

V A L D O S T A   S T A T E   U N I V E R S I T Y

**URC**

VALDOSTA STATE UNIVERSITY  
UNDERGRADUATE RESEARCH COUNCIL

# Abstracts



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**FIRST ANNUAL**

C A M P U S - W I D E

**SYMPOSIUM** *on*  
**UNDERGRADUATE RESEARCH**

STUDENT UNION BALLROOM AND THEATRE

April 5-6, 2012

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## **SYLVIA PLATH'S DETACHMENT FROM MOTHERHOOD AS SEEN IN *ARIEL: THE RESTORED EDITION***

**Meagan C. Ellis, Department of English**

**Faculty Sponsor: Dr. Nathan Elliot, Department of English**

Known for her oftentimes dark and macabre poetry, Sylvia Plath was what one would call a “people person.” Throughout her journal, Plath consistently writes about her desire for the consummate human experience – the pinnacle of which would be motherhood: “I have a queer growing hunger for a baby. I feel an immaturity there, where a teen-age mother is further advanced in womanhood than I” (411). Ironically, her final collection, *Ariel*, - published posthumously in 1965 – contains poems that do not reflect the idyllic picture of motherhood she had expected. In particular, her poems “Morning Song” and “Thalidomide” convey a sense of revulsion and anger towards their speakers’ metaphorical children. The purpose of this article is to discuss how Plath, in juxtaposition with media messages determining the “ideal” woman” in her era, used her poetry as a possible catharsis in dealing with the disappointment and lack of inspiration she felt after becoming a mother.

## **METAL ACCUMULATION AND SUBLETHAL EFFECTS IN THE SEA ANEMONE, *AIPTASIA PALLIDA*, AFTER WATERBORNE EXPOSURE TO METAL MIXTURES**

**Jonathan R. Brock, Department of Biology**

**Faculty Sponsor: Dr. Gretchen K. Bielmyer, Department of Biology**

The impact of metals on symbiotic cnidarians is largely understudied. To address this issue, a toxicity study was performed where the sea anemone, *Aiptasia pallida* was exposed to a control or a metal mixture (Cu, Zn, Ni, and Cd) at three exposure levels for 7 d. Anemones were then transferred to clean seawater for an additional 7 d to assess metal depuration and recovery. Accumulation of copper, zinc, nickel, and cadmium and their effects on enzyme activity, protein concentration, and algal cell density were measured over 7 d. Metal accumulation was time and concentration dependent throughout the experiment. Additionally, enzyme activity and algal cell density were significantly affected. Metal depuration and physiological recovery were dependent on both the metal and exposure concentration. Understanding how *A. pallida* and their symbionts respond to mixed metal exposures may allow better understanding about the response of symbiotic cnidarians to metal-polluted aquatic environments.

## **A SEPARATE PEACE: AN INTRODUCTION TO THE GULLAH-GEECHEE NATION**

**David J. Gregors, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Department of Philosophy and Religious Studies**

From North Carolina to Florida, the Gullah/Geechee people live as an unintentional historical experiment. This slave-descended, self-sustained community was created after a malaria epidemic and the falling demand for Sea Island Cotton caused the plantation owners of the area to abandon their land, leaving the Gullah/Geechee people abandoned. Currently, the Gullah/Geechee are struggling to preserve their way of life in the face of tourism and the over-development of the marshy Sea Islands. Although they consider themselves Christians, their religious history and praxis indicate a unique combination of Christianity, Islam, and African tribal religions. The research for this paper was done in with the support of the Gullah/Geechee people and includes an interview with Queen Quet, the leader of the Gullah/Geechee Nation. The paper focuses on how the Gullah/Geechee used their religious and cultural differences to create a proud and thriving nation.

## **THE NEW DEAL'S FARM SECURITY ADMINISTRATION CREATIVE WRITING**

**Amber Blocker, Department of Art and the Honors College**

**Faculty Sponsors: Drs. Paula McNeill, Department of Art, and Ofelia Nikolova,  
Honors College**

This work is a creative short story based on a photograph from the Great Depression Era. The photograph selected is one taken in 1937 Hartwell Georgia by Dorethea Lange of a sharecropper family. The story is centered on an adventurous young boy in the family photo and will give a child's perspective of The Great Depression. The story also gives an accurate historical depiction of this rural Georgia town during this time period, and of the New Deal's Farm Security Administration (FSA), and how it affected farmers. The FSA was a program started in 1935 in an effort to improve rural poverty. The program has a very famous photography program portraying the battles of rural poverty.

## **APPALACHIAN DIALECT AND MUSIC**

**Brittany S. Paxton, Department of Sociology, Anthropology, and Criminal Justice**

**Faculty Sponsor: Dr. Marvin Smith, Department of Sociology, Anthropology, and Criminal Justice**

Language is directly shaped by culture, but it also can be said that culture is shaped by language. In Appalachia, the dialect and the way of life are clearly intertwined. Two major features involving the area are the dialect and the music, and since the region's genesis, both have supplemented the other. This complimentary relationship occurred because several cultures came together within one locality, and there were conflicts with each group's manner of speaking. To help rectify the situation, a certain type of music was born: bluegrass. In addition to the unique sound that was shaped in Appalachia, a specific dialect was also developed. To those who are native, this special manner of speaking is insignificant; however, to those from the outside, the sounds of the region are exclusive. Research involving these two elements was accomplished through literature written by local authors, interviews with those who reside in the area, and through several articles from other researchers.

## **SOCIAL INFORMATION PROCESSING THEORY AND COMPUTER-MEDIATED COMMUNICATION**

**Paul Drewitz, Department of Communication Arts**

**Faculty Sponsor: Dr. Michael Eaves, Department of Communication Arts**

Social Information Processing Theory (SIPT) looks at how interpersonal relationships are developed through computer mediated communication (CMC). When building or starting relationships online, there is an obvious lack of nonverbal cues, and impressions are made purely from verbal cues. People will make assumptions through the written messages. SIPT looks at this and attempts to explain why this happens. Previous researchers have explained that no matter what the channel of communication is, people naturally form impressions and develop relationships. Another key factor SIPT talks about is the time exchange involved. Face-to-face (FTF) interaction occurs in real time, whereas CMC communication can happen over a longer period of time. SIPT explains that given enough time, the same level of intimacy can be reached in CMC as it is in FTF interactions. A strength of SIPT is that is an essential building block for future research in online interaction. A weakness is that it does not look enough into the heightened level of anonymity online and how this can be attributed to a lack of accountability. Has the regular online user become complacent with this lack of accountability online? This lack of accountability may also have started to bleed over into FTF interaction as well.

## **WILL THE WORLD BE ABLE TO FEED ITSELF IN THE FORESEEABLE FUTURE?**

**Jennifer Rose Stakich, Department of Political Science and the Honors College**

**Faculty Sponsors: Drs. Carol M. Glen, Department of Political Science, and  
Ofélia R. Nikolova, Honors College**

Tonight, one in seven people will go to bed hungry. After an intense economic recession, global food crises do not seem as far-fetched as previously thought; in fact, countries in Africa and Asia balance precariously on the edge of a full-scale catastrophe. Severe weather, global warming, and misuse of environmental resources all play a role in decreasing the food productivity of a country; coupled with the pressure to produce biofuels and protect domestic markets in the richer industrialized countries, these factors can reduce a developing nation to rely on food aid from the global North. This paper examines causes such as ethanol production, environmental concerns, economic policies, and global consumption trends in relation to the global food crisis question.

## ***NO PASÓ NADA: UN ANÁLISIS LITERARIO***

**Savannah E. Spivey, Department of Modern and Classical Languages**

**Faculty Sponsor: Dr. Susan Wehling**

This paper analyzes the literary style of Antonio Skármeta through his novel, No Pasó Nada. Skármeta was influenced by different experiences in writing this “post boom” Bildungsroman novel most notably the fall of the democratically elected President Salvador Allende and the author’s subsequent exile to Germany. The most notable influence in Germany for Skármeta was the resilience and passion of the exiled Chilean children during this time of exile. He was also influenced by the “ansiedad adolescente” (teen angst) and perseverance of the youth (p. 19). The growth and persistence of the protagonist is the deepest issue the novelist addresses. Readers experience the loss, love, and questions adolescence proposes with the protagonist, Lucho, through whose perspective the story is told. By using a “post boom” writing style to narrate Lucho’s story, Skármeta provides his readers a story with which they can identify.

## **A SYNERGISTIC PARADIGM OF TEACHING**

**Andrew Tatler-Burgess, Department of Psychology and Counseling**

**Faculty Sponsors: Drs. Julie Troyer, Department of Psychology and Counseling, and  
Ofélia Nikolova, Honors College**

It appears that educators generally have a tendency to restrict themselves to one model or theory, which arguably could limit their teaching quality. This apparent restriction can have a variety of sources: a lack of knowledge or grounding in different models or theories, a lack of confidence or skills to incorporate different theories and models during teaching, or complacency. This presentation surveys a newly developed teaching paradigm entitled *The Synergistic Paradigm*, a paradigm that advocates modulating between the anticipated most effective educational models and/or theories and keeping the student as central during the modulating or fluxing process. Utilizing this student-centered aspect of the *Synergistic Paradigm* the *Potential Accelerated Learning Zone* (P.A.L.Z) could potentially speed-up the learning and teaching process and increase the educational effectiveness. A case study garnered from a mandatory field observation is presented to illustrate this paradigm in action.

## **PRAGMATIC SOCIAL CONTRACT THEORY**

**Kelly L. Strickland, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Ari Santas, Department of Philosophy and Religious Studies**

This paper re-examines various social contract theories, describing their contents and validity. The social contract theory is a social-political tool in philosophy to establish what counts as a legitimate government and hinges primarily on the concept of the state of nature. This paper describes the state of nature as a study of the relationship between the people and the state and understanding it as the key to producing a universal theory and then goes on to refute logically the prescriptions of the pre-existing ideas of the state of nature both historically and intellectually. The paper attempts to produce an updated theory by providing a pragmatic view redefinition of government and redescription of the state of nature based on the central concepts of morality and objectivity.

## **GUNNING FOR VOTES: AN ANALYSIS OF VOTING BEHAVIOR IN THE GEORGIA GENERAL ASSEMBLY**

**S. Kathryn Grant, General Studies and the Honors College**

**Faculty SponsorS: Drs. James LaPlant, Department of Political Science, and Ofélia Nikolova, Honors College**

In 2010, the Georgia Assembly passed two significant legislative measures relaxing restrictions on the carry of concealed handguns and weapons. This study first explores the rationale used by gun advocates and lobbying groups, then investigates the voting behavior of the Assembly relative to bills enacted that same year. House and Senate roll call votes on Senate Bills 308 and 291 are analyzed using the following independent variables: chamber, party affiliation, race, gender, urban or rural district, campaign contributions received from the lobbying group, Georgia Public Strategies, Inc., and endorsement ratings of members issued by the National Rifle Association (NRA). All variables are statistically significant with the exception of chamber. Endorsements members received from the NRA resulted in the highest statistical significance followed by party affiliation and then race. Results are most relevant given similar legislation in the Georgia Assembly is scheduled for vote in 2012.

## **CANCER DRUGS FROM THE SEA: A COMPREHENSIVE VIEW**

**Ryenne N. Ogburn, Kaitlyn V. Ledwitch, and Jeramy Baum, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

Our group has pioneered a novel approach to making pharmaceutical agents that come from the marine and terrestrial environments. We have focused largely on the cancer and Alzheimer's drug, bryostatin. While a well-known and effective agent, it is rarely used because of its extraordinary cost (millions/gram) and its general lack of availability. We have set out to develop a new and economical method to produce this drug as it serves as a prototype for many drugs that are difficult to synthesize in a lab setting. We dub our technique pharmaceutical aquaculture or farming the ocean. This development has evolved into three phases; sample collection from the sea; molecular synthesis using a new green approach; and an improved method of delivering medicinal agents. This talk will provide an overview of the project and provide some data and details.

