates in the United States. Diversity and tolerance need to be stressed not only in terms of race, ethnicity, gender, physical characteristics, etc, but also with regard to dialect. In fact, since dialect intolerance is more resistant to change than other types of prejudice [5], dialect diversity deserves a focal position in our collective approach diversity in the classroom.

Perceptions based on dialect not only lead students to associate with some of their peers and shun others, but also have a significant impact on self-image and accordingly on students’ likelihood of academic success. Instruction in the regularity and logic of dialects should not replace instruction in Standard English, but may serve as a bridge between students’ home languages and the more prestigious form of English we so often tell them they need in order to go on to college or to move up the employment ladder after graduation. In fact, Adger (2005) notes that we do not need to hold Standard English out as a future necessity, as our students already have a sense of the role of Standard English in day to day activities. In a three year study of five elementary schools in Maryland, she found that students frequently used their dialects in the classroom, despite their teachers’ concerted efforts to make them use Standard English. The one notable exception to this trend, she found, was that students employed more Standard English when given an authoritative position in the classroom, that is when they were asked to lead a class activity or teach their classmates about something. While overtly correcting non-standard usage may lead to demoralized and silent students, putting them in positions of authority may encourage them to practice the targeted standard forms as they are simultaneously stretched in other ways as well.
IV. DIACET EDUCATION IN SOUTH CAROLINA

While this discussion has been going on for over 40 years, and though teacher preparation organizations like the National Council of Teachers of English and the International Reading Association have long called for “students [to] develop an understanding of and respect for diversity in language use, patterns and dialects” (NCTE/IRA, 1996: 3), little progress has been made. Part of the reason is because language ideology is, as Wolfram and Schilling-Estes (2008: 187) state it, “among the most entrenched belief systems in society, rivaling religion, morality, and nationalism in terms of partisanship” and language discrimination is more resistant to change than other types of prejudice (Wolfram, Adger & Christian, 1999). This resistance must not lead to resignation, but rather to benevolent activism (see Glancy, 2009). Issues of dialect discrimination affect us directly as South Carolina is home to high concentrations of several highly stigmatized dialects including African American English, Appalachian dialects, and Gullah as well as one of the highest immigrant population growth rates in the United States. Educational inclusivity must apply to the non-standard dialects our children speak as well as to more traditional targets of diversity programming and teacher education programs have the greatest potential impact on next generation of K-12 educators.

In an effort to address these issues by promoting linguistic tolerance, we are working to introduce dialect diversity into the South Carolina middle schools though a set of curricula which teachers can use in their classrooms. Our model is based on a similar project in North Carolina which provides teachers of that state with detailed dialect awareness curricula. Unfortunately, due to differences in both resident dialects and state standards, the North Carolina materials are not suitable for our state. Because of the value of cross-curricular materials and the make-up of South Carolina State Education Standards, our dialect diversity materials target an interdisciplinary approach involving both Social Studies (SS) and English Language Arts (ELA) classrooms. While dialect diversity should be addressed at all levels, it is often in middle school that students become most aware of dialectal differences, and as the eighth grade SS curriculum focuses on the history of South Carolina, we are designing our materials for this audience.

V. THE PROJECT

As part of this project we are soliciting input from members of the Education departments at Furman University and the University of South Carolina Upstate, as well as practicing eighth grade teachers in creating cross-curricular lesson plans. Our lesson plans include subtle treatment of the dialects of the people central to the historical development of South Carolina. Dialect issues are integrated with other materials in an effort to induce understanding and tolerance. Our plans are created as stand-alone units, designed to be integrated into teachers’ yearly plans as appropriate, and reflect current best practice by addressing multiple-learning styles and incorporating “living language” via primary documents and multimedia. These curricular materials include 12 lesson plans involving investigation of six historical and current of languages and dialects of SC with focus on the regular, logical patterns of traditionally stigmatized speech.

Our preliminary approach includes six units based on historical periods (dialect foci are noted parenthetically): Native Americans (Catawba and Cherokee), Early Settlement (Colonial English), the Revolutionary War (Appalachian dialect), slavery and the Civil War (Gullah), late 20th century immigration (ESOL), and modern times (African American English). Each period includes optionally cross-curricular lesson plans for both SS and ELA; all of the lesson plans culminate in discussion about the people who use(d) the language and the effect of language in their society. Primary goals targeted by these materials include increased awareness of the social impact of language, tolerance for stigmatized language in others as well as in one’s self, and advocacy for bi-dialectalism in which speakers of stigmatized dialects embrace their heritage language as a bridge to mastering the socially preferred Standard English. Practicing middle school teachers will be recruited to test these materials in the classroom and to discuss their experiences at community discussions. A long range goal of this program is to publish lesson plans to the Internet for use by teachers across the state.

One lesson plan utilizes excerpts from a primary source document first published in 1913: Our Southern Highlanders by Horace Kephart. Students examine excerpts from the text exploring Appalachian culture and then read a local tale presented in the rich dialect of the southern foothills of the Appalachian Mountains. SS
standards are addressed through investigation of the Highlanders’ contributions to South Carolina’s Revolutionary War efforts and with the conflict of cultures resulting from the migration of these mountaineers into the developing mill communities of early twentieth century.

As they explore the mountain culture in its speakers’ native dialect, students discover both a sympathetic portrayal of the Highlanders’ language and the dialect-based bias they faced. The changing nature of language and the potential for dialect-based prejudice are examined in this impersonal, socio-historical context. This lesson is cross-curricular in that it addresses ELA standards involving communication with differing audiences and recognition of bias in a variety sources. Students also rewrite segments of the primary source in Standard American English and in TXT. Demonstration of the mechanisms of changing language and discussion of the bias some have against TXTing indirectly advocates tolerance and appreciation of dialect diversity.

VI. CONCLUSIONS

Our goal is to have a complete set of lesson plans developed, reviewed, tested and available to South Carolina teachers by December of this year for possible integration into eighth grade classrooms in the spring semester. These materials complement instruction in standard grammar; they do not supplant it. The importance of Standard English for success in students’ future academic and career goals cannot be denied, but a student who feels inadequate linguistically is unlikely to succeed in any academic area. Hence tolerance of dialect diversity serves not only the community at large, but also the individual. By embedding linguistically diverse lessons in the curriculum, we hope to brighten the future of South Carolina middle school students as they grow to understand, tolerate, and even embrace the diversity of South Carolina dialects.

In closing we address teachers and pre-service teachers specifically and suggest three steps you may take to become involved in helping to send the message of language diversity and tolerance. First, establish a relationship with a linguist interested in issues of linguistic diversity. Educators and linguists have too long worked independently toward similar goals of inclusion, tolerance, and excellence in education. Many linguists would be delighted to work with you in designing and providing materials for pre-service and in-service teachers that will help them refine their knowledge and perception of language variation to support linguistic tolerance in their students. If your college or university does not have a linguist, contact Dr. Marlow and he will be happy to work with you, or to connect you with someone in your area of the state. Second, watch for opportunities to discuss linguistic diversity. Also encourage your students to openly discuss dialect tolerance when they have classrooms of their own (c.f. Reaser, 2007). Finally, we invite you to take an active part in spreading the message of language diversity and tolerance. In the coming year we, the authors in coordination with other educators and linguists from several parts of the state, hope to pilot language awareness and tolerance curricula in eighth grade Social Studies and English Language Arts classrooms. The purpose of these emerging materials is to encourage awareness of, and tolerance for, variation in the language of all people in our society. These materials will not undermine the teaching of Standard English, but a student who feels inadequate linguistically is unlikely to succeed in any academic area. Rather our goal is to build bridges for students from non-standard forms to comfort in speaking the standard. There is much work to be done, but the stakes are high. By introducing these lessons into South Carolina classrooms, we hope to brighten the future of our state as her citizens grow to understand, tolerate, and even embrace the diversity of South Carolina dialects. Please get involved!