## **CORNPLANTER'S DIPLOMATIC STRATEGY: FROM THE AMERICAN REVOLUTION TO THE TREATY OF CANANDAIGUA**

**Robert Julian Rodriguez, Department of History**

**Faculty Sponsor: Dr. Dixie Haggard, Department of History**

After the American Revolution the Indian tribes who sided with the British also lost and had to deal with a fledging government that wanted land reparations. The Seneca war chief Cornplanter used diplomacy to try to prevent the land seizure and treaty history shows his efforts succeeded. Cornplanter argued his case directly to George Washington. The conversation between Cornplanter and the President examined in this paper explains the relationship between the Seneca and the new United States government. Washington and Secretary of War, Henry Knox, saw Cornplanter as an ally to help pacify frontier Indian aggression while Cornplanter viewed Washington as someone who could solve his grievances with earlier encroachment. Because of Cornplanter's friendly relationship with the United States, the Treaty of Canandaigua secured most of the Seneca lands.

## **THE FEMINIST CASE FOR DR. JEKYLL AND MR. HYDE**

**Laura N. Hanna, Department of English**

**Faculty Sponsor: Dr. Byron Brown, Department of English**

*The Strange Case of Dr. Jekyll and Mr. Hyde* can be read as a male-dominated horror story set during the late nineteenth century—a period during which the marginalization of women was often overlooked. As such, the only females in the story represent seemingly oppressed roles in society. However, this paper—by examining Robert Louis Stevenson's use of diction and by deconstructing the literal interpretation of the text—examines why this work reveals that a world without significant female characters causes men to become psychologically and even sexually unstable. Furthermore, the overt absence of females is examined as not simply Stevenson's ignorance of women, but as this author's way of subversively revealing a world full of male instabilities and problems juxtaposed with the total absence of female psychological problems. This ironic juxtaposition reveals that women are portrayed as superior to men because feminine instabilities are never exposed in Stevenson's work.

## **ARE THE GEORGIA OFFICIAL SPELLING BEE RULES FAIR?**

**Alexandra Lily Wang, Department of Mathematics and Computer Science**

**Faculty Sponsor: Dr. Krishnendu Roy, Department of Mathematics and Computer Science**

We investigate the fairness of the Georgia Official Spelling Bee Rules. This is an important issue, since many students across the State of Georgia participate in such competitions. We perform the simulation optimization method and generate the Spelling Bee system with the Georgia Official Rules. Our simulation outputs show that the Georgia Official Spelling Bee Rules are not fair and are biased due to the random order of seat allocation. We also derive some theoretical results which are consistent with our simulation results.

## **SPRINGBOARDING MENA: ECONOMIC SUCCESS IN THE MIDDLE EAST AND NORTH AFRICA**

**Felina B. Duncan, Department of Marketing and Economics**

**Faculty Sponsor: Dr. Zulal S. Denaux, Department of Marketing and Economics**

Periodically referred to as the “cradle of civilization”, an adage reflecting its past economic success and growth, the MENA region continues to serve as an international focal point, albeit a disappointing one in light of its economic potential. Moreover, for a region characterized by high unemployment, security states, a weak private sector, volatile external revenues, and a disproportionate concentration of power in the hands of a few, the recent widespread civilian protests, demonstrations, and toppling of dictatorships should come as no surprise. Even so, I would argue that the Arab Spring was not a sufficient response to appropriately curtail the political repression and lack of economic opportunities that caused it. Therefore, the purpose of this study is to utilize regression analysis to reexamine the impact of the initial conditions, human capital, investment ratio, external shocks, macroeconomic performance, openness, natural resource abundance, and output volatility of the MENA region—which previous studies have cited as prominent determinants of the region’s economic growth—on the growth of the MENA region’s real GDP per capita in light of recent events. Finally, this study will consider a largely overlooked but nonetheless significant factor, the influence of the state, and assess whether or not it can now be viewed as a more prominent determinant of the region’s economic growth as a result of the Arab Spring Uprising.

## **MALE PREROGATIVE, MEDIA, AND DIVIDED PARLIAMENT: THE FIGHT AND RESISTANCE TO RAISING OF THE AGE OF CONSENT IN ENGLAND, 1872-1885**

**William L. Gay, Department of History**

**Faculty Sponsor: Dr. Mary Block, Department of History**

This paper illuminates the complex struggle by Members of Parliament, the Media, and middle-class organizations to protect young girls by raising the age of sexual consent. Intertwined with perceptions of prostitution, sexually transmitted disease, rape law, and middle-class values, the coalition met deep, staunch resistance from cultural conservatives seeking to retain a strong measure of male hegemony both socially and legally. Despite reservations, exposés by investigative journalists and continued pressure from middle-class backed Members of Parliament eventually forced the formulation and passage of bill targeting the white slave trade and limiting male legal dominance in rape cases.

## **THE NARRATIVE PHOTOGRAPHS OF DOROTHEA LANGE**

**Julie A. Skinner, Department of Art**

**Faculty Sponsor: Dr. Paula McNeill, Department of Art**

This art lesson was based on narrative photographs taken by Dorothea Lange for the Farm Security Administration during The Great Depression and taught to fourth graders at Westside Elementary School in Valdosta, Georgia. Students were introduced to the concept of artworks serving as visual narratives and viewed two of Lange's photographs without initially being told their context. The students were prompted to work together as a class to create a verbal narrative for the first photograph viewed and next, to individually create written narratives for the second photograph viewed. Context and intent were revealed to the students at the end of the class period. The purpose of this lesson was that of enhancing instruction across the curriculum. It was later discovered that the students had been shown the same photographs by their third grade social studies instructor, and it is remarkable that many mentioned context specific details in their writings.

## **USING LENA™ WITH A CHILD WITH COCHLEAR IMPLANTS: A CASE STUDY**

**Sarah M. Lively, Department of Communication Sciences and Disorders**

**Faculty Sponsors: Drs. Jade Coston, Ruth Stonestreet, and Corine Myers-Jennings,  
Department of Communications Sciences and Disorders**

Language sampling, a practice in which a child's language is recorded, transcribed, and analyzed, is integral to the communication assessment process. The purpose of this poster is to discuss the contributions and limitations of computer generated language sample data as compared to the traditional methods of transcription and analysis. Researchers utilized innovative recording technology known as LENA™ to collect and analyze samples of young children and their mothers. Such research resulted in interesting findings for a child with cochlear implants. The participants in this case study include a 3 year-old male who was born deaf and his mother. This child and parent were identified because results generated by traditional language sample analysis methods varied from computer generated results. This case adds to the understanding of how LENA™ analyzes communication development and points to the fact that more research is needed on language sample analysis for children with hearing loss.

## **LIVING IN NEVERLAND: THE UNITED STATES' 15<sup>th</sup> INFANTRY REGIMENT IN CHINA, 1912-1938**

**Joshua R. Herrin, Department of History**

**Faculty Sponsor: Dr. John Dunn, Department of History**

This paper examines the Fifteenth Infantry, United States Army, during the Regiment's time in Tientsin, China from 1912-1938 where it performed one of the most peculiar garrison duties of any branch of the US military. The 15<sup>th</sup> Infantry's primary duty was to protect the vital railway that ran between Beijing and Tientsin. However, this garrison duty coincided with American Prohibition and the Great Depression, and offered the American soldiers a completely different lifestyle. Regiment members had abundant access to alcohol, prostitution, and enjoyed a high exchange rate with the local currency that allowed them to live a life at odds with other Americans as a whole during the time. Regiment commanders tried to control the soldiers' behaviors with varying degrees of success.

## **THE PHYLOGENY OF *ASIMINA* AND *DEERINGOTHAMNUS***

**Brandi M. Griffin and Joshua L. Steele, Department of Biology**

**Faculty Sponsor: Dr. Catherine Bush, Department of Biology**

The molecular phylogenetic classification of the North American genera *Asimina* and *Deeringothamnus* (Annonaceae) has never been determined with strong support and/or resolution. DNA sequences for the two genera were shown in previous studies to be too similar to determine phylogenetic relationships. In this analysis, ISSR DNA fingerprinting techniques were used in order to elucidate the phylogeny of the group. DNA was extracted from accessions from both the field and herbarium. Six ISSR primers were used with 15 species, including 11 of *Asimina*, two of *Deeringothamnus*, one *Annona* and one *Disepalum*. Agarose gels stained with ethidium bromide were used to determine the presence and absence of bands. The gels were replicated two times for each primer. These data were analyzed in PAUP using Neighbor Joining algorithms. Morphological traits (including floral scent characteristics) were included in addition to the molecular data. The preliminary conclusions strongly support the inclusion of *Deeringothamnus* in *Asimina*.

## **CREATIVE WRITING FROM HISTORICAL PHOTOGRAPHS**

**Katlyn P. Tucker, Department of Art and the Honors College**

**Faculty Sponsors: Drs. Paula McNeill, Department of Art, and Ofelia Nikolova,  
Honors College**

This paper is a creative work based on historical research and pictures taken by the Farm Security Administration around the Depression era. The pictures chosen were from Carroll County, Georgia and trace the fictional life of a family in rural Georgia. This creative story is written from the perspective of the people seen in the photographs. The story is told through journal entries and the presentation of this project would be an oral reading and explanation accompanied by a power point of the photographs.

## **INDIGENOUS PHILIPPINE “BEGINNING” KNOWLEDGE**

**Pamela Johnson, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

The Indigenous peoples in the Philippines including the Tagalog, the Bikol, and the Visayan, use the term *aswang* to depict various “beginnings” in their stories. This paper will explore the importance of the “beginning” expressions in the traditions of these Indigenous cultures. The paper will analyze the terminology involved in the study of “mythology”, “creation stories” and “folklore” as established by Western cultures and the opposing terminology applied in Indigenous methodologies when discussing “stories of beginnings”. The paper will conclude with a discussion about the significance of terminology usage in the analysis of “beginning stories” and why Western terminology should be cautiously used or avoided when analyzing Indigenous knowledge.

## **“LADIES, MAN UP!”– AN ETHNOGRAPHIC STUDY OF GIRLS’ BASKETBALL**

**Danielle Jordan, Department of Sociology, Anthropology, and Criminal Justice**

**Faculty Sponsor: Dr. Matthew Richard, Department of Sociology, Anthropology, and Criminal Justice**

This ethnographic study uses discourse analysis to examine a high school girls’ basketball team located in a traditional southern community in order to better understand both shared and idiosyncratic cultural models held by players. Data will highlight the meanings attached to a number of domains including gender, race, and class, while attempting to explain the ways in which they influence and inhibit players’ actions. The study will take a look into the background of various players in hopes of pinpointing the construction of particular understandings through the socialization process. The study’s main aim is to accurately depict ways in which players may understand themselves at any given moment according to their engagements with fellow players, coaches, and outside actors, while also taking into consideration subjectivity and the transference of emotions from their unique childhoods.

## ***DON CATRÍN DE LA FACHENDA AND THE MEXICAN DRUG WAR***

**Yannick Gill, Department of Modern and Classical Languages**

**Faculty Sponsor: Dr. Ericka Parra, Department of Modern and Classical Languages**

This paper discusses the necessity of international discourse by explaining the connection between the power shift in José Joaquín Fernández de Lizardi's *Don Catrín de La Fachenda* and Mexico's current fight against the drug cartels. Although the story was written nearly a century ago, Lizardi's work provides insight into a modern solution to the Mexican drug war. The paper addresses how the protagonist, Don Catrín, resolves his issues with the advice of various characters whom he encounters. The analysis shows the path way to ending Mexico's war on drugs can be found through the tactics of Don Catrín. As in Lizardi's novel, dirty politicians and deception have fueled terroristic acts happening today in Mexico. Moreover, increased militant action only exacerbates the problem. The paper shows that in order to end the war on drugs, Mexico must engage in political discourse with all affected countries as Don Catrín did throughout the novel.

## **“CONFUSION BEYOND IMAGINATION”: U.S. ARMY CHINESE LANGUAGE TRAINING IN REPUBLICAN ERA CHINA**

**Matthew R. Portwood, Department of History**

**Faculty Sponsor: Dr. John Dunn, Department of History**

The United States government established the U.S. Army Chinese Language Officers Program to train Army Officers in the basics of the Chinese language. The training program lasted from 1924 to 1938 and this paper will examine the program's role in teaching the language to prominent World War II officers. The paper highlights examples of officers who served in the China-Burma-India Theater of World War II and who received language training to demonstrate the utility of this program. The language training of these officers helped them bridge difficult cultural and linguistic gaps while they served in the China-Burma-India Theater of World War II.

## **BAD ROMANCE: HOW THE INTERACTIONS BETWEEN THE CULTS OF YAHWEH AND ASHERAH SHAPED JEWISH ATTITUDES TOWARDS WOMEN**

**Matthew Thomas Rivera, Department of Philosophy and Religious Studies, and  
the Honors College**

**Faculty Sponsors: Drs. Lily Vuong, Department of Philosophy and Religious Studies, and  
Ofélia Nikolova, Honors College**

The cults of Asherah and Yahweh were two of the most important religious institutions of the Pre-Exilic period of Israelite history in Canaan despite their differing attitudes towards the value of goddess worship and patriarchy. Using biblical narratives that focus on the character of Yahweh as father/ king or Asherah as mother/queen as well as whore/consort, I examine how the conflict between their worshippers helped construct images of women in the ancient world and shape attitudes towards women in general. In the Hebrew Bible, for instance, idolatry becomes equated with adultery in the story of the Gentile Jezebel, while Gentile women such as Ruth are praised for leaving their former deities for Yahweh. Additionally, the interactions between kings and their corresponding queen mothers reveal feminine power as revered by goddess-worshipping Solomon, but seen as a threat to the Yahwist reformer Asa.

## **EXCHANGE RATE VOLATILITY AND TRADE FLOWS: THE EU AND TURKEY**

**Rebecca R. Falks, Department of Marketing and Economics**

**Faculty Sponsor: Dr. Zulal S. Denaux, Department of Marketing and Economics**

This study analyzes the effect of exchange rate volatility on Turkish import demand by examining how historical exchange rate fluctuations have impacted trade flows between Turkey and its largest trading partner, the European Union, since its application for full membership to the European Economic Community (EEC) in 1987. Turkey has maintained strong ties to the countries of the EU since 1959. According to the European Commission, “the European Union (EU) ranks by far as number one in both Turkey's imports and exports while Turkey ranks 7th in the EU's top import and 5th in export markets”. The effects of volatility upon trade flows between these two parties are particularly important in light of Turkey’s continuing accession process with the EU. This study will empirically analyze exchange rate volatility and bilateral trade flow data derived through the application of Ordinary Least Square methodology to quarterly time series data collected for the period 1987:Q1 to 2011:Q4. Information gained from this study can be applied by countries experiencing periods of economic instability to develop potential actions to enhance or defuse similar effects.

## **THE LESLIE MATRIX AND FEMALE POPULATION IN THE UNITED STATES**

**Brittney Nelson and Antonija Tangar, Department of Mathematics and Computer Science**

**Faculty Sponsors: Drs. Denise T. Reid and José A. Vélez-Marulanda, Department of Mathematics and Computer Science**

This research tests the accuracy of the Leslie matrix, which is a discrete age-structured method that uses fertility and survival rates, as a tool for predicting women population. Based on available data for the year 2000, we have constructed a Leslie matrix that predicts female population in the United States for every five years from the years 2000 to 2020. To test the accuracy of this method, we compare the aforementioned obtained projected data for the year 2010 with the actual data for women population in the United States obtained by the 2010 U.S. Census.

## **EFFECTS OF 2008 FINANCIAL MELTDOWN ON BORROWERS OF MICRO-FINANCING OUTLETS**

**Brian J. Leverett, Department of Accounting and Finance**

**Faculty Sponsor: Dr. Elvan Aktas, Department of Accounting and Finance**

The effects of the financial meltdown of 2008 have been felt worldwide. This study specifically examines the effects of the financial crisis on borrowers of micro-financing outlets. Micro-financing data examined in this study presented that home-owners had much higher levels of reliability across all loan types compared to non-owners. However, this study found evidence that during the financial meltdown, home-ownership transformed into a liability rather than a credit source. Moreover, home-ownership is becoming a reliable source of credit post-crisis, confirming the recovery reported by other sectors of the economy.

## **CHEROKEE REMOVAL**

**Charles Pavey, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

This paper will examine the broken treaties between the Cherokee people and the governing bodies of both the United States and Georgia. John Ross, the recognized leader of the Cherokee Nation, fought to maintain the Cherokee's legal rights to their ancestral lands. He was joined by other Native Americans in the struggle to establish and clarify the rights of the Cherokee people. This paper will document the attempts to maintain their land using legal channels and the results of forced removal, when these channels failed. Finally, the paper will discuss the hardships faced by the Cherokee people during the forced removal on what has become known as the Trail of Tears.

## **COLUMBIA'S STRUGGLED HISTORY: POLITICS, DRUGS, THE CONSTITUTION AND HUMAN RIGHTS**

**Matthew Vanacore, Department of Political Science**

**Faculty Sponsor: Dr. Marc Pufong, Department of Political Science**

Notoriously known for its cocaine industry and its paramilitary forces who bring harm to the innocent, Colombia is a country on stilts. In this report on Colombia, an attempt is made to exemplify the cataclysmic events that have lead from the first foundation of Colombian soil to the current state of the Republic regarding political, constitutional, and civil rights of the people. This report uses a list of accredited sources to examine the three country aspects previously stated. From the political standpoint: economic, military, and laconic history is addressed. From the origins of the constitution: rights, guarantees, and civil liberty are summarized. And the illustration by means of vivid written detail of human rights violations from accredited sources will be outlined. This report will substantially provide enough information to agree that the Colombian government needs assistance from foreign allies, United States, to once again provide military advisory to ultimately terminate the mass chaos between the opposing combat forces.

## **SOCIAL AND CIRCULATORY SPATIAL USE IN ASSISTED LIVING FACILITIES**

**Alden York, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

This study explores how assisted living residents' walking behaviors are affected by the social spaces and activities within their facilities. Older adults in an assisted living community depend on the facility to provide an environment that accommodates their needs. If social spaces and activities are not stimulating enough to evoke residents to travel to them, it could impact their health in a negative way (Lu, 2010). The researcher visited an assisted living facility and conducted open-ended interviews with residents and administrators, observed social activities, and documented the facility's layout. Results indicate that residents were directly affected by the social activities provided by the facility. For some, it was the only exercise they acquired during the day. These findings are significant to interior designers, facility planners, and coordinators looking to increase usable space and activity areas to encourage residents to participate and increase daily exercise.

## **THE LOGIC BEHIND DESIGN**

**Shannon M. Dekle, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

Interior Designers use their specialized design skills to design functional and fulfilling interiors. This study used a design thinking model (Dohr & Portillo, 2011) dividing the design process into a six part circle model. Older adult's kitchens are an important part of place identity (Ahn & Hedge, 2011). This study used Dohr and Portillo's model to explore how older adults and interior design students develop kitchen designs for older adults. Interviews with older adults were conducted at three assisted living homes in the southeast. Sophomore interior design students were interviewed at a public university in the southeast. Findings suggest that older adults used empathy and place identity to create kitchen designs. Interior design students' relied on design logic: engagement and innovation. This research highlights how different people think while designing the same product and is important for interior designers and assisted living space developers.

## **PRIVACY IN INSTITUTIONAL LIVING: STUDENT DORMS AND ASSISTED LIVING FACILITIES**

**Julie M. Evans, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

Institutional living can make privacy and security challenging for people (French, 2000). This study was designed to compare and contrast the quality of living environments in public student housing and assistant living facilities in a midsize city in the southeast. Out of 20 participants, half were freshmen dormitory students and half were residents from an assisted living facility. While interviewing residents, they completed a questionnaire that assessed their impressions of the facility and its staff. Findings suggest that students feel they do not get enough privacy, and feel disorganized in their current dwelling, and assisted living residents feel they have sufficient privacy but also feel disorganized in their current dwelling. In conclusion, the students and residents that helped with this study had fewer negative statements about their current living environment. These findings could help institutional managers, interior Designers, and individuals considering moving into an institutional setting.

## **CAN A KITCHEN DESIGN LAST A LIFETIME?**

**Natalia A. Panagopoulos, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

Kitchens play a key role in adult's lifespan. Kitchen design impacts how individuals and families function. This is a second part of a two part study exploring kitchen design preferences across adults' lifetimes. Participants used interviews, surveys, and three-dimensional model building to express their kitchen design preferences. Interviews revealed that some individuals designed past kitchens and some designed future kitchens. Participants who had built custom homes designed that kitchen. Participants that have not built created a new design. This study is significant to designers and builders because it indicates that a preferable design will stay with people throughout their life.

## **TRANSITIONS FROM STUDENT DORMITORIES AND ASSISTED LIVING FACILITIES TO INSTITUTIONALIZED LIVING FACILITIES**

**Brooke H. Taylor, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

Moving from a private home into an institutionalized setting, such as a student dormitory or an assisted living facility, gives new residents the opportunity to create new homes for themselves. This study examines how students and older adults used the decoration and interior design of the living facility to transition to their new institutional environment. Did these specific individuals use current or new furnishings? Were they able to create a comfortable environment for themselves in their new living environment? The majority of students transitioning to a new environment purchased new furnishings, in contrast to the older adults, who brought furnishings from their homes. Results from these studies help us better understand the intermediary characteristics for those who leave their home for an institutionalized setting. Findings are significant to those helping people design a new home within their institutional living space.

## **COMPANIONSHIP MATTERS**

**Asea M. Thompson, Department of Art**

**Faculty Sponsor: Ms. Jessica Goldsmith, Department of Art**

Greater relative happiness is an important quality of life indicator for older adults in assisted living (Eshelman & Evans, 2002). Smith and Hogan (1987) explore the relationship between the nurse's efforts and how effectively senior citizens can carry out everyday tasks at assisted living facilities. This study expands previous research by looking at the relationship between the physical environment of an active older adult and related the emotional aspects to examine how they adapt to assisted living facilities. Data was collected through series of open-ended interviews with 10 older adults in assisted living facilities in the southeast. Results indicate many assisted living residents are more concerned about companionship and staying active socially than room size or living quarters. These findings are beneficial to interior designers and assisted living managers designing social spaces for assisted living facilities.

## **CHANGE IN STUDENTS' ATTITUDES TOWARD EVOLUTION**

**Kassandra E. Brantley, Department of Biology**

**Faculty Sponsor: Dr. Leslie S. Jones, Department of Biology**

Since Georgia students receive very little pre-collegiate instruction on evolution, they use a typical repertoire of misconceptions to justify their creationist aversions to the theory. Surveys were administered at the end of a non-majors biology course in which the socio-political dimensions of the evolution/creationism controversy were emphasized. Qualitative analysis revealed students recognized that the controversy is rooted in perceived conflict between religion and science, as well as the obvious inconsistency between scriptural and biological accounts. Their testimony indicated changes in both their understanding of and receptivity toward the theory of evolution. Students recognized that the theory made scientific sense based on recorded empirical evidence and indicated that some parts of the theory hold up under logical review.

## **INTERLEUKIN RECEPTORS NEAR THE SUPRACHIASMATIC NUCLEUS**

**David A. Garcia, Department of Biology**

**Faculty Sponsor: Dr. Robert Gannon, Department of Biology**

Many groups of cytokine receptors exist, but one group of interest is the interleukins. Three interleukin antibodies (IL-1, IL-6, and IL-15) were tested to determine if these receptors are located in the suprachiasmatic nucleus (SCN) of ventral hypothalamus. Cells within the SCN are responsible for controlling mammalian circadian rhythms. Frontal sections of a hamster brain were cut and sections containing the SCN region were prepared for staining using an ABC kit and the antibody of interest at a particular dilution. The sections were stained and mounted onto slides to be examined. Results showed that IL-1 receptors stained in the hippocampus and the paraventricular hypothalamic nucleus. IL-6 receptors stained in the paraventricular hypothalamic nucleus and in the regions immediately above the third ventricle. IL-15 receptors stained diffusely over the entire section but particularly in the paraventricular hypothalamic nucleus and the hippocampus. None of the antibodies showed staining in the SCN region.