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REFERENCES


IMPLEMENTATION OF THE NORTH AMERICAN AMPHIBIAN MONITORING PROGRAM IN THE UPSTATE REGION OF SOUTH CAROLINA

Abstract. In response to the global amphibian decline issue, the World Conservation Union developed the Declining Amphibian Task Force. A goal of the task force is to identify geographic areas where amphibian declines are happening. One large scale inventory and monitoring program developed through the task force is the North American Amphibian Monitoring Program (NAAMP). Specifically, NAAMP was developed in 1995 as an initiative to monitor amphibian population trends in Canada, Mexico and the United States. NAAMP uses breeding call surveys to document presence and persistence of anuran (i.e., frog and toad) species in a region. South Carolina joined NAAMP in 2008. USC Upstate’s research group, Upstate Herpetology, collects data for NAAMP routes located in the upstate region of South Carolina. Specifically, we were assigned 11 routes located in 7 Upstate counties. Ten potential anuran breeding sites are located along each route; thus, we survey 110 potential anuran breeding sites. Our goals for 2008 were to assess the productivity of our routes, the species richness of our region and seasonal impacts on breeding phenology. In short, we recorded anuran calling activity at 91 of the 110 potential breeding sites surveyed, and twelve anuran species calling along Upstate routes. Season impacted both intraspecific and interspecific variation in calling activity. The program is ongoing and our expectation is that through the NAAMP data will allow us to evaluate how global climate change variables impact anuran range expansion, range contraction, breeding phenology and community assemblages in the Piedmont of South Carolina.

Keywords: Biodiversity Crisis, Amphibian Decline, Breeding Call Surveys

Alexsis Ferguson. As a science education major, the NAAMP program combined both of my academic interests. Through participation in the program I was able to speak to high school students, college communities (i.e., students and faculty), gather volunteers, and continue to learn more about the importance of local anuran populations. In coauthoring this piece, I gained an appreciation for the amount of patience and diligence involved with converting data into a product that communicates findings to an audience. My future goals are to work with the public in science education and potentially pursue a master’s degree. My hobbies include horsebackriding, singing, and spending time with family. I would like to thank Dr. Pilgrim for working such long hours with me on this research, and continuing to be such a great support through it all.

Dr. Melissa Pilgrim. Dr. Melissa Pilgrim is an Assistant Professor of Biology and has been at USC Upstate since Fall 2006. Her primary research focus involves an integrative approach to investigating how ecosystems respond to environmental change (natural and anthropogenic). Her research program integrates field ecology, biogeochemistry (e.g., stable isotopes), and ecophysiology. She earned her Ph.D. from the University of Arkansas in 2005 and transitioned to a post-doctoral research position at the University of Georgia’s Savannah River Ecology Laboratory. Her publications range from book chapters in Herpetology volumes to scholarly articles in isotope, ecological, and herpetological journals. Dr. Pilgrim holds elected positions with the American Society of Ichthyologists and Herpetologists and the Herpetologist’s League, and she serves as book editor for the Association of Southeastern Biologists. Her hobbies include hiking, yoga, gardening and cooking.
I. INTRODUCTION

Humanity currently faces an environmental crisis: the loss of biodiversity [1-2]. Biodiversity refers to the variety of life on Earth. To date, there are approximately 1.4 million identified living species [3]. We are losing these species to extinction at a rate 100 –10,000 times faster than the background extinction rate observed in the fossil record [4]. In fact, the fossil record is dominated by five mass extinction events, and some scientists label the current trend in biodiversity loss as a sixth mass extinction [5]. Unlike the previous five mass extinction events, the current event is largely the result of human impacts on the environment [5].

In both scientific and public communities, one of the most publicized outgrowths of the biodiversity crisis is the issue of global amphibian decline. Of the 5,743 described species of amphibians, 32.5% are listed as threatened by the World Conservation Union [6]. In addition, the current amphibian extinction rate is 211 times greater than the background extinction rate for amphibians [3]. The disappearance of this group draws much attention for good reason. In many ecosystems amphibians are critical to energy/nutrient cycling within the system [7]. For example, more than a ton (over 400,000 individual captures) of amphibian biomass was exchanged between one isolated wetland and the surrounding forest [8]. In addition to their role in ecosystem function, amphibians are often viewed as measures of ecosystem quality. Because of their sensitivity to environmental perturbation (e.g., thin skin makes them susceptible to pesticide poisoning), they are viewed as bioindicators that reflect the health of an ecosystem. Amphibian loss is perceived as one factor that can destabilize ecosystem function and it represents environmental degradation. Thus, from a human perspective, global amphibian declines are often viewed to represent overall environmental degradation likely associated with a reduction in ecosystem services and direct health risks.

In response to the global amphibian decline issue, the World Conservation Union (IUCN/SSC) developed the Declining Amphibian Task Force. A goal of the task force is to identify geographic areas where amphibian declines are happening. One large scale inventory and monitoring program developed through the task force is the North American Amphibian Monitoring Program (NAAMP). Specifically, NAAMP was developed in 1995 as an initiative to monitor amphibian population trends in Canada, Mexico and the United States (see www.pwrc.usgs.gov/naamp). NAAMP takes advantage of a particular behavior associated with anuran breeding events. Each species of frog or toad has a unique breeding call (vocalization/song; see Fig. 1). NAAMP uses breeding call surveys to inventory and monitor presence and persistence of anuran species in a region. South Carolina joined NAAMP in 2008. USC Upstate’s research group, Upstate Herpetology, is responsible for collecting NAAMP data for the Upstate region of South Carolina. Our objectives for the 2008 season were to evaluate the productivity of Upstate calling routes, the species richness of our region and seasonal impacts on anuran calling activity.

II. METHODS

The USGS assigned 11 routes to the Upstate region of South Carolina. The routes are located in seven counties: Chester, Greenville, Laurens, Newberry, Spartanburg, Union, and York. We followed standard NAAMP protocol (see http://www.pwrc.usgs.gov/naamp/naamp_protocol.pdf) for data collection along each route. Each route had ten stops. Each stop represented a potential amphibian breeding site for our region; thus, there were 110 potential breeding sites along the Upstate routes. Potential breeding sites encompassed a variety of habitats, such as flooded wetlands, farm ponds, creeks, and road ditches. Since 2008 was our first year in the program, we were busy establishing the stops along each route during NAAMP sampling window 1 (January 15th – February 28th). Thus, for the 2008 season we only conducted anuran calling surveys during NAAMP sampling windows 2 and 3. Sampling window 2 spanned from March 15 through April 30, while sampling window 3 spanned from May 15 through June 30. At each stop, we recorded the time, temperature, noise factor (e.g., traffic) and moon visibility. Then we recorded any anuran species calling during a five minute period. We used a numerical scale to score anuran calling activity. The scale ranged from 1 to 3, with one representing low calling activity (e.g., hearing individual frog calls) and three representing high calling activity (e.g., full breeding chorus of many overlapping calls). We used EXCEL (version 2003) for data management.
III. RESULTS

We recorded anuran calling activity at 91 of the 110 potential breeding sites surveyed. The York county route was our least productive route, with 6 of 10 stops having no calling activity. Our Spartanburg county route was the most productive route, with 8 of 10 stops having calling activity in both sampling windows. The number of species calling per stop ranged from 1-5, with per stop species richness being higher during sampling window 3 (Fig. 2).

We recorded 12 anuran species calling along Upstate routes (Table 1). During sampling window 2, we recorded calling activity for only 10 of the 12 species. The three dominant callers during window 2 were Spring Peepers, Northern Cricket Frogs, and Fowler’s Toads (Fig. 3). During window 3, we recorded calling activity for only 9 of the 12 species. The three dominant callers during window 3 were Fowler’s Toads, Green Treefrogs, and Northern Cricket Frogs (Fig. 3). In addition to documenting interspecific variation in calling activity between sampling windows, we recorded intraspecific variation in calling activity. For example, we recorded a 50% increase in American Bullfrog calling activity between windows 2 and 3 (Fig. 3).