## **METAL ACCUMULATION IN TWO SPECIES OF SEAWEED AFTER WATERBORNE METAL EXPOSURE**

**Sasha L. Booth, Department of Biology**

**Faculty Sponsor: Dr. Gretchen Bielmyer, Department of Biology**

Marine environments are commonly exposed to metal pollutants from anthropogenic activities such as agriculture, mining, and storm water runoff, as well as natural inputs from volcanoes and forest fires. In excess, metals may accumulate in marine biota and potentially cause toxicity. The goal of this experiment was to measure metal accumulation in two species of marine seaweed after 48 hours of waterborne exposure to 100 µg/L of cadmium, copper, lead, nickel, and zinc. *Ulva lactuca* and *Agardhiella subulata* were ideal for use in this study because they occupy a variety of coastal habitats such as inner bays and estuaries, and are therefore commonly exposed to polluted environments. Metal accumulation in the seaweed varied between species and among metals, however, significant copper accumulation was observed in both species. This study provides important information concerning metal accumulation in sensitive lower trophic levels, which serve as vital constituents in many food chains.

## **THE ENVIRONMENTAL HISTORY OF BANKS LAKE**

**Kimberly Nicole Edwards and Shannon Clark, Department of Biology**

**Faculty Sponsors: Drs. Matthew Waters, Department of Biology, and Ofélia Nikolova, Honors College**

Banks Lake is a shallow, macrophyte-dominated lake located in South Georgia that originated in the mid-1800's as a dammed wetland. Other shallow lakes in the southeastern US have been shown to exist as either macrophyte-dominated or algal-dominated systems. Changing between the two states can occur rapidly and is typically caused by environmental factors such as nutrients and water level. In order to determine where Banks Lake lies on this continuum between the alternative ecosystem states, a sediment core was collected prior to the most recent drainage period. We analyzed organic matter, nutrients, stable isotopes and photosynthetic pigments on lake sediments to reconstruct the environmental history of the lake. Results show an increase during recent periods of management in organic material and nutrients as well as changes in isotopic and pigment signatures. These stratigraphies will be used to better assess the effectiveness of the current management practices.

## **THE INFLUENCE OF SALINITY ON ACUTE TOXICITY TO THE EURYHALINE FISH, *Kryptolebias marmoratus***

**Aaron C. Albritton-Ford and Benjamin T. Harper, Department of Biology**

**Faculty Sponsor: Dr. Gretchen K. Bielmyer, Department of Biology**

Aquatic systems are commonly polluted with metals, such as cadmium (Cd), often due to anthropogenic inputs. In excess, Cd may be toxic to many aquatic organisms. Cd toxicity has been well characterized in freshwater fish, but fewer studies have examined Cd toxicity in saltwater environments. Salinity is variable in estuarine systems and may influence metal toxicity. We exposed the euryhaline fish *Kryptolebias marmoratus* (7-9 d old) to Cd in waters with salinities ranging from 0.1-12 ppt for 96 h and mortality was recorded. Concentrations causing 50% lethality (LC50s) were calculated for each water type and ranged from 6.43 µg/L Cd in freshwater to 8.41 mg/L Cd in 12 ppt saltwater. Results demonstrated a reduction in Cd toxicity in these fish with increasing salinity. Further, experiments are being performed in freshwater supplemented with individual salts to determine which components of saltwater were protective against acute Cd toxicity to *K. marmoratus*.

## **A FACILE ONE-POT SYNTHESIS OF CHIRAL AMINES ON SILICA**

**Robert Rozier, Ivan L. Furtado, and Antonija Tangar, Department of Chemistry**

**Faculty Sponsor: Dr. John T. Barbas, Department of Chemistry**

We have continued our investigation for a greener synthesis of chiral amines on silica surfaces. The synthesis described below is facile, economical, and takes place at ambient temperatures on the surface of activated silica with the addition of only minimum amounts of solvent. Typically, 2 g. of activated silica were introduced into a dry round bottomed flask equipped with a stirring bar and a drying tube. To the flask were added 10-20 mL of anhydrous ether,  $1.0 \times 10^{-3}$  mol of an aldehyde and  $1.0 \times 10^{-3}$  mol of a chiral primary amine. The suspension was stirred for 30 minutes to complete formation of the intermediate chiral imine. To the suspension was then added 0.15 g of Sodium Borohydride and stirred briefly. The flask was cooled in an ice bath, and a few drops of water were added periodically to initiate reduction. The product was filtered, and the silica was washed with three aliquots of 5 mL ether. The ether extracts were combined and dried over anhydrous Sodium Sulfate. After filtration, the ether was removed on a rotary evaporator. The products were purified from trace impurities by column chromatography. Yields were near quantitative. They were analyzed by IR, GC-MS, proton and C-13 NMR, and polarimetry.

## **COPPER (II) CATION AS A DRUG DELIVERY MECHANISM. TAXOL AND QUININE**

**Kaitlyn V. Ledwitch and Ryenne N. Ogburn, Department of Chemistry**

**Faculty Sponsors: Dr. Thomas Manning, Department of Chemistry, (Valdosta State University, Valdosta, GA) and Dennis Phillips and Greg Wylie, Department of Chemistry, (University of Georgia, Athens, GA)**

New methods of delivering drugs are being developed. These include systems such as liposome's, different proteins and nanoparticles. In each case the medicinal agent, typically a small molecule drug (<1000 g/mol), is attached to a larger structure. This is done to enhance water solubility and to increase the drug's efficacy. This talk will focus on amine containing drugs, particularly taxol and quinine, and their increase in medical efficacy by binding to a copper (II) ion. The results include NMR (proton, carbon, nitrogen), IR, UV//Vis and LC-ESI-MS to study each complexes structure. The encouraging results from the National Cancer Institute's 60 cancer cell line panel for the different complexes synthesized in this lab will also be outlined in the presentation.

## **COTTON BALLS AS MINI-AQUARIUMS FOR MARINE MICROBES**

**Jatin Patel and Jon Wyche, Department of Chemistry**

**Faculty Sponsors: Drs. Thomas Manning, Department of Chemistry, and Jim Nienow, Department of Biology**

The vast majority of marine bacteria are difficult or impossible to cultivate in a lab setting. This limitation has inhibited the production of marine natural products produced by marine microbes using traditional methods. In this preliminary study, a series of cotton balls are used to retain sea water from the Gulf of Mexico over a thirty day period. A total of thirty experiments, lasting from 1 to 30 days are conducted using a control (seawater plus cotton) and the experimental system (seawater plus nutrients plus cotton). While little to no growth was observed in the control and it underwent significant loss of water content, the nutrient based cotton samples showed little loss and had maintained living microbes in the high salinity environment for several weeks. In addition to chemical analysis of the solution, samples are saved and examined using optical microscopy to identify both the density and the type of microbes present.

## **DESIGNING AND BUILDING REMOTE OPERATED VEHICLES (ROV) TO HUNT FOR MARINE NATURAL PRODUCTS**

**Jeramy Baum, Riland Jones, J. Alex Etheridge, and Ted F. West III, Department of Chemistry**

**Faculty Sponsors: Drs. Thomas Manning, Department of Chemistry, (Valdosta State University, Valdosta, GA) and Dennis Phillips and Greg Wylie, Department of Chemistry, (University of Georgia, Athens, GA)**

This presentation will focus on the construction and use of three generations of ROV's. The first is a small kit sold under the name of "*Sea Perch*." This kit acquainted students with some of the basic ideas and concepts of building an ROV including waterproofing electronics, buoyancy and tethering over a distance. The second (impellor driven) and third generation (propeller driven) were constructed from parts purchased at hardware stores and on-line vendors. These are designed to hold and transport a seven pound underwater video camera and collect marine sediment. The original designs are made to go to a depth of 130 feet with the follow up design aimed at collecting samples from the 200-250 depth feet range. The sediment samples, collected from the ocean, are analyzed for marine natural products produced by microorganisms in the sediment. Video footage from the explorations will be included in the presentation. The ROV's will be part of the demonstration.

## **IMPROVING THE EFFICACY OF AMINE CONTAINING MEDICINES: A COMPUTATIONAL APPROACH**

**Jarrett M. Darrah, Aaron C. Ford, Sierra Marable, Sadie E. Paulk, and Kaitlyn V. Ledwitch, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

In this computational study, approximately 150 well known medicinal agents, from malaria drugs to cancer treatments, are examined as candidates for improving their efficacy by increasing their water solubility. Each of these agents have a similarity, they contain an amine. As opposed to other approaches such as liposomes and other micelle approaches, nanoparticles and proteins, this presentation will show that a number of drugs can have improved water solubility and hence better treatment efficiency by binding the amine structure to a specific cation in the correct molecular location. The ratio of the molecules dipole moment ( $D$ ; Debye) to molecular volume ( $V$ ,  $\text{A}^3$ ) or its  $D/V$  ratio when unbound compared to the bound complex is used to make the physiological argument.

## **IONIZATION SUPPRESSION BY CATIONS IN ELECTROSPRAY IONIZATION- MASS SPECTROMETRY IN ANALYSIS OF A MARINE NATURAL PRODUCT**

**Ryenne N. Ogburn and Becky Parker-Hall, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

Our group has a focus on marine natural products such as bryostatin and ET743. In performing an analysis of these compounds, they are often extracted from a marine matrix that has a wide range of cations (alkali, alkaline earth and transition metal cations) and anions (halides, carbonates, phosphates, etc.). While our procedure often calls for several extractions and separations over a column, trace levels of these ions can remain with the sample. This presentation will focus on the impact that iron(III) and copper(II) have on the signal of bryostatin-1 that is being ionized by ESI. Ionization suppression in ESI is well-known for a range of samples but little exists in the literature concerning the analysis of marine natural products and transition metals.

## **KINETICS AND THERMODYNAMICS OF SOLVENT EVAPORATION: A CHEMICAL EDUCATION EXPERIENCE**

**Jeremy Baum, Aletrius Booker, William Burch, William Capland, Melan DeBese, Lori Griner, Tiffanie Guy, Riland Jones, Melanie Murphy, Mychal Outlaw, Jatin Patel, Puja Patel, Christopher Pyles, Stephanie Rowe, Tony Sampson, Ted F. West III, and Paul Williams, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

A series of kinetic experiments were done to compare data from evaporating varying fractions of methanol and water with sodium, quinine, sodium acetate and hemoglobin (Hb). Among the data measured are mass lost, evaporation rates, and rate of evaporation. As predicted, solutions with the higher concentration of methanol evaporated the fastest. The species with lowest evaporation rates were the biggest and more non-polar because they did not tend to change the intermolecular reactions in solutions, therefore they were non-inhibiting. A wide range of parameters, such as heat of evaporation, dipole moments, surface tension, viscosity, *etc.*, are correlated with the evaporation rate.

## **MEASURING PERMEABILITY OF LIPID MEMBRANES TO H<sup>+</sup> AND ACIDS**

**Carolyn B. Newham and Pratik P. Patel, Department of Biology**

**Faculty Sponsor: Dr. Yakov Y. Woldman, Department of Chemistry**

Transport through cellular membranes plays a defining role in biological systems. The focus of this research is to study the passive permeability of lipid membranes for small molecules using lipid vesicles (liposomes) as a model. A fluorescent probe that cannot permeate through the membrane was encapsulated inside the liposomes. The spectrum of the probe is pH dependent allowing the H<sup>+</sup> ion concentration to be measured. Various acids and salts were added to the medium outside of the liposomes. Due to the penetration of H<sup>+</sup> or non-dissociated acid molecules through the membrane, the pH inside the liposomes will change. This causes the change in the spectrum of the fluorescent probe inside the liposomes, which was recorded. Phosphatidylcholine, the major component of bacterial and eukaryotic membranes, was used to measure the permeability of lipid membranes in this study.

## **PHOTOCURRENT GENERATION USING DIFFERENT ELECTRON DONORS AND ENEDIOL LIGANDS ON Fe<sub>2</sub>O<sub>3</sub> NANOPARTICULATE FILMS**

**Olivia Rachel Law, Department of Chemistry**

**Faculty Sponsor: Dr. Linda de la Garza, Department of Chemistry**

Fe<sub>2</sub>O<sub>3</sub> nanoparticles were synthesized by hydrothermal method and the solution was characterized by UV-VIS spectroscopy. The nanoparticles solution was used to deposit Fe<sub>2</sub>O<sub>3</sub> films on indium tin oxide (ITO) electrodes by dip-coating. After annealing in oxygen at 450°C, the Fe<sub>2</sub>O<sub>3</sub> films are modified with enediol ligands such as 3,4-dihydroxyphenylacetic acid (DC). The enediol ligands block the trapping sites in the nanoparticulate films and increase photocurrent generation. To maintain high current production during illumination an electron donor is present in the electrolyte solution of the photo-electrochemical cell. Two different electron donors in solution, QH<sub>2</sub> (hydroquinone) and NADH (nicotinamide adenine dinucleotide), are compared.

## **PRODUCTION OF AZA-FULLERENES: SYNTHESIS, SEPARATION AND DETECTION**

**Tia M. Bishop, William S. Burch, Sonal P. Desai, Joseph A. Etheridge, Joseph K. Farrow, Ivan L. Furtado, Lori B. Griner, Dustin C. Jenkins, Thomas K. Leggett, Christopher L. Louis, Amanda L. Mays, Taylor P. Middlebrooks, M. Merrick Murphy, Ryenne N. Ogburn, Christopher A. Pyles, Ted F. West III, and Jonathan J. Wyche, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

Fullerenes are one of three allotropes of carbon (diamond, graphite are the others). C<sub>60</sub> or buckminsterfullerene is a spherical molecule that is composed of 12 pentagons and resembles the shape of a soccer ball. A novel form of this is aza-fullerenes or fullerenes that contain nitrogen and carbon. In this research project, a systematic approach is undertaken by a group of students to investigate different microwave and sonochemical approaches to assembling aza-fullerenes (i.e. C<sub>48</sub>N<sub>12</sub>) from pyrrole, then using flash chromatography to separate the mixture and several techniques such as FT-IR, UV/Vis absorbance spectroscopy, LC-MS and TOF-MS to identify its structure. Because of the symmetry of the structure coupled with the chemical and physical properties of amine containing sphere, these molecules have been predicted to have more attractive properties in terms of electronic components and novel medical applications.

## **SYNTHESIS OF BRYOSTATINS AND OTHER NATURAL PRODUCTS USING A SAND-BASED MICROBIAL SYSTEM**

**Ryenne N. Ogburn, Jatin I. Patel, Kaitlyn V. Ledwitch, Trevor Lawton Davis, and Jon Wyche, Department of Chemistry**

**Faculty Sponsors: Drs. Thomas Manning, Department of Chemistry, (Valdosta State University, Valdosta, GA) and Dennis Phillips and Greg Wylie, Department of Chemistry, (University of Georgia, Athens, GA)**

Bryostatin, a 47 carbon macrolid, is a well-known marine natural product that is extracted from the bryozoa *Bugula neritina* in very low yields (10<sup>-7</sup>%). Its synthesis has been published but the lengthy processes have little commercial value. There have also been unsuccessful attempts to grow *Bugula* in bulk in an ocean setting. It is well recognized that *Bugula* is the host of a symbiotic bacteria that produces bryostatin. Our work has centered on providing a favorable chemical environment that allows this bacteria to grow and produce bryostatin without *Bugula*. This presentation will focus on production as well as separation and structural determination of the bryostatin. Techniques such as UV/Vis, FT-IR, LC-ESI-MS and NMR are used to quantitatively and qualitatively determine the yields. Typical yields from a sand based system produce yields on the order of 0.002% (vs. mass of sand and nutrients). This work will also examine the production of the soft tissue sarcoma drug ET743 and taxol, the breast cancer drug.

## **TAXOL: EFFICACY AGAINST ORAL SQUAMOUS CELL CARCINOMA**

**Jodi Cox, Kaitlyn V. Ledwitch, and Ryenne N. Ogburn, Department of Chemistry**

**Faculty Sponsors: Drs. Donna Gosnell and Thomas Manning, Department of Chemistry**

Taxol is a versatile natural product that is utilized in various cancer treatment regimens. It is administered to patients with breast, lung, and ovarian cancers, and is currently being studied for the treatment of squamous cell carcinoma of the oral cavity and tongue. Taxol has been tested in a number of research and clinical phase trials in order to determine feasibility, toxicity, and cytotoxicity against oral squamous cell carcinoma as a single drug regimen and as a contributing drug component in treatment plans. In addition to the content, this presentation will outline how students wrote and submitted an invited paper to a peer reviewed international medicinal chemistry journal in a highly competitive area of research. This paper reviews thirty-eight articles that examine cell lines, murine models, and human results for the response of taxol against squamous cell carcinoma (SCC) of the oral cavity and the tongue.

## **TOWARDS THE SYNTHESIS OF LAYERED CATIONIC MATERIALS FOR CATALYSIS**

**Cieanna A. Baptiste and Frankie A. Stackhouse, Department of Chemistry**

**Faculty Sponsor: Dr. Tolulope O. Salami, Department of Chemistry**

Layered materials are extremely important materials with a wide array of applications in catalysis, ion exchange, energy storage and drug delivery, just to mention a few. Our research involves the synthesis of new layered materials by hydrothermal synthesis for catalysis. We are presently studying the lower alkaline earth metals (strontium and barium). Our recent result from strontium, xylene-templated structure will be discussed.

## **WORLD HEALTH ORGANIZATION'S LIST OF ESSENTIAL MEDICINES: SPRINGBOARD FOR EDUCATIONAL AND RESEARCH PROJECTS**

**Kaitlyn V. Ledwitch, Ryenne N. Ogburn, and Jarrett M. Darrah, Department of Chemistry**

**Faculty Sponsor: Dr. Thomas Manning, Department of Chemistry**

A series of posters (5.5'× 3.8') were developed that lists of essential medicines as outlined by the World Health Organization (WHO: [www.who.int/](http://www.who.int/)). According to WHO, essential medicines are “*those that satisfy the priority health care needs of the population,*” and “*are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative cost-effectiveness.*” This list was used as a class project to identify medicinal structures and some important knowledge related to their medicinal efficacy. This presentation will focus on how the poster, which contains the structure and medicinal information on over three hundred medicines, is used in student research and teaching activities, spanning computational and experimental work. Copies of the poster, in .pptx form (single sheet) will be given to interested parties. Medicinal chemistry (CHEM4920) developed the poster as part of a class project.

## **BULLYING IN SCHOOL SETTING**

**Zachary J. Johnston, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

Bullying has been a ubiquitous problem everywhere, but ignored. School bullying calls the public attention only recently because of its progressive rise. In today's school setting, schools are running ramped with problems of bullying. Student victim reports do not really help, because their peers will “peak” at them, and hinder them socially. Bullying not only hurts the student victims physically and emotionally but also their grades. Students who are bullied are statistically not doing well at school and prefer not to come to school. This issue in the real world has been progressing faster and faster. Programs have been initiated to fight bullying in school setting and to prevent student victims from physical or emotional abuse. In this research project, I will explore the many factors causing bullying and the many programs to prevent this monstrosity. Schools should be a place of learning, not of fear.

## **CHILDREN’S LITERATURE FOR MATHEMATICAL PROFICIENCY**

**Andrea L. Wright, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

Most children in Special Education are not interested in mathematics. The problem will soon go beyond the score in math, and the loss of global competition in the near future. My research is to activate children’s interest and potentials in math through children literature, and implement “critical literacy” into math instruction by embedding math concepts into children’s daily life. A great many books both fiction and nonfiction are wonderful for providing meaningful connections to the contents of math like number & operation, pattern & algebra, geometry & spatial sense, measurement, data analysis & probability, etc. The criteria for children’s literature for math are mathematical integrity with the NCTM Principles and state standards, the potential for varied response, the aesthetic dimension, and the inclusion of diversity because math is itself the universal language. I will integrate literacy skills like reading, writing, drawing, and discussion in my math class.

## **DR. SEUSS WILL GO TO FINLAND FOR ESL CHILDREN**

**Johanna Manninen, Early Childhood and Special Education**

**Faculty Sponsor: Dr. Lucia Lu, Early Childhood and Special Education**

As an exchanging student from Finland, I heard of Dr. Seuss in EDUC2120, and became interested in him. In 1956, Dr. Seuss (Ted Geisel) accepted the invitation from Houghton Mifflin Publishers to write a children’s reading primer. In 1957, *The Cat in the Hat*, one of the world’s most famous children’s books was born. “The cat” met quite a bit of professional resistance, but *it* became a popular character in the school settings later. I enjoy reading Dr. Seuss’ books and his writing style with the hilarious illustrations which make the readers laugh and make reading more interesting. The words he used in the books commonly exist in the children world, and are always repeated whenever possible and easy words come always first followed by larger ones. I am exploring how to include Dr. Seuss in the teaching of English, especially the phonemic awareness to the ESL children in Finland.

## **EXPLORING THE CHEROKEE FROM *THE EDUCATION OF LITTLE TREE***

**Cristy L. Milligan, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

My research is on the Cherokee people from *The Education of Little Tree*, which is the autobiography of Forrest Carter, a Native American, and the authenticity is quite reliable. Little Tree was adopted by his half-Cherokee grandfather and Cherokee grandmother when he was eight years old. Little Tree learned the Cherokee ways from his grandparents and Willow John, a Cherokee seer; while his Granma taught him reading with very advanced vocabulary strategies. Later Little Tree was forced to live in the Indian boarding school where he suffered the cruelty of the white people who tried to assimilate him and take away his culture and tradition. Little John learned the two cultures from his experience with the white people in the church, in the country grocery store and in the boarding school. I am exploring the Cherokee ways from this book and the movie played in the beautiful Tennessee Mountains.

## **ISSUES IN CHILD ABUSE**

**Jamia Reese, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Y. Lu, Early Child and Special Education**

I love children, and I like to voice for the children that are abused. In my life experience, a little boy explains how happy he used to be. He was very smart and excelled at everything in school. His sister was very sweet. All the children enjoy playing with them. However, there was a secret that was not known to anyone. This abused child explained how he saw his sister get punched in her face and his step-brother being choked until he could hardly breathe. Furthermore, this was being done by someone that they believed they could trust, which was their stepfather. Child Abuse should not be tolerated. Child abuse is a physical, sexual, emotional mistreatment of a child. There should be no excuse why parents abuse their children. My research is to explore the many programs that help the abused children live a better life.

## **MANGA ACROSS THE CURRICULUM**

**Alex Cameron, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

I have been enjoying reading Manga since I was young. Manga are Japanese comic books that are popular worldwide because of the cinematic qualities and epic storytelling. Artists and cartoonists around the world have been inspired by Japanese Manga. There is a wide variety of Manga available for kids as well as adults. Comic books like Manga promote literacy by attracting a wider audience with unique visuals compared to regular textbooks. Kids obtain excellent reading comprehension by reading Manga. Adults find it very enjoyable reading Manga. Educators may consider to use Japanese comic books as a tool for promoting literacy. Students who do not like reading long novels may find Manga quite inviting to read. Because of my personal talent in arts, I am exploring ways to integrate Manga across the curriculum to make the lessons of math, science, and social studies accurate and more interesting.

## **SEMIOTICS FOR EARLY LITERACY IN PROCESS WRITING**

**Mary E. Sheeley and Sarah D. Zipperer, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

Most students in Special Education are two grade levels below in reading, writing, and math. To complete the assignment of “Differentiated Instruction” in READ 4200, we conceptualized semiotics into the literacy curriculum of process writing. We invited the struggling learners in Practicum III to share their family stories, to draw 6-8 panels of pictures on the papers to make their stories visible, and to use one sentence including invented spelling to describe the picture on each panel. We confirmed to the struggling learners, saying that:

If you can see it, you can think it,  
If you can think it, you can say it,  
If you can say it, you can draw it,  
If you can draw it, you can write it,  
If you can write it, you can read it.

(Chapman & King, 2003; Lu, 2006; 2010)

Multisensory strategies successfully engaged the struggling learners as “happy authors” in literacy activities.

## **THE HOMELESS CHILDREN IN THE US**

**Rakeeta Laird, Early Childhood and Special Education**

**Faculty Sponsor: Dr. Lucia Lu, Early Childhood and Special Education**

I love children, and believe that children are the hope of our country. In the course of EDUC 2120, I selected “Homeless Children” for my research. According to a report by the National Center on Family Homelessness, one out of every 45 children – some 1.6 million – in the United States is homeless. The majority of the children are under age 7. Those children also struggle with hunger, poor physical and emotional health, and missed educational opportunities in extreme poverty. A majority of homeless children have limited proficiency in math and reading. Despite their growing numbers, homeless children are invisible to most of us; they have no voice and no constituency. In this project, I will explore the strategies that “we”, the future educators can do to impact the lives of the less fortunate children in my future classroom in which they can grow and learn in a safe environment.