We recorded at least 1 full chorus for 9 out of the 12 species (Fig. 4). In sampling window 2, we scaled over 70% of Spring Peeper calling activity as full breeding choruses (Fig. 4 & 5). In sampling window 3, we scaled over 50% of American Toad and Green Treefrog calling activity as full breeding choruses (Fig. 4 & 5).

IV. DISCUSSION

A. Overall Conclusions

Overall, our 11 Upstate routes were very productive. In our first year of NAAMP participation, we documented the presence of 12 of the 15 anuran species expected to occur in the Upstate region. Two of the 12 species (i.e., Northern Cricket Frogs and Pickerel Frogs) are listed as species of concern by the South Carolina Department of Natural Resources (https://www.dnr.sc.gov). Our hope is that data collected in the Upstate will be useful when developing management plans targeting conservation of these species statewide.

Often, the numerical score for calling activity is used as an index of species abundance at a site. For example, Nelson and Graves (2004) found there was a positive correlation between the number of individual Green Frogs captured at farm ponds in Michigan and the numerical score recorded for calling activity in the ponds [9]. Nine of the 12 species we recorded had at least one site where we scored their calling activity as a full breeding chorus (i.e., a numerical score of 3). Thus, it appears several species have sites in the Upstate where they are locally abundant.

NAAMP protocol has received some criticism [10-12]. For example, NAAMP protocol specifies that call surveys are to be conducted in the time window spanning half an hour following sunset until 1am. The concern is that the protocol will underestimate the presence of species that call during other times of the day. For example, Bridges and Dorcas (2000) demonstrated that the NAAMP protocol would likely underestimate Southern Leopard Frog occurrence on the Savannah River Site (SRS; Aiken, South Carolina) during certain times of the year [13]. On the SRS in July, Southern Leopard Frogs had peak calling activity between midnight and dawn. NAAMP data sets do have certain limitations. However, if viewed as a long term inventory and monitoring program, NAAMP can contribute useful information on both presence and persistence of anuran species in a region. Our expectation is that through time our NAAMP data set will allow us to evaluate how global climate change variables (e.g., precipitation and temperature patterns) impact anuran range expansion, range contraction, breeding phenology and community assemblages in the Piedmont of South Carolina.

B. Future Goals and How You Can Help

The NAAMP program is ongoing. We have an army of volunteers collecting data along our upstate routes each year for NAAMP sampling windows 1 – 3. The majority of our volunteers are USC Upstate undergraduates; however, community members and other students are welcome to participate. NAAMP is a nationally based program and requires participating volunteers to know frog calls for their region well enough to pass the national frog call quiz.
We generally request that volunteers commit to running their assigned route or routes for an entire year. This means donating time running each assigned route a minimum of three nights per year (once during each of three sampling windows). If you are interested in participating in the program, please contact Dr. Melissa Pilgrim at mpilgrim@uscupstate.edu.

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We would like to thank the following volunteers for helping us collect NAAMP data during 2008: Jared Ballenger, David Brothers, Lauren Horton, Sanjana Iddyadinesh, Martha Miller, Dr. Gill Newberry, Matt Phillips, Will Reid, and Maria Sarkozi. We are grateful to our state coordinators (Dr. Eran Kilpatrick and Steve Bennett) for their willingness to integrate South Carolina into the national program and for assistance with implementing NAAMP in the Upstate region of SC. We would like to thank J.D. Willson for providing photographs.

**REFERENCES**

Table 1. Anurans recorded calling along Upstate NAAMP routes during sampling windows 2 and 3 of 2008.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acris crepitans</td>
<td>Northern Cricket Frog</td>
</tr>
<tr>
<td>Bufo americanus</td>
<td>American Toad</td>
</tr>
<tr>
<td>Bufo fowleri</td>
<td>Fowler's Toad</td>
</tr>
<tr>
<td>Gastrophryne carolinensis</td>
<td>Eastern Narrow-Mouthed Toad</td>
</tr>
<tr>
<td>Hyla chrysoscelis</td>
<td>Cope’s Gray Treefrog</td>
</tr>
<tr>
<td>Hyla cinerea</td>
<td>Green Treefrog</td>
</tr>
<tr>
<td>Pseudacris crucifer</td>
<td>Spring Peeper</td>
</tr>
<tr>
<td>Pseudacris feriarum</td>
<td>Southeastern Chorus Frog</td>
</tr>
<tr>
<td>Rana catesbeiana</td>
<td>American Bullfrog</td>
</tr>
<tr>
<td>Rana clamitans</td>
<td>Green Frog</td>
</tr>
<tr>
<td>Rana palustris</td>
<td>Pickerel Frog</td>
</tr>
<tr>
<td>Rana sphenocephala</td>
<td>Southern Leopard Frog</td>
</tr>
</tbody>
</table>

Fig. 1. Example of a calling anuran. In this picture, a Squirrel Treefrog, *Hyla squirrella*, is calling from vegetation surrounding a breeding site. Photo provided by J.D. Willson.
Fig 2. Impact of sampling window on the number of species calling per stop (i.e., per stop species richness).

Fig 3. Species-specific calling activity along the 11 Upstate routes.
Fig. 4. Percentages of species-specific calling activity scored as full breeding choruses.

Fig. 5. Based on the number of full choruses recorded, three of the most abundant species were (A) Spring Peepers, (B) American Toads and (3) Green Treefrogs. Photos by J.D. Willson.
Abstract. During the 1920s, scientific studies that viewed the African American race as biologically inferior were being contested and replaced by various sociological studies of American society, which examined American culture and its hierarchical nature, concluding that inferiority was determined not by scientific evidence, but rather by the dominant race or group. This paper uses these scientific and sociological studies to analyze F. Scott Fitzgerald’s The Great Gatsby and Nella Larsen’s Passing, in order to show how these texts reflect this changing idea of racial identity, while also exploring the implications of class identity and its relationship to race within these two texts. By examining Larsen’s Clare Kendry and John Bellew, as well as Fitzgerald’s Jay Gatsby and Tom Buchanan, this essay highlights the complexities of race, class, and cultural identity found during the modernist period. The focus on the deaths of the “passing” characters of Clare Kendry and Jay Gatsby shows the various modes of social control that are inherent within the novels and how they relate to American modernist society. This paper concludes that white racial dominance proves to be the most explicit form of social control within the two works. Fitzgerald and Larsen address this issue by agreeing with sociological studies that viewed African Americans as biological and intellectual equals, rather than inferiors, while both parodying and critiquing characters hostile to these emerging ideas.

Keywords: The Great Gatsby, Passing, Race, and Class

John Crocker graduated from USC Upstate in December of 2008, earning a Bachelor of Arts Degree in English with an emphasis in American Literature. He is currently working as an OSP Career/Transfer Advisor at USC Union. “This research project allowed me to explore many of my current interests, including race, class, and American literature. I was able to look at Modernist American society from various scientific and sociological perspectives, and apply them to two prominent novels of that period. I particularly enjoyed seeing the shifting attitudes towards race that were beginning to take root during the early part of the 20th century, and being able to see these attitudes reflected in these novels.”

Dr. Celena Kusch. Dr. Celena E. Kusch is an Assistant Professor of American Literature in the Department of Languages, Literature and Composition at the University of South Carolina Upstate. With a Ph.D. in Literature from the University of Wisconsin-Madison, Dr. Kusch specializes in early twentieth-century modernism, with a secondary specialization in postcolonial literature. She has published articles on the issues of cosmopolitanism, transnationalism, and American identity in the journals American Literature and the Journal of Modern Literature. Her research focuses on the modernist writers H. D., Marianne Moore, Bryher, and Dorothy Richardson.
I. INTRODUCTION

Tom Buchanan, when speaking to Nick Caraway in *The Great Gatsby*, alludes to the racial fears and anxieties prevalent during the modernist period. Tom states, “Civilization’s going to pieces [...] the white race will be – will be utterly submerged. It’s all scientific stuff; it’s been proved” [1]. This fear of the submergence of the white race echoes “Danger in Race Mixture,” a study published in *The Science News-Letter* (1927), which states that the “negro-white” combinations “seem, on the whole, socially inferior to the parent races,” because they combine “something of a white man’s intelligence and ambition with an insufficient intelligence to realize that ambition” [2]. Therefore, scientific discoveries during the early part of the modernist period shunned the mixing of races, mostly because African Americans were viewed as biologically and intellectually inferior to whites. However, as pointed out by James Reinhardt in “The Negro: Is He a Biological Inferior” (1927), racial superiority is enacted by “peoples who happen to occupy, for the time, a favorable position; and that these arguments have had an emotional, rather than a scientific and rational, background” [3]. Reinhardt is pointing out that racial inferiority is not based on science or rationale, but is rather based on racial dominance, and it is the white race that has been in control throughout the history of the United States. This transition of thought, in which popular notions of racial identity were challenged, allowed the literature from this period to reflect and struggle with these ideas, which is evident in F. Scott Fitzgerald’s *The Great Gatsby* (1925) and Nella Larsen’s *Passing* (1929). These texts reflect the scientific and sociological studies on race that were being performed during the modernist period, allowing us to see the contradiction of views regarding race, while siding more with the sociological studies that viewed African Americans as biologically equal, rather than inferior.

II. BIOLOGICAL AND SOCIOLOGICAL IMPLICATIONS OF PASSING

Opposing views of African American identity collided during the 1920s. While “nativists,” like the character of Tom Buchanan, wanted to oppress African Americans in order to retain white racial superiority and power, others sought to redefine African American identity by delving deeper into the African culture. In her introduction to the 1997 edition of *Passing*, Thadious Davis writes that the 1920s were the “golden days of black cultural consciousness” [4]. This “black cultural consciousness” came about partly as a result of the Harlem Renaissance, a movement that saw African American writers, musicians, and artists redefine black identity through their rediscovery of the African continent as a place of cultural beginnings. However, they could not escape the white dominated society in which they found themselves, and while the 1920s saw an expansion of the African American middle class, white privilege was something many African Americans desired, which is seen in the number of “passers” during the 1920s. Walter White, a blond haired, blue eyed, “voluntary black person” and leader of the National Association for the Advancement of Colored People, stated that the number of “passers” was “very large – much larger than is commonly suspected” (qtd. in [4]).

The issue of “passing,” in order to be entitled to the privileges that white people were entitled, shows us the mindset of 1920s America, in that it allows us to see white racial dominance and the perceived inferiority of African Americans.

The issue of “passing” also combines elements of both race and class, which as Herbert Miller states in his essay “Race and Class Parallelism” (1928), became intertwined during the modernist period, due to the fact that class supremacy became much more visible. Miller states, “class formulations were developed first, and merely appropriated when race consciousness in its modern form appeared,” which means that the “racial cult and the accompanying vocabulary have been built up for the purpose of maintaining class supremacy” [5]. Therefore, class takes precedence over race, and racism is simply a means to maintain class supremacy. In Nella Larsen’s *Passing*, social class and privilege take precedence over race for Clare Kendry, a character who “passes” constantly, even marrying a wealthy and racist white husband, John Bellew, as opposed to Irene Redfield, who only passes occasionally and lives in the middle of Harlem with her very dark skinned husband and children. Clare, when talking to Irene about “passing,” states, “I’ve often wondered why more coloured girls, girls like you and Margaret Hammer and Esther Dawson and – oh, lots of others – never ‘passed’ over. It’s such a frightfully easy thing to do. If one’s the type, all that’s needed is a little nerve” [6]. Clare wonders
why more able African Americans do not “pass,” seeing the social privileges and opportunities that it brings. “Passers,” like Clare, were able to gain a desired class identity by subverting their racial identity.

In addition to showing the class privileges that result from “passing,” Larsen also puts an emphasis on racial identity, which allows us to question Clare’s decision to “pass” as white. Irene, when questioning why she did not “take up the defence of the race to which she belonged” after Clare’s white husband insulted the African American race, thinks, “She had to Clare Kendry a duty. She was bound to her by those very ties of race, which, for all her repudiation of them, Clare had been unable to completely sever” [6]. This passage places racial identity above class identity and allows us to see Davis’s “black cultural consciousness” that came about during the 1920s by narrating to us Irene’s feeling of racial solidarity with Clare, as well as showing that Clare too felt those same feelings of racial solidarity, despite her “passing” and desire for class identity.

Larsen, by giving Clare and Irene feelings of racial solidarity despite their obvious physical differences from darker skinned African Americans, is seemingly disputing the modernist idea that there is a biological difference between what Robert Terry, in his essay “The American Negro” (1929), calls the “negro and the brown” [7]. Because of this biological difference between African Americans and darker skinned whites, Terry writes that it can impact the African American’s ability to survive in an urban environment, as opposed to the rural areas from which many African Americans migrated from during the early part of the 20th century. The African American’s ability to thrive in an urban environment is also the subject of Jean Toomer’s Cane, a book of short stories written during the Harlem Renaissance period. Larsen focuses on this same issue in Passing, choosing to set her story within the urban environments of Chicago and Harlem. Larsen seems to uphold Terry’s idea of biological difference being a hindrance in the urban environment of Harlem. Irene attempts to convince Clare “of the folly of Harlem for her,” stating, “I can’t help thinking that you ought not to come up here, ought not to run the risk of knowing Negroes” [6]. This statement from Irene contradicts her earlier statements about racial solidarity and the duty that she feels towards Clare. Her concerns for Clare’s safety in this passage do not emanate from the bond of race, but rather from her loyalty to childhood friendship and her simultaneous selfish desire to permanently rid herself of Clare. By saying that Clare should not “run the risk of knowing Negroes,” Irene is setting Clare apart from the race, which is ultimately what Clare has done to herself, and any ties to race have been severed for Clare, although Irene believes that Clare cannot genuinely sever those ties.

According to Irene, Harlem would be an unfriendly environment for Clare, a “passing” African American. The biological differences that allow Clare to “pass” would affect her ability to live comfortably within the urban environment of Harlem, which is the basis of Terry’s argument. However, the real threat to Clare’s survival in Harlem is less biological than it is sociological, seeing that the true threat would come from society, either the African American society of Harlem, or the white society of her husband. This dichotomy of sociological threats to Clare is represented when Irene tells Clare, “Brian and I have talked the whole thing over carefully and decided that it isn’t wise. He says it’s always a dangerous business, this coming back. He’s seen more than one come to grief because of it. And, Clare, considering everything – Mr. Bellew’s attitude and all that – don’t you think you ought to be as careful as you can?” [6]. Brian’s views of “coming back” as dangerous represent the threat that would come from African American society, while Irene points out that Clare’s husband’s racist attitude could also lead to her ruin if he ever found out. This debate between the two Harlem-based characters, Irene and Brian, illustrates the ambiguous relationship between Clare and the two societies in which she belongs, an ambiguity that becomes even more crucial at the end of the novel.

Passing ends with Clare dying after falling six stories from an open window. Her husband, who has found out the truth about Clare’s racial identity, arrives at the party, saying, “So you’re a nigger, a damned dirty nigger!” [6]. Clare’s indifferent “faint smile from her full, red lips” infuriates Irene to the point that she runs toward Clare and grabs her arm, with Clare’s white husband standing right in front of them and Brian, Irene’s African American husband, stepping out from the crowd [6]. What really happens to Clare after that is unknown, because the narrator, who is focalized through Irene, states, “What happened next, Irene Redfield never afterwards allowed herself to remember. Never clearly. One moment Clare had been there, a vital glowing thing, like a flame of red and gold. The next she was gone” [6]. The ambiguity regarding Clare’s death is related to the ambiguity of Clare’s relationship with Harlem, in that the two societies to which Clare belongs are present at the moment she fell from the window. Her husband represents the white society, while Irene and Brian represent the African American society, both of which are hostile to “passing” people in this novel. Therefore, the threat to Clare’s existence in the urban environment of Harlem is purely sociological, rather than biological, which only dictates Clare’s skin color. However, it is the color of her skin that allows her to
choose between the two societies, and therefore, biology plays an important role in the act of “passing.” If Clare had not attempted to move within the two societies, then she may have been able to survive the urban environment in which she found herself, which allows us to view sociological factors as the leading cause of her demise.