## **THE SIGNIFICANCE OF SHEL SILVERSTEIN ON EARLY LITERACY**

**Jessica Fitzpatrick, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

I have enjoyed reading Shel’s books since I was young. Shel was a musician, composer, cartoonist, poet, as well as an author of children’s literature. His books are filled with interesting stories and beautiful illustrations. Shel referred to himself as Uncle Shelby. The book *Lafcadio, the Lion Who Shot Back*, started with the lines, “And now, children your Uncle Shelby is going to tell you a story about a very strange lion- in fact, the strangest lion I have ever met.” By introducing his stories like this, it gave the stories a more personal touch and created a relationship between Shel and his young readers. Shel’s unique style and eye-drawing comics draw the attention of thousands of children. I specifically remember reading many of his poems as a child such as *The Giving Tree*, *Where the Sidewalk Ends*, *A Giraffe and a Half*, etc. Silverstein strongly influenced children and their desire for reading.

## **THE STORY OF “THE TRAIL OF TEARS”**

**Kasey Combs, Early Childhood and Special Education**

**Sponsor Faculty: Dr. Lucia Lu, Early Childhood and Special Education**

My research is on the Native American culture, especially the Cherokee. This tribe located in various parts of the United States, but almost 100,000 members lived in Oklahoma. Many others migrated elsewhere. The Cherokee Indians existed from the 1700's through the 1850's. The Cherokees were one of the most prosperous and progressive tribes in the country. The early Cherokee farmed and hunted in the southern Appalachian Mountains. During the 1750s and 1760's, they fought the colonists who moved into their territory. In about 1800, the Cherokee began to adopt the way of living of the white settlers. The tribe also established a republican form of government called the Cherokee Nation in 1821. During the winter of 1838-1839, U.S troops forced around 17,000 Cherokee to move to the Indian Territory in Oklahoma. Thousands died on the way. About 1,000 Cherokee escaped. Their forced march became known as “The Trail of Tears.”

## **PEANUT SEED ASSAY**

**Hayley Franklin, Department of Chemistry and the Honors College**

**Faculty Sponsors: Drs. Emily Cantonwine, Department of Biology,  
and Ofélia Nikolova, Honors College**

Organically grown peanuts are in high demand but low supply. Peanuts are extremely susceptible to soil-inhabiting pathogens, making it important to find acceptable methods to protect the seed and its early stages of growth in organic systems. A peanut assay was conducted at Valdosta State University in 2011 to determine the efficacy of organic seed treatments for control of *Rhizopus* sp. and *Aspergillus* sp., two common soil inhabiting pathogens. Eight different treatments, including wet and dry preparations of Nordox, Copper Sulfate, Kodiak, and Actinogrow, were compared against a negative control (untreated seed) and a positive control (Dynasty seed treatment). Copper sulfate wet, and two preparations of Kodiak significantly suppressed *Aspergillus* sp. growth better than untreated seed ( $p < 0.05$ ). The Kodiak treatments provided as much control as Dynasty. Disease pressure of *Rhizopus* was too low for statistical analysis. More research is needed to evaluate these seed treatments under field conditions.

## **STIGMA AND QUARANTINE: THE SOCIAL ISSUES OF THE MODERN TUBERCULOSIS EPIDEMIC**

**Matthew Thomas Rivera, Department of Biology and the Honors College**

**Faculty Sponsors: Drs. Melanie S. Byrd, Department of History, and  
Ofélia Nikolova, Honors College**

Tuberculosis is one of the most significant diseases suffered by humans and has been especially in the past two hundred years. The disease's history has seen the development of sanatoriums, public health mandates, an explosive growth in population, and contemporary complications such as HIV/AIDS and multidrug-resistant strains of the causative bacteria, *Mycobacterium tuberculosis*. Tuberculosis' infectiousness, virulence, and difficult and expensive treatment present unique challenges for society; and the disease has created numerous social problems in addition to the dangers posed to public health. My research examines the problems of isolation and stigmatization that accompany infected patients who are viewed in the popular mind as members of poor, uneducated minority groups. I will examine how these views have evolved over the centuries that gave rise to public health systems. Additionally, I will examine how external opinions and mandates affect patients and their prognosis.

## **WHAT FACTORS MOTIVATE COLLEGE STUDENT'S LEISURE AND RECREATION CHOICES?**

**Savannah E. Spivey, Department of Psychology and Counseling**

**Faculty Sponsors: Drs. Steven Kohn, Department of Psychology and Counseling, and  
Ofélia Nikolova, Honors College**

Recreation and leisure activities are recognized by both college students and higher education professionals as an important form of respite from the daily challenges, stressors, and demands of normal college life. Yet, little empirical research has been conducted on the motivating factors that impact student's choice of specific leisure and recreation activities. In the present study, a new measure of motivation for leisure and recreation activity engagement among college students was developed and tested (factor-analyzed) with sample of college students (N > 500). Findings will be discussed in terms of principle components analysis results; and the relative impact of the measure's ability to reduce stress and heighten well-being associated with the college life experience.

## **WILL CHINA BECOME THE NEXT SUPERPOWER?**

**Kenneth Chase Kelly, Department of Political Science and the Honors College**

**Faculty Sponsors: Drs. Carol Glen, Department of Political Science,  
and Ofélia Nikolova, Honors College**

China has claimed its well-deserved position among the very top of global political actors, especially following the global economic downturn of 2008. Many people find themselves wondering if China will become the next superpower. And if so, what impact would that have on the global economy? Would China, as a superpower, just replace the former Soviet Union and possibly increase tensions with the United States? In this project, I discuss how China has experienced an unimaginable growth in such a short time. Along with this discussion, I reflect on China's ability to become a superpower. There are some serious problems China must face, such as its huge and aging population, poverty rates, environmental pollution, and over-dependency on non-renewable resources. Finally, I discuss how China can become a very different superpower than we have known before and I briefly address how we should respond to China's national and economic development.

## **WOMEN AS PARTNERS IN *THE ODYSSEY* AND *THE AENEID***

**Erica L. Garcia, Department of Mathematics and Computer Science**

**Faculty Sponsors: Drs. Maren Clegg-Hyer, Department of English,  
and Ofélia Nikolova, Honors College**

Women, whether mortal or immortal, serve as many types of partners in *The Odyssey* and *The Aeneid*, some playing positive roles and others negative ones. It can even be argued that each partnership between the heroes and the women form the majority of the epic. This paper examines women whose actions are vital in shaping the journeys of Odysseus and Aeneas. Every partnership between the heroes and the women they meet is central to the development of each story, and each partnership also gives the reader insight to the heroes.

## **EXERCISE FOR CANCER SURVIVORS AND CAREGIVERS IN VALDOSTA, GEORGIA**

**John P. Willner, Amanda Boone, Samantha Murphy, and Joshua Gervacio,  
Department of Kinesiology and Physical Education**

**Faculty Sponsor: Dr. Tom Darling, Department of Kinesiology and Physical Education**

The cancer burden is significant. Exercise reduces cancer-related side effects and improves quality of life (QOL). Exercise can be added to routine cancer care as part of cancer prevention, treatment, and remission. Little is known whether cancer survivors and caregivers in Valdosta, Georgia are aware of the importance of exercise, its role in cancer care, and the availability of medical and community services. Valdosta State University (VSU), in partnership with Relay for Life (RFL), will survey cancer survivors and caregivers in the area to assess basic exercise knowledge, exercise participation for cancer, and awareness of available services. The primary goal is to enhance overall care and QOL for cancer survivors through education, increasing awareness, and referral to services. VSU will also collaborate with RFL in establishing community exercise programs. VSU and RFL are committed in providing the best care for cancer survivors and ample support for caregivers in Valdosta, Georgia.

## **BEZIER CUBIC CURVES**

**Joseph Michael Cauley and Chelsie M. Norton, Department of Mathematics and Computer  
Science**

**Faculty Sponsor: Dr. José A. Vélez-Marulanda, Department of Mathematics and  
Computer Science**

Bezier curves are parametric curves frequently used in computer graphics and related fields that were introduced by French Renault auto engineer Pierre Bezier, who used them to design automobile bodies. We present the definition and several properties of a Bezier curve that is cubic and determined by four points in a plane or in space. The central idea of this poster presentation is that only basic concepts from linear algebra, vector calculus, and basic algebraic geometry are necessary to understand Bezier curves.

## **GREEN KEYS**

**Jonathon T. Ramey and Andrew Stephen Lewis, Department of Mathematics and Computer Science**

**Faculty Sponsor: Dr. Zhiguang Xu, Department of Mathematics and Computer Science**

Green Keys is a project designed to demonstrate how the Microsoft Xbox 360 Kinect motion sensing peripheral can be used for a multitude of different computer applications/scenarios. This project uses the integrated development environment, Greenfoot, to provide the scenario for the demonstration. With some programming knowledge, developers can create different scenarios in Greenfoot that allow them to utilize the Microsoft Kinect's 3D camera to track user movements, which adds a whole new dimension of user interactivity to these scenarios. In this particular project, the Kinect is used to allow the user to play a virtual piano with their hands.

## **PROACTIVE REMOTE TUTORING**

**William C. Rouse and Kai Tillman, Department of Mathematics and Computer Science**

**Faculty Sponsor: Dr. Jam Jenkins, Department of Mathematics and Computer Science**

This poster explores the potential of a remote proactive tutoring system to enhance learning and ameliorate attrition rates in introductory Computer Science courses. The system we analyze uses Java WIDE to connect students to a remote tutor, who offers help when usage statistics indicate that a student be having difficulty. This format is effective because students prefer drop in appointments to scheduled appointments, short and frequent help to long and infrequent help, tutoring at their own location instead of a central tutoring center, and online tutoring to in-person tutoring. Students seeking proactive remote tutoring learn more than those who do not, spend more time with the tutor than when the tutor waits for students to ask for help, view their learning as more comprehensive than those who do not, are less likely to quickly give up on tasks, and learn more.

## **INTERDISCIPLINARY UNIT INTERACTIVE DISPLAY BOARD**

**Judy Branch, Justin E. Collins, Arin Patterson, and Jennifer J. West, Department of Middle, Secondary, Reading, and Deaf Education**

**Faculty Sponsor: Dr. Juan Walker, Department of Middle, Secondary, Reading, and Deaf Education**

This poster project features an interactive display board that can be used as part of a thematic interdisciplinary unit in a middle grades program, specifically a seventh grade unit focused on the African country of Sudan. Our display board encourages students to investigate social, political, environmental, and economic issues relating to Sudan, and integrates mathematics, science, social studies, and language arts. Teachers can use this type of display board to introduce new topics, generate student interest, make connections across content areas, and engage students. The interactivity of the display board is the key element that allows students to actively participate in the learning process and develop ownership of the classroom and their own learning. The interactive display board and accompanying classroom discussion accommodates visual, auditory, and kinesthetic learners, and gives teachers the power to regulate how, when, and what information is displayed during a unit.

## **TEACHING WITH A THEME: KENYA**

**Kris D. Henderson, Marie D. Browne, Quinnton Finn, and Michael Clapper, Department of Middle, Secondary, Reading, and Deaf Education**

**Faculty Sponsor: Dr. Juan Walker, Department of Middle, Secondary, Reading, and Deaf Education**

Our poster presentation will explore the social, political, economic, environmental, and religious aspects that shape the culture of Kenya today and generate student interest using real world connections. We will explore how creating interdisciplinary connections and building student interest strengthens student's schemata. We will also describe how these student's connections to prior knowledge create more effective lessons, promote student involvement, and encourage the student's retention of content knowledge. The mathematics portion of our Kenya unit will focus on graphing specific population data and currency values. Connections will be made to between American dollars and Kenyan shillings. The English and language arts portion of our unit will emphasize prominent figures in Kenyan literature, Kenyan folktales, and explore Kenyan religions. The science portion will explore the food chain of Kenyan animals, climate, and how humans impact the environment. Finally, social studies will culminate with social, political, and economic factors affecting Kenya.

## **CACAO IN CENTRAL AMERICA**

**Sydney Lynn Haire, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

The cacao bean in both the Mayan and Aztec cultures served multiple functions. Traditional usage includes the whole bean, white bean paste, fermented forms and liquid. The cacao bean was used for trade and as gifts to the cultural elites. Cacao was also used in both ceremonial and healing practices in Central America for more than 2,000 years. Both cacao and chocolate sediment can be found in ritual ceramics and in burial sites. The traditional use of cacao and chocolate continues in the Mayan and Aztec communities. However, these traditional practices have become threatened by colonization. The paper will address how the global consumption of chocolate continues to threaten these Indigenous communities as non-Indigenous companies push for expanded production.

## **INDIGENOUS TECHNOLOGY IN CENTRAL AND SOUTH AMERICA**

**Tony Collins, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

This poster will explore the Inca, Aztec, and Mayan civilizations and the use of technology and agricultural advancements. Historically, these empires have been studied based on colonial and post-colonial models, which have labeled them as “primitive”. While designating these empires as “primitive”, Western cultures adopted their advanced technologies including irrigation, seed cross-pollination and mathematical concepts. Western usage involving food and medicine can also be directly traced to these empires. This paper explores the significance of some of the remarkable technology and agricultural advancements developed in Central and South American civilizations.

## **NATIVE AMERICAN RELIGIONS IN THE SOUTHEAST**

**Chase Landon Studstill, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

This paper will examine religious and cultural practices of Native American Indians in the Southeastern United States during the later Mississippian societies. The focus will be on Native American societies that were prominent in the region during the time of Europe's first contact. In order to assist in the distinction between pre- and post-contact cultural practices, the research will document the spread of agricultural and religious practices from Mesoamerica to the southeast. Finally, the discussion will outline the importance of nature in the religious and cultural institutions within the lives of Southeastern Native Americans.

## **THE "INDIAN PROBLEM" AND THE DAWES ACT OF 1887**

**Janene E. Bessent, Native American Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Native American Studies**

The Dawes Act of 1887 was established in the United States as a solution to the continuing "Indian Problem" that had developed. The establishment of the Dawes Act allowed the American government to enter into a process of surveying and dividing Native American land into parcels that reflected the European/American models of land ownership. The Act also pushed for Native American assimilation into the European/American culture and social norms. The purpose of this paper is to examine the use of the Dawes Act as a means of ending the perceived "Indian Problem" in the United States.

## **MANIPULATION BY PRISON INMATES AS IT PERTAINS TO FORENSIC NURSES: AN UNDERGRADUATE'S PERSPECTIVE**

**David S. Shoe, College of Nursing**

**Faculty Sponsors: Drs. Anita G. Hufft and James P. Humphrey, College of Nursing**

Forensic nurses working with correctional populations (prison inmates) relate their expectations that they will experience manipulation; however, there is little research literature on the topic. This study was conducted to expand the knowledge on manipulation as experienced by nurses working in corrections, with the eventual purpose of developing intervention protocols to decrease its frequency and negative consequences that occur as a corollary of nurses being manipulated by inmate clients. With more than 2 million inmates in the United States, 25% of the world's prison population, research studies related to nursing and the delivery of health care to the inmate population remain scarce. This was a qualitative, descriptive study conducted in South Georgia. Interviews of five nurses were conducted using an open-ended interview technique. The interview schedule and the research data collection strategies were approved through the Valdosta State University Institutional Review Board in conjunction with Dr. Anita Hufft's research. A definition of manipulation of nurses by inmates in a forensic setting was developed based on the descriptions provided by the respondents. The experiences of these nurses have been recorded, as well as their suggestions to help other nurses in forensic settings to avoid manipulation by inmates. The nurses interviewed in this study recounted that they had experienced manipulation by inmates while working in a prison. They all believed that they were not prepared for the amount of manipulation or the consequences encompassing manipulation by inmates. The five nurses believed that further education by employers or nursing schools would be useful in their careers.

## **AN EXAMINATION OF CHRISTIAN AND HINDU TRINITIES**

**Sydney Lynn Haire, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Department of Philosophy and Religious Studies**

This paper examines the similarities and differences involving the theological constructs of the Christian and Hindu trinities. Historically and currently, many people around the world focus on religious differences. While it is important to recognize the differences, it is also important to note the similarities that may allow for positive communication. For example, both the Christian and the Hindu faiths offer some form of divine trinity. While the trinities differ on many issues, there are similar theological roles involving creation, preservation, and a sense of the spirit afterlife. This paper will focus on how these theological concepts intersect in the areas of mythology, origination and function as they are used in the praxis of the respective religions' trinity.

## **BARREN WOMEN AND SIBLING RIVALRY: A STUDY OF RACHEL AND LEAH IN BIBLICAL NARRATIVE**

**Brenna E. Lockaby, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Lily Vuong, Department of Philosophy and Religious Studies**

Leah and Rachel are two of the most well-known matriarchs in Biblical literature. Between the two sisters, they are accredited for the twelve sons of Jacob, the father of the Israelite nation. Both women struggle under the sociological expectations for women of their time—motherhood and potential fertility dominated their lives. The competitive relationship that exists between these sisters is the direct result of their need to be accepted in a society that treated barren women as unblessed by God. My paper looks at the ways in which traditional concepts of motherhood affected Leah and Rachel and how these concepts have influenced modern views of women as mothers. My research will examine the biblical texts concerning Leah and Rachel as well as modern interpretations of their relationship. I will discuss barrenness, the methods of surrogacy, and the emotional and physical dangers of motherhood for women in the ancient Near East.

## **DEPICTIONS OF WOMEN IN THE HEBREW BIBLE**

**Colin Law, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Lily Vuong, Department of Philosophy and Religious Studies**

On the portrayal of women in the Hebrew Bible, Ester Fuchs writes, “the biblical narrative was implicated in the cultural construction of gendered relations, and ought therefore to be read [...] as tendentious political representations of reality, and interpretations of truth.”<sup>1</sup> This paper attempts to explore representations of women in the ancient world with the goal of shedding light on women’s experiences in a male-dominated world. In doing so, I will focus on the stories surrounding the contrasting figures of Eve and Sarah in Genesis and pay close attention to how they are treated by their male counterparts and described by their male authors. Finally, I will also examine the ways in which these depictions have contributed to the development and expectation of women’s roles throughout the centuries

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<sup>1</sup> Ester Fuchs, “Biblical feminisms: knowledge, theory and politics in the study of women in the Hebrew bible.” *Biblical Interpretations* 16 (2008): 210.

## **NORSE NEOPAGANISM: A RETURN TO SPIRITUAL ROOTS OR AN EXCUSE FOR RACISM?**

**Alexander F. Lawhorne, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Lavonna Lovern, Department of Philosophy and Religious Studies**

This paper examines the emergence of Norse Neopaganism, focusing specifically on Asatú and its variants within the United States. While many individuals turn to these religions out of a desire to embrace their ancestors' beliefs, many others seem to find Norse Neopaganism as the ideal companion of white supremacy. The paper will examine both the development of Asatú and the motivations behind it as well as the development of its racially based offspring. The relationship between white supremacist groups and Norse Neopaganism will be explored, as well as the conflict between white supremacist Christians and white supremacist Neopagans. The paper demonstrates the evolution of this diverse set of religions and their potential impact on society.

## **PERPETUAL PROBLEMS: ISSUES WITH SOVEREIGNTY IN GLOBAL POLITICS**

**Angelique Witmer, Department of Philosophy and Religious Studies**

**Faculty Sponsor: Dr. Ari Santas, Department of Philosophy and Religious Studies**

This paper discusses the role of sovereignty within Kant's depiction of states as existing in a Hobbesian state of nature. Kant holds that states should maintain sovereignty after rationally coming into a society with one another under the power of law to maximize freedom and end perpetual war. However, the analogy of states to individuals existing in a state of nature no longer holds if we allow states such sovereignty. Individuals leaving a state of nature cannot retain ultimate authority, or sovereignty. In seeking to preserve the integrity of the analogy, I argue that perpetual peace cannot be achieved without subjecting national sovereignty to international law.

### **3D LASER SCANNING OF QUARRY EXPOSURES IN COASTAL PLAIN STRATA**

**Chad A. Novack, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Donald Thieme, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

Terrestrial laser scanning is a new technology which can be used to make three dimensional interpretations of geologic outcrops. We used a Leica C-10 HDS scanner to identify contacts between stratigraphic units at the CEMEX limestone quarry near Perry, Georgia. The upper highwall had approximately 25 meters of the Twiggs Clay (Fullers' Earth) overlying limestone from the Tivola tongue of the Ocala formation. In the lower highwall, almost the entire thickness of the Tivola limestone above the Clinchfield sand was present. Preliminary results from the 3D laser scanning suggest that limestone is particularly well preserved beneath the ridges in the quarry area where there are thick deposits of the Twiggs Clay.

### **A DETAILED STRUCTURAL ANALYSIS OF THE HINGE AREA OF THE MURPHY SYNCLINE, ELLIJAY, GEORGIA**

**Cassie L. Taylor, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Mark S. Groszos, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The Murphy Syncline includes the youngest rocks in the Western Blue Ridge terrain of the Appalachian Mountains. The syncline is a very large overturned isoclinal fold that extends from near Ashville, North Carolina, to the north end of Lake Allatoona, Georgia. A detailed structural analysis was made of four outcrops in Ellijay, Georgia. This area was chosen because of the high density of structural elements in these outcrops and its location in the hinge area of the Murphy Syncline. These structural elements include stretched pebbles in metaconglomerates, fold hinge lines, L1 intersection lineations, and mineral lineations. Stereographic analysis of these data was completed using NetProg, a structural analysis software suite. Results from this study indicate a near-horizontal southwesterly trend for the syncline and are consistent with other regional studies. Moderate scattering of the data suggests minor interference by F2 and later cross folds. Data were consistent across the study area.

## **ANALYSIS OF THE CHANGES IN TOBACCO FARMING IN SOUTH GEORGIA**

**Rance L. Harrod, Department of Physics, Astronomy, Geosciences, and  
Engineering Studies**

**Faculty Sponsor: Dr. Paul C. Vincent, Department of Physics, Astronomy, Geosciences,  
and Engineering Studies**

This study was conducted to investigate if the transition from producing tobacco to corn was due to the demand for ethanol. Interviews were conducted with a sample of farmers in South Georgia determine if this crop harvesting transition has been a definitive effect of the increase of ethanol demand. Findings from this study disclosed that the choice to transition from tobacco crops to another crop was due to several factors. The leading factors were increased awareness of the health hazards of tobacco, settlements on medical lawsuits, and increases in production cost. Results of this study showed that the transitional crop choice for South Georgia farmers was cotton. This preferred choice was due to the higher cost of producing corn in comparison with producing cotton, therefore resulting in more profit.

## **BUCKLING AND EULER'S FORMULA: AN EXPERIMENTAL INVESTIGATION WITH MECHANICAL TESTING SYSTEM**

**Justin Ryan Womble, Department of Physics, Astronomy, Geosciences, and Engineering  
Studies**

**Faculty Sponsor: Dr. Barry Hojjatie, Department of Physics, Astronomy, Geosciences, and  
Engineering Studies**

The objective of this study is to provide an overview of buckling behavior of engineering structures and utilize the mechanical testing system available in the VSU engineering laboratory to examine the validity of the Euler's equation of buckling. We will also analyze the influence of the variables involved in the equation in buckling behavior of engineering structures. We have measured critical load of buckling of several wood samples as a function of length, elastic modulus, and moment of inertia. Through these experiments, the importance of the knowledge of buckling in stability of structures specifically columns becomes apparent. The results of this study indicate that if the material and cross sectional area of the sample remain constant, the maximum load of buckling is inversely proportional to the length of the sample.