III. RACE AS THE “ULTIMATE TROPE OF DIFFERENCE” IN THE GREAT GATSBY

Just as sociology is important to understanding African American survival within a given setting, sociological studies performed during the modernist period also helped to disprove the scientific studies that saw African Americans as biologically inferior to whites. James Reinhardt points out that biological inferiority is determined by the racially dominant group and is not predicated on rational or scientific facts [3], and Wilson Wallis also states in “Race and Culture” (1926) that differences among human beings can be attributed to culture, rather than race, saying that difference among races “fluctuate as the culture life of neighbors changes, and independently of changes in the physical type of the group in question” [8]. Because of this fluctuation of racial changes, Wallis notes, “we have no reason to believe that one race differs from another in innate psychic equipment” [8], but rather can attribute all differences to the particular culture and environment of a certain group. Despite this growing trend away from biological determinism, the character of Tom Buchanan in F. Scott Fitzgerald’s novel The Great Gatsby upholds the previously perceived scientific evidence that African Americans are biologically inferior to whites [1], while also unintentionally affirming the studies of Reinhardt [3], Miller [5], and Wallis [8] that disagree with these scientific discoveries.

Tom, after pointing out that he has read Goddard’s “The Rise of the Colored Empires,” by noting that he feels “civilization’s going to pieces” because of the submergence of the white race, also states, “It’s up to us, who are the dominant race, to watch out or these other races will have control of things” [1]. Tom is stating that the white race is the dominant race, which, according to Reinhardt, dictates who they feel is biologically inferior. Therefore, Tom is agreeing with Reinhardt, while attempting to uphold the perceived scientific discoveries by saying, “It’s all scientific stuff” [1]. After Tom is finished speaking, however, Fitzgerald allows us to see him as pathetic by having Nick state, “There was something pathetic in his concentration” [1]. Fitzgerald is aware of these scientific studies, which is why he allows Tom, a dishonest character who cheats on his wife, to adhere to these beliefs. Therefore, Fitzgerald is implicitly disagreeing with these scientific studies and leaning more toward the sociological studies performed during the modernist period.

Tom’s support of these early twentieth-century scientific studies of race influences his opinions about interracial marriage. As Tom is talking to Daisy about her relationship with Jay Gatsby, he says, “Self-control […] I suppose the latest thing is to sit back and let Mr. Nobody from Nowhere make love to your wife […] Nowadays people begin by sneering at family life and family institutions, and next they’ll throw everything overboard and have intermarriage between black and white” [1]. Tom’s hypocritical statements allow us to conclude that he sees Gatsby as the “other” based on Gatsby’s socioeconomic status, rather than racial affiliation. However, Tom does state that the next step after inter-class relationships is interracial marriage, which creates a relationship between class and race, much like the study performed by Miller, who states that racism was only appropriated to maintain “class supremacy” [5].

The relationship between socioeconomic “others” and racial “others” allows us to connect Larsen’s Clare Kendry and Fitzgerald’s Jay Gatsby, who also “passes” in order to achieve his desire of marrying into a higher social status, embodied in the character of Daisy Buchanan. This connection between Clare and Gatsby is the subject of Charles Lewis’s “Babbled Slander Where the Paler Shades Dwell: Reading Race in The Great Gatsby and Passing,” where he states, “A character like Clare Kendry, who literally passes racially, therefore suggests important (and potentially disturbing) connections to one like Jay Gatsby, whose passing is figuratively rendered in terms of racial blackness” [9]. Much like Walter Benn Michaels states, “For Tom […] Gatsby isn’t quite white, and Tom’s identification of him as in some sense black suggests the power of the expanded notion of the alien” (qtd. in [9]). Tom calls Gatsby a “Nobody from Nowhere” [1], which alienates Gatsby based on social class, but because Tom connects inter-class relationships with interracial marriage, he is also racially alienating Gatsby, which furthers Gatsby’s exclusion from the dominant U.S. culture and class. In this passage, Fitzgerald agrees with Henry Louis Gates’s statement that race is the “ultimate trope of difference”
Therefore, Fitzgerald places racial difference above class difference, instead of seeing racism simply as a means to maintain class supremacy.

Just as Clare’s racial “passing” leads to her demise, Gatsby’s socioeconomic “passing” also ends when he is killed by George Wilson, who finds out from Tom that Gatsby is responsible for the death of his wife, Myrtle. Tom states that he told Wilson “the truth,” and that Gatsby “had it coming to him” [1]. Tom’s truth, much like the scientific truths of the early modern period, is determined by the dominant culture, rather than being based on rational thought. Therefore, the truth that leads to Gatsby’s death is also based on racial and class dominance, which is furthered by Tom’s admission that Gatsby “had it coming to him.” Gatsby is the alienated “Nobody from Nowhere,” which allows Tom to feel justified in telling Wilson that Gatsby killed Myrtle, although Daisy, not Gatsby, was driving at the time Myrtle was hit. Like Irene’s selfish desire to rid herself of Clare, Tom also wants Gatsby out of his life. Because Tom sees Gatsby as not fully belonging to the white race, while also viewing racial difference above all differences, we can see Tom’s role in Gatsby’s death as a way of stopping the submergence of the white race, which for Tom comes about through both inter-class and interracial relationships. However, it is Tom’s view of Gatsby as not fully belonging to the white race that ultimately leads to Gatsby’s demise. As Michael Eric Dyson states, poor whites were prevented from “being viewed as the ultimate cause of harm to white civilization” [10]. Dyson is pointing out that African Americans, rather than poor whites, have historically been seen as the ultimate threat to white superiority. Therefore, because Tom views Gatsby as not fully belonging to the white race, he is able to see him as a threat to white racial dominance as well.

### IV. CONCLUSIONS

The need for this social dominance and control proves to be the real threat for both Fitzgerald and Larsen. The irrational maintenance of white biological dominance is the fatal force in both books. The novels address these issues of social control by questioning modern scientific studies that viewed African Americans as biologically inferior, and instead force us to see the emerging views of race that were coming to light during the 1920s. At the end of both novels, the “passing” characters die, which represents the modernist attitudes towards the racial and socioeconomic “other.” Tom and John Bellow, both “nativists,” are threatened by the “other,” and are fearful that the dominant white race will lose control. This same “nativist” thought influenced scientific studies like “Danger in Race Mixture,” which attempted to point out the threats that would arise from interracial marriages and relationships [2]. However, the novels use nativists to introduce the purportedly scientific evidence of that threat, causing our sympathies to lie with the victims of the racist ideologies.

Based on these novels, Fitzgerald and Larsen seem to agree with the progressive sociological studies that were being performed during the 1920s. While both Tom Buchanan and John Bellow agree with the scientific studies that warned against interracial marriages and relationships, the narration, however, does not. By focalizing the narrative through Irene, we are able to see John Bellow as a person who hurls racial insults because of his extreme racist attitude. The same is true for Tom, in that the narrator, Nick, constantly remarks about Tom’s pathetic demeanor, presenting Tom as a racist, rather than a “nativist” hero. These narrators allow us to see both novels as disagreeing with the scientific idea that African Americans are biologically inferior to whites, and instead allow us to see the complexities of race and class inherent in the modernist period. The struggle for an African American identity, apart from the given identity as biological and intellectual inferior, was a primary aim of the 1920s Harlem Renaissance. By situating both novels within this important decade of racial thought and liberation, Fitzgerald and Larsen are not only struggling with the complexities, but are also making statements that reflect the shifting attitudes towards race and African American identity.
REFERENCES

FOCUSING ON THE SPILL: A STUDY OF KAREN KASMAUSKI’S PHOTOGRAPHS OF THE ALASKAN OIL INDUSTRY

Abstract. Karen Kasmauski is an accomplished photographer who has published over 25 articles in National Geographic since 1984. Her work directly impacts the viewer with a kind of immediacy that is not easily achieved through text alone. Her photography has covered topics such as Alzheimer’s disease, AIDS, and environmental problems caused by Alaskan oil businesses. Kasmauski’s photographs are both educational, due to the social and political context that they contain, and artistic, due to her sophisticated sense of color, framing, composition, and other formal elements. Using images from her 1999 photo essay “In the Wake of the Spill” this paper sets out to explore the ways in which her journalism might also be considered art, and argues that these two realms - art and journalism - that have traditionally been separated, may in fact be most effective when they operate simultaneously in any given image.

Keywords: Karen Kasmauski, Photography, Art History

Ryan Crawford. I began researching this topic while enrolled in Dr. Snow’s Women and Art class in the Spring of 2007. I chose Karen Kasmauski because I really respect her photography. They seemed dangerous to me, especially the ones taken in Alaska. Over the past two years, I have interviewed Karen Kasmauski, presented a paper at a conference in New Orleans, and extended my thesis with the help of Dr. Snow. The photos that Kasmauski takes are not only artistic but also tell a story and document history. I am majoring in History and have a minor in Art History. Not only do I have a respect for photography, but I practice it as well. Karen Kasmauski’s work has opened my eyes to photography and what it can do in the absence of or in the addition to text.

Dr. Rachel Snow. Dr. Snow is an Assistant Professor of Art History and has been at USC Upstate since 2006. Her research area is the History of Photography. She has a Ph.D. from the City University of New York Graduate Center and has published articles in Afterimage and The Journal of American Culture. She has made presentations at the Annual Association of Art Historians Conference and the American Culture Conference. Dr. Snow is originally from Salt Lake City, Utah, and lived and worked in New York City for 10 years before coming to USC Upstate.
Karen Kasmauski (1953- ) is an experienced photographer who has published several books including, *Impact: on the Frontiers of Global Health* (2003) and *Nurse: A World of Care* (2008). She has over 25 stories published by *National Geographic*, including “In the Heart of Appalachia” (1993), and “In the Wake of the Spill” (1999). The importance of her work lies not only in the beauty of her images, but also in the social and environmental issues she explores. In fact, this paper is precisely about her unique ability to combine photojournalistic and artistic techniques to create images that operate simultaneously as art and as truthful records of historical events and social problems. In this paper we will discuss her coverage of Alaskan oil and its affects on the Alaskan people, its economy and its eco-system. We will do this by analyzing her images related to the Exxon Valdez oil spill, the cleanup efforts, and the overall influence of industry on Alaska’s wild plain. The images were taken from 1995-1999, as well as on her return visits to Alaska.\(^1\)

In 1989 the supertanker Exxon Valdez, carrying 1.25 million barrels of North Slope Alaska crude to a refinery at Long Beach, California, ran aground on one of the best known navigation hazards in Alaska’s Prince William Sound [5]. The tanker released 240,000 barrels of oil. Despite contingency plans for such a disaster, the first response came 14 hours later, and efforts during the first week recovered substantially less than 4 percent of the oil. The tanker crashed for a number of reasons. Captain Hazelwood, who had been drinking vodka that evening, turned the controls of the ship to third mate Gregory Cousins, who, because of following his orders too late, crashed the oil tanker in the harbor of Prince William Sound.

Releasing 10.8 million gallons of oil into the water it is considered one of the most devastating human-caused environmental disasters ever to occur at sea. The initial wildlife death toll from the spill was estimated at 500,000 seabirds, at least 1,000 sea otters, 12 river otters, 300 harbor seals, 250 bald eagles, and 22 Orcas, as well as the destruction of billions of salmon and herring eggs[2]. In 1994, in the case of Baker vs. Exxon, an Anchorage jury awarded $287 million for actual damages and $5 billion for punitive damages to victims of the spill such as local fisheries, and wildlife rescue foundations working on the cleanup effort. The punitive damages amount was based on a single year’s profit by Exxon at that time. No matter the hours of labor, or amounts of money given through settlement by Exxon, or efforts assisted by volunteers, the impact of the spill still devastated the wildlife and landscape of Alaska. The Supreme Court of the United States has ruled several times that punitive damages be reduced. The first in 2002 to $4 billion, the second in 2006 to $2.5 billion and the third in 2008 to $500 million deciding that Exxon already paid to compensate the victims for economic losses.

The native people of Alaska are not unaccustomed to feeling the affects of settlers and corporations taking advantage of their natural wealth. Before their exploitation by industrial, governmental and missionary forces, the Alaskan people were largely if not completely self reliant. Unfortunately, the modernization which brought fur trade (1741), Christian missionaries (1780’s), the gold rush (1890’s), and oil industries (1968) also brought race discrimination, ill-health and lack of economic opportunities for native populations. While a presumed economic boom was to follow the discovery of oil in different parts of the state, the negative impacts of non-natives inevitably followed. As one piece of land was found to have large amounts of oil drawn from it, the efforts to find more oil around the state was in the works. The increased development of land continually caused a large threat to native land holders. In 1971, state Senator Ted Stevens created the Alaska Native Claims Settlement Act (ANCSA) which gave $1 billion and 44 million acres, including subsurface rights, to twelve regional and over 200 village native corporations. He explains that: “While the act has been glamorized by its proponents over the past thirty years, the fact is it was a calculated effort to get the natives ‘out of the way’ of oil development.” [4] Stevens may have felt that the ANCSA funding justified his action of relocating Alaskan Natives, but the truth is the reliance on that supplementary income has caused a plummet in employment therefore leading parts of the state into poverty.

The economic, social, and environmental problems caused by oil industries caught the attention of many sympathetic individuals who are now trying to improve conditions for native Alaskans and the environment. Kasmauski’s photo essays can and should be included among the efforts to call attention to these social, and

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\(^1\) A historical achievement of these photos is recording, what fellow Alaskan photographer Marcus Halevi considers, the last naturally wild frontier being compromised environmentally by the oil industry. Halevi is more of a traditional photojournalist in the aspect of achieving simple non-formalized images that conveys purely a specific subject matter.
environmental problems. Yet, they do so in ways that emphasize visual techniques that are as artistic as they are photojournalistic. When an important event transpires and visual representation is essential, historically it is the job of photojournalists to capture an event, person or place objectively to the greatest of their ability. A look at several specific examples will clarify the ways in which she artfully presents a social and political narrative.

Kasmauski’s photographs of the Trans Alaska Pipeline in her photo essay *In the Wake of the Spill*, (March 1999) and additional documentary images placed alongside other world health and environmental issues are taken from different perspectives gained by the use of helicopters, special zoom lenses, and intimate close up positioning. After traveling to Alaska, Kasmauski states, “The cold and isolation make a visit there feel like a trip to another planet.”[1] Her photograph *Walking On Oil Pipeline* (1996) shows a repair man walking across a piece of protruding pipeline that juts out of the side of a mountain in the Northern part of Alaska (Fig. 1). The frozen white objects surrounding the man and the pipeline give an eerie, uninhabitable appearance to the place the photograph depicts. The man walking on the pipeline is dressed in a fully covered suit to keep him warm from the harsh cold that is constant in the Alaskan tundra. The special warm outfit resembles a space suit, further heightening the hostility and untried quality of this landscape. This image provides the viewer with not only a visually interesting subject matter, but also an accurate portrayal of the daily work environment of the oil workers. The blanket of snow helps to emphasize the large pipeline as well as the human figure walking on top of it.

Other images, such as *North Slope Oil Processing Plant* (Fig. 2) and *Nuiqsut Alaska* (Fig. 3), also illustrate Alaska’s isolation and alien planet like terrain. Both photographs are landscapes which share a likeness of infinite emptiness that is interrupted only by smokestacks or organized factory buildings. The overall artistic impact of these images is the unified color tone created by the sun, which is filtered through a thick haze then reflected off the ice. The pleasantries of the soft light on the landscape are quickly removed as the viewer focuses on the factory, a factory that seems to be burning the very land it works on. The North Slope

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2 How Kasmauski has perfected her objective photojournalist ability is by studying anthropology, the knowledge of human beings, their customs and social relationships, therefore giving her the skill to process a deep understanding of the workings of different cultures. Examples of Kasmauski capturing the emotions of her subjects can be seen in her photo essays on the daily work habits of the Alaskan oil worker, Japanese women, the community in the heart of Appalachia and the industrious people of Viet Nam. When traveling to Alaska and studying the affects of the oil industries on the land and its people, her techniques gained through her study of anthropology such as having an open mind to understanding other communities’ traditions and holding conversations in order to identify with a different culture, have bettered her awareness of how a large change, such as an oil industry entering fragile lands, impact the surrounding communities.
Processing Plant and the area of Nuiqsut were taken from helicopter in order capture a large scale reference of Alaska’s open, barren landscape.