## **CHALLENGES AND OPPORTUNITIES WITHIN VSU'S ENGINEERING STUDIES PROGRAM: EMPHASIS ON INTERNATIONALIZATION**

**Wade Jeffers and Natalie A. Milko, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Barry Hojjatie, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

This study examines the international aspects of the Engineering Studies program at Valdosta State University (VSU), including information on current challenges along with the opportunities associated with completing the program. The objectives of this project are to assess the program, analyze the growth of American and international student enrollment rates, evaluate and determine which groups of international students are choosing engineering as a career field, educate current students on international job opportunities and average salaries of each discipline within the United States, Germany, and South Korea. Collection of data research, surveys of current international VSU engineering students, and interviews of faculty members all showed conclusive results that the Engineering Studies program's enrollment rate at VSU continues to expand, thus proving this program could offer more courses with more faculty members to continue the enrollment expansion and retention rate.

## **CHANNEL CHANGE OF THE WITHLACOOCHEE RIVER FROM 2009 TO PRESENT DAY**

**Brian George Deye, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Paul C. Vincent, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The purpose of this research is to analyze the morphological change in river depth, cross-sectional area, and discharge at three locations on the Withlacoochee River. All research was based on vertical aerial photos of the Withlacoochee River before and after the 2009 flood, hydrodynamic numerical models, and cross-sectional measurements of the Withlacoochee River. Average width ratios (width before/after the flood) were calculated and correlated with the hydraulic parameters of specific stream power, shear stress, flow area, and specific discharge. This research concluded that the flood of 2009 carried an immense amount of debris with the floodwater which cut into the banks of the Withlacoochee River changing the channel slope.

## **CHARACTERIZATION OF COMPOSITE MATERIALS BY WAVE-MATTER INTERACTIONS**

**Brian C. Shanken and Steve Terry, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Hasson Tavossi, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The goal of this study is to investigate wave response of a two-phase system consisting of liquid-solid mixture at different scales. To detect defects in the composite materials, and to determine the similarities in wave-matter interactions at macro and nano-scales. The solid-liquid aggregates of the uniform -size glass spheres forms the model media. The wave response of the model, as a function of the dimensionless quantity,  $kr$ , (wave number x particle size), gives the wave response independent of scale. Band-pass filter, dispersion, and wave attenuation data measured in this study could predict structural parameters such as; grain size, elastic moduli, index of refraction, and absorption spectra of composite materials.

## **DEVELOPMENT OF A 3-D CAD MODEL OF HUMAN MANDIBLE**

**William Michael Bartholomew, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Barry Hojjatie, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The purpose of this project is to develop a three-dimensional CAD model of human mandible to be used in stress analysis using computer aided engineering. A composite model of an average size human mandible was employed and using a digital caliber, its various dimensions were measured and applied in the Inventor program to create the computer model. In this initial model, we did not include the mandibular teeth in our model and only modeled the bone that forms the lower jaw. However, after refining the model to a realistic shape and size, a simplified 3-D model of a single tooth will be assemble to it. Using the three-dimensional printer (prototyper) located at the VSU engineering lab, we will create a solid model of the system and then it will be subjected to simulated biting forces to determine the magnitude and directions of the stresses developed within the mandible

## **EARTHQUAKES IN AND NEAR JAPAN, MARCH-AUGUST, 2011**

**Whitney B. Rountree, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Donald Thieme, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The great Tohoku earthquake of March 11, 2011 was the most powerful to be recorded by seismographs on Japan, with a 9.0 moment magnitude ( $M_w$ ). We examine all earthquakes of greater than 4.0  $M_w$  tabulated by the National Earthquake Information Center (NEIC) to identify "foreshock" and "aftershock" movements related to the March 11 event. Our results indicate abundant fault activity at crustal depths shallower than 30 km during March of 2011. Of the 4,662 earthquakes studied, 63.4 percent (2,954) occurred during March. Strong earthquakes greater than 4.0  $M_w$  did continue to occur along this boundary through August, however, and crustal movements comparable to that which caused the great Tohoku event may recur in the not too distant future.

## **FOURIER TRANSFORM AND ITS APPLICATIONS**

**Cordel Anthony Williams, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Frank Flaherty, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

The Fourier Transform has many applications in engineering and physics and can be used to analyze waveforms whether optical, electrical, or acoustical. In this experiment we employ Fourier analysis to obtain the frequency spectrum of a normally functioning machine. The machine was then deliberately altered so that the usefulness of Fourier analysis for diagnosing malfunctions can be investigated.

## **GROUND-PENETRATING RADAR INVESTIGATION OF SUBSIDENCE IN COVERED KARST NEAR VALDOSTA**

**Benjamin L. Davis, Department of Physics, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Donald Thieme, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

We employed ground-penetrating radar (GPR) to investigate a house lot in a rural area west of Valdosta at which subsidence had occurred. Subsurface anomalies were identified in a 29 m x 51 m grid which abutted the house. Two other areas on the same property were also investigated to identify locations which had fewer subsurface anomalies and might be less prone to subsidence than the current house site. The land surface on the property is variably mantled by indurated sand at the top of the Hawthorne Group in the local geology. We collected samples of the local bedrock and overlying soil and sediments in order to constrain the velocity at which the radar pulse is transmitted and reflected in the subsurface. We will present maps of each area based upon "time slice" analysis of GPR data. The method shows promise for estimating the likelihood of subsidence in the Valdosta area.

## **HOW HUMANS CONTRIBUTED TO THE FORMATION OF PROVIDENCE CANYON**

**La'Stacia S. Reese, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Michael G. Noll, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

Providence Canyon is a network of gorges located in southwest Georgia which were created by the rapid erosion of numerous soil layers. The first settlers in the 1820s practiced poor farming and soil management techniques that began the erosional processes that led to its formation. This study will examine agricultural aspects and environmental consequences of human activity in the area. The main focus will be on existing farming communities in the 1800's, the different farming techniques practiced by the settlers, types of soil found in the region, and a discussion of what the future might hold in store for Georgia's "Little Grand Canyon."

## **MINERALOGY OF PALYGORSKITE DEPOSITS NEAR OCHLOCKNEE, GEORGIA, NORTHEASTERN THOMAS COUNTY**

**David C. Clark, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Mark S. Groszos, Department of Physics, Astronomy, Geosciences,  
and Engineering Studies**

Palygorskite, sometimes referred to as “fuller’s earth”, is a fibrous clay of sedimentary origin that is widely used in industry as a filtering agent and as an absorbent. Palygorskite is heavily mined along a trend extending from Meigs, Georgia, to Quincy, Florida. A local variety known as attapulgitite is formed from a mixture of palygorskite, smectite and montmorillonite clays. The palygorskite occurs in the Meigs Member of the Coosawhatchie Formation of the Miocene Hawthorne Group. These clay deposits occur in a poorly understood Miocene paleo-deposition feature known as the Suwannee Straits or Gulf Trough that served as an open seaway between Georgia and Florida from the Cretaceous to the Tertiary. This study examines samples of palygorskite from several quarries operated by the Oil-Dry Corporation near Ochlocknee, Georgia. These samples will be characterized using SEM, XRD, and chemical analysis to determine if there is any variation in the clay along strike.

## **STRUCTURAL SOUNDNESS OF MONITORING OF PRO-ELASTIC MATERIALS BY ULTRASOUND**

**Jacob A. Smith, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Hasson Tavossi, Department of Physics, Astronomy, Geosciences, and  
Engineering Studies**

Non-destructive evaluation and monitoring of structural soundness of pro-elastic materials are investigated with model materials of uniform size glass spheres. Damaged zones and non-uniformity of structure are studied by ultrasound. Signal analyses of waves, transmitted through the sample, with fast Fourier transform, attenuation, and phase, provide structural information. Signal transmitted through the damaged sample, and reference signal, through a healthy sample, are compared by two pairs of ultrasound sensors of 40 kHz, arranged in pitch-catch mode. Separate samples were prepared by 1, 2, 3, and 3.5 mm in diameter uniform glass spheres in water, to determine pore-size effect. Signal analyses were performed by a 500 MHz advanced oscilloscope. Experimental results and mathematical modeling show that a damage zone in the sample and its size are detectable. This technology, when fully automated, could provide the real-time health monitoring of structures and advance proelastic materials, with industrial and biomedical applications.

## **SURFACE WEATHERING OF LIMESTONE IN FLORIDA CAVERNS STATE PARK**

**Mary Elizabeth Lupo, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Donald Thieme, Department of Physics, Astronomy, Geosciences and Engineering Studies**

Florida Caverns State Park near Marianna is a system of interconnected cave passages developed into a tour cave by federal workers during the 1930's and 1940's. The surface of limestone outcrops throughout the park exhibits features resulting from physical and chemical weathering. Rectangular cracks, rillenkarren, and other features have been identified and are found at several scales. Field mapping and sampling are focused on two areas of the park: 1) China Cave vicinity, and 2) the bluffs between the Tour Cave entrance and the Chipola River. Fractures and features due to both mechanical and chemical weathering are being mapped on rectified photographs and assembled into photomosaics for each area. Samples of limestone are being collected from the exposures representing various stages of weathering beginning with relatively fresh rock. Approximately six (6) thin sections will be made from these samples for petrographic analyses, possibly to be followed up by chemical analyses.

## **URBAN SPRAWL ANALYSIS AND ITS MANAGEMENT POLICY IN MADISON, WISCONSIN METROPOLITAN AREA**

**Jay Sharpe, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Jia Lu, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

Studies show that urban sprawl can cause significant negative consequences. Many cities in the US introduce policies and plans to help alleviate sprawl and contribute to smarter land use and urban growth. The City of Madison, Wisconsin has been considered an area of smart growth. This study will look at population and land use data between 1990 and 2000 to determine if there is significant issue with urban sprawl; and if so, what policies shall be suggested for smart growth in the future. Preliminary data indicates that there is, indeed, urban sprawl within the area. A more in depth study using interviews and survey of the urban development plans and policies implemented will determine which factors are contributing to the sprawl and suggest related polices to minimized urban sprawl.

## **VOLCANIC HAZARD ASSESSMENT FOR GEORGIA**

**Ivey J. Roubique, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

**Faculty Sponsor: Dr. Mark S. Groszos, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

Large volcanic eruptions are known to occur in the western United States. Volcanic activity in areas such as the Cascade Mountains, Yellowstone National Park, and New Mexico can create significant hazards for areas thousands of kilometers away. The primary threat is eruptions that produce very fine ash that is then ejected into the upper troposphere and stratosphere. This ash is subject to wind currents and the associated jet stream. The northwest winds sweep eastward carrying the ash across North America. This study is an analysis of the hazard that these ash falls present to Georgia. Examination of ash events described in science journals allows for qualitative meta-analysis of future ash events for Georgia. Work here focused on the economic and environmental impacts of hypothetical volcanic eruptions on Georgia. This study shows that future volcanic activity in the western United States could have a profound effect on Georgia.

## **YIELD AND EFFICIENCY OF PRECISION AGRICULTURE CROPS IN REGARDS TO NON PRECISION AGRICULTURE CROPS**

**Brandon D. Hattermann, Department of Physics, Astronomy, Geosciences and Engineering Studies**

**Faculty Sponsor: Dr. Paul C. Vincent, Department of Physics, Astronomy, Geosciences, and Engineering Studies**

With exponential growth of human population, agricultural resources have become precious commodities. The development of global positioning systems (GPS) has led to the development of precision agriculture technology. Farmers adopt this technology in hopes of a more efficient, higher yield crops. However, flaws in precision agriculture, such as overlap in GPS, have led to unexpected costs in yield. In this study, yield and efficiency of precision agriculture plots is compared to non-precision agriculture plots. The plots from which the data was collected are under similar conditions such as seed type, region, and method of application. The data in this particular study finds that precision agriculture efficiently produces a higher yield than non-precision agriculture crops.

## **INDONESIA: POLITICS, CONSTITUTION, AND RIGHTS OF THE PEOPLE**

**Charita L. Gates, Department of Political Science**

**Faculty Sponsor: Dr. Marc G. Pufong, Department of Political Science**

The political history of Indonesia is a fascinating one and is its constitutional system. In this paper an effort is made to present information that addresses concerns touching upon the political, constitutional, civil and political rights of the people of Indonesia. Using resources from various sources I assess these conditions focusing on the government which has been central in the manipulation of lives of many Indonesians since the nation's independence in 1945 to the present time. The political aspect shows impunity in leadership and the constitutional assessment shows a systematic breakdown of order in the guarantee of the basic rights to its citizens. Indonesia's civil and human rights records are used as evidence of government transgression and misuse