Where the isolated processing plants and drill sites stop, the pipelines begin and carry the image of environmental damage to the shore line. While the pipe line may be an engineering wonder, Kasmauski’s photos also show the pipeline as intrusive upon the landscape. *Alaska Oil: 14* (1997) shows the elevated section of the pipeline which allows passage of migrating animals and also the beauty of Alaska’s wilderness (Fig. 4). This picture captures the hard vertical and horizontal lines of the pipeline, which break up the naturally soft atmospheric perspective of the Alaskan mountains. This image along with a photograph titled *Helicopter Over Trans-Alaska Pipeline* (1996) provides a visual contrast of the wide open, naturally flowing terrain of Alaska to the harsh interference of the industrial, land draining pipeline (Fig. 5).

Another photo that provides an example of industry overpowering nature is *Bear in Prudhoe Bay Dump* (1996) (Fig. 6). Kasmauski uses this image in comparison to the previous four, to illustrate that while the products of the oil industry can be held within safely constructed pipelines and organized factory buildings, the human byproduct of this industry, in this case garbage, still brings damage to the indigenous environment. She achieves the contrast of industry and nature in an ironically beautiful photograph that utilizes the surrounding soft fog to focus the viewer’s eye to the subject of the scattered trash and bear in the foreground. At the time this photograph was taken, researchers were attempting to get the site cleaned up by way of bear proof dumpsters being installed, and warning people not to throw food at the bears in order to keep them out of the site, a site that before the introduction of the oil industry belonged to the bears.

As explained earlier, the Exxon Valdez crash of 1989 caused discarding of oil. The remains of this environmental disaster can still be found. Kasmauski revisited the Exxon Valdez spill site and the affected surrounding areas on the disaster’s tenth anniversary as a follow up to her earlier photo essay. Her photograph *Oil-Covered Rocks from Exxon Valdez Spill* (1996) (Fig. 7) shows that even though there was an elaborate cleanup completed after the initial spill of 1989, there is still a lot more work to be done, such as filtering major rivers and streams in order to cleanse the already damaged ecosystem, an ecosystem that provides much of the human and animal population alike.
with food. The figure in the photo is positioned as if they just picked up any rock at the spill site at random and found remains of oil. Kasmauski chooses to frame the figure with no face and therefore no identity suggesting that this is not the one who caused the spill but merely someone who is providing the viewer with an example of the spill.

Another photo, that shows how Kasmauski uses fragmenting to quickly position the viewer's gaze directly to the subject, is her image *Remains of the Exxon Valdez Oil Spill* (1998) (Fig. 8). Here we see a close-up of a hand covered in oil left by the spill. Fragmenting through close cropping of the scene cuts the rest of the figure out of the photograph. Therefore viewers must focus on the oil even more than if the image contained the face of the individual. The glove signifies a concern of protection that not only the human wearing it is aware of but also suggests to the viewer that it is also dangerous to the environment as well. Kasmauski edits extraneous information out of this photograph by cropping it. This editing emphasizes the fact that this problem was caused by human carelessness. In short, Kasmauski is telling the viewer (without words) that humans caused the spill and its lingering damage. Of course she could have taken this photograph without a hand in it, but if she had done so the damage would not be specifically associated with human interaction.

As the contributing photographer for the *National Geographic* article “In the Wake of the Spill” (1999) Kasmauski photographed a footprint on an island near the site of the spill which was filled with oily water (Fig. 9). This photograph also defines the disaster as one brought on by humans. The impact of humans on the land is shown by the footprint on the earth. The consequences of irresponsible, even criminal actions are also signified by the oil in the water that fills the footprint. The photo also can be interpreted as humans literally and figuratively stepping where they do not belong and jeopardizing the land in which they step.

Kasmauski’s work is open to interpretation, however, when it comes down to it, the purpose of her work is for documenting historical events. This does not mean that it cannot be considered as art work or interpreted in such a manner. Her photojournalism offers an artistic interpretation of the harsh terrain of Alaska, presenting it as a unique, almost alien planet as well as providing an awareness of the spill. Kasmauski uses fragmentation, shocking subject matter and unplanned occurrences to produce the effect of truthfulness, and photojournalistic objectivity. Her use of these devices has secured her a reputation as a fair and effective photojournalist. A close visual analysis of these photographs will show how Kasmauski reveals the ways that photography can be presented in an artistic manner. While also telling stories about social, economic and political problems. Kasmauski’s photojournalism also relayed the message of the impact of the oil spill on Alaska’s land, people and economy. Her keen eye and knowledge of different cultures assured a clear message through her photographs.
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Many thanks to Dr. Rachel Snow as well for her patience and expert insight during the editing process. This research topic was brought to fruition when I attended her class on Women and Art. She has pushed me to develop and perfect this topic as much as possible over the past two years and for that I can most certainly say I have grown as a student, public speaker, and individual.

REFERENCES

WHAT’S ON THE BURNER?

Since the last volume of this Journal, the Office of Sponsored Awards and Research Support (SARS) at USC Upstate has also supported several other projects that involve undergraduate research assistants. Many of these projects are still in progress and may lead to publication in conference proceedings or journals in the near future.

Social Security: Its Intent versus Application
Alyssa Mason and Dr. Elizabeth Cole

The purpose of this research is to examine the changes that have occurred over the lifetime of the Social Security tax and Social Security payments. The intent of this research is to tell a clear story of how Social Security taxes are misleading.

On Comparison of Two Survival Functions
Brent McCracken and Dr. Steve Hyun

The purpose of this research is to construct a confidence band for the difference of two survival functions based on the additive risk model. That is, we estimate the difference between two conditional survival functions for a particular set of covariates with a confidence band. We propose a simulation method to construct the confidence bands for a survival function. We use a similar simulation method to construct a confidence band for the difference. To the best of our knowledge, such a confidence band for the difference based on the additive risk model has not been developed yet. The proposed simulation method can be extended to construct the confidence band for the difference of two survival functions based on other survival regression models.

Developing Best Practices for Making Scholarly Digital Archives Accessible to Visually Impaired Endusers
Cory Bohon and Dr. George Williams

This project offers a significant opportunity to infuse digital humanities work with the important insights of disability studies in the humanities, a relatively new field which considers disability as “a way of interpreting human differences,” in the words of one prominent scholar. Digital knowledge tools that assume all endusers approach information with the same abilities risk excluding a large population of people. Visually-impaired endusers take advantage of digital technologies for “accessibility” that (with their oral/aural and tactile interfaces) are fascinatingly different than the standard monitor-keyboard-mouse combination, forcing us to rethink our embodied relationship to data. Learning how to create scholarly digital archives that take into account these human differences is a necessary task no one has yet undertaken.

1,4-Conjugate Addition Reactions of Funcationalized Organocuprate Reagents with Nitrofuran
Valerie King and Dr. Rhett Watson

Asymmetric construction of multi-substituted nitrogen or oxygen heterocycles remains an intense area of research in part because of the prevalence of these motifs within many pharmacologically and industrially relevant molecules. This is underscored by a recent report indicating that in a ten-year period over 12,000 unique piperidines were investigated in pre-clinical trials for use in the pharmaceutical industry. Additionally, new and innovative ways of constructing carbon-carbon bonds in a stereo controlled fashion are valuable tools from the standpoint of synthetic methodology, and therefore represent an important endeavor for synthetic organic chemists.
**Personal Relations**  
*Cody Brooks* and Dr. Andrew Beer

The purpose of this study is to examine individuals’ ability to make personality judgments of others based on different types of personal information they receive. Value revelations will be compared to the revelations of interesting and distinguishing facts, and we intend to decipher which type of information leads to greater accuracy in personality judgment. Also, a comparison of personality assessments made by strangers versus close others will offer insight into the acquaintanceship effect.

**Bullying Prevention Strategies for Young Children**  
*Jessica Babb* and Dr. Greta Freeman

Research shows that bullying is a common problem among school-aged children, reportedly at its height during the middle school years. A minimal amount of research on bullying has been completed with preschoolers and children in the primary grades, partially due to adults “underestimat(ing) the amount of bullying behavior that takes place...” with this age group. The research available shows that bullying is taking place with young children at an alarming rate. This research project focuses on younger children so that we can determine where and how bullying begins and what strategies can be put into play to prevent bullying behaviors and help children deal with these situations should they arise.

**A Culturally Appropriate Intervention to Reduce Barriers to Breast Cancer Screening in African American Women**  
*Hadassa Legrand* and Dr. Lynette Gibson

Breast cancer is the most common cancer in African American women. For African American women, the mortality rate is higher than that of all U.S. ethnic groups and African American women are more likely to die from breast cancer at every age. While the five-year survival rate is 90 percent for European American women, the rate for African American women is 78 percent. Although many of the multifaceted reasons are beyond the women’s control, recommended screenings can be controlled. The recommended screenings involve having mammograms beginning at age 35, performing breast self-examinations, and receiving clinical breast examinations. In 2004, 59.4 percent of African American women over 40 reported receiving a mammogram within the past year; this figure decreased from 70 percent in 2003 and is likely due to the numerous barriers to breast cancer screening. The current study will measure changes in breast cancer health beliefs (including barriers) and intention to screen by African American women following a culturally appropriate intervention.

**Andy Warhol Research Project**  
*Alyssa Ashdown* and Dr. Rachel Snow

The Andy Warhol Foundation for the Visual Arts recently celebrated its 20th anniversary. To commemorate the anniversary, the Andy Warhol Photographic Legacy Program was established and made an unprecedented gift of 28,543 original Warhol photographs to 183 college and university art museums across the U.S., an overall gift valued in excess of $28 million. USC Upstate was fortunate to be selected as one of the recipients and recently took possession of 152 original Warhol photographs, original Polaroid photographs and gelatin silver prints. The foundation’s intent in donating Warhol’s photographs is to provide greater access to his artwork and process, and to enable a wide range of people from communities across the country to view and study this important yet relatively unknown body of Warhol’s work. Given the historical and economic importance of this gift, there is an urgent need to make the collection public through exhibition. This project will focus on getting these photographs ready for exhibition.
A Data Mining Based Model for Studying Healthcare Quality of Residents in Southside of Spartanburg
Daniel Hagerman and Dr. Wei Zhong

The main goal of this project is to compare the quality of healthcare received by the residents of the Southside of Spartanburg to the county, state, and national levels. Through the study of healthcare quality, this project aims to provide quantifiable information for community planners and healthcare providers to enhance healthcare services and eventually bring about healthy living for the residents of Southside.

Environmental Activism in Jordon
Joni Hammond and Dr. Lizabeth Zack

This project examines patterns of environmental activism in Jordan. Popular accounts of political life in the Middle East emphasize the violence associated with civil unrest and the so-called “Arab street”, while scholarly research has tended lately to focus on political mobilization by Islamist groups. Neither approach accounts very well for the diverse patterns of political activity, including activism around environmental issues. This project seeks to address this gap in our understanding by analyzing various civil society efforts to address environmental concerns in Jordan in recent years. The project draws on information from newspapers, organizational websites, interviews, and government documents. The analysis pays close attention to the groups involved, their complaints and demands, how they mobilize, and the impact of their efforts. This analysis of environmental activism in Jordan should shed some light on the varying patterns of mobilization around environmental issues across the Middle East and the role civil society plays in addressing growing environmental concerns in the region.

Frontloading Primaries and Voter Turnout
Donna Randolph and Dr. Allison Clark

This research will compare voter turnout during the 2000 and 2008 primary elections. The thesis is that states hold earlier primaries in an effort to exert more influence over nominations, and that this results in higher voter turnout. To see whether this is the case, data will be collected from each of the 50 states regarding its voter turnout in 2000 and 2008, as well as when their primaries were held during each year.

Action Rule Summaries
Anna Novo, Coung Hoang and Dr. Angelina Tzacheva

With KDD (knowledge discovery of databases) we extract previously unknown patterns from large amounts of data. Patterns are of interest if they are being useful, meaningful, or otherwise have applications in business, medicine, science, and similar organizations. Action rules are of interest since they suggest actionable patterns. In other words, the user can act on them to his/her advantage. For instance, an actionable pattern can be used in the decision making process of a business to increase profit. In this work, we propose an improved method which decreases the space of action rules.

A Comparative Study on Healthcare Effectiveness for Spartanburg, SC
Stephen St. Peter and Dr. Rick Chow

This study focuses on comparing the effectiveness of healthcare received by the residents of Spartanburg with those of the residents in South Carolina and the entire country. Through the study of healthcare effectiveness in different regions, this project aims to provide quantifiable information for community planners and healthcare providers to enhance healthcare services in Spartanburg. This study utilizes two core healthcare effectiveness measures as defined by the Agency for Healthcare Research and Quality: Process Measures, which track receipt of services, and Outcome
Measures, which in part measure the results of medical cares. Statistical analysis and data mining techniques are applied to extract knowledge to facilitate healthcare services and policies.

**Community Interpreting: Habitat for Humanity-USC Upstate Bilingual Partnership**

Melissa Trejo and Dr. Douglas Jackson

The internship builds on previous volunteer work carried out by USC Upstate students in both the construction of housing and translations of basic documents. This opportunity will benefit the Hispanic community in Spartanburg, demonstrate USC Upstate's commitment to its Metropolitan Mission, and establish a precedent for future interpreting and translations students interested in engaging in internships.

**The Pro-Israel Lobby and U.S. Foreign Policy: Examining the Evidence**

Chris Weidensee and Dr. Trevor Rubenzer

To what extent are pro-Israel interest groups able to influence U.S. foreign policy? Current case study research has identified several factors that may condition the ability of diasporic groups to influence foreign policy toward ancestral “homelands.” One set of conditions focuses on the ability of ethnic identity groups to mobilize the necessary resources to make significant campaign contributions in the hope of influencing political outcomes. To this point, existing studies have been unable to isolate the impact of campaign contributions from other factors that may influence U.S. foreign policy decision-making. The current study uses a mixture of statistical techniques in an attempt to determine the impact of pro-Israel political action committee campaign contributions on foreign policy decisions in the U.S. House of Representatives.

**Finite Sample Performance of Rank-Based Tests for Linearity in Multiple Linear Regression**

Daniel Hagerman and Dr. Bernard Omolo

The finite sample performance of rank-based tests for sub-hypotheses in linear models with repeated observations is considered. Typically, such models are encountered in the biological and physical sciences. An extensive empirical study of the finite sample, null behavior of the tests is presented. Power comparisons with the standard least square test is also discussed. The results are applied in checking for model adequacy for data from an experimental study.

**Investigation of the Mechanism of DRA Down-Regulation**

Derek Griffith and Dr. Jeannie Chapman

Expression of the tumor suppressor, DRA, is aberrantly lost in cancers of the colon. The mechanism by which this occurs has not been investigated. It is known that loss of expression is not due to gene deletion or major chromosomal rearrangements. However, since DRA mRNA cannot be detected in colon cancer tumors, down-regulation must be at the transcriptional level. The goal of this project is to determine if either histone modification or promoter methylation is responsible for loss of DRA expression. Both of these processes are common mechanisms for loss of tumor suppressor expression. DRA expression will be assessed in colon cancer cells after they have been treated with inhibitors of histone deacetylation and/or promoter methylation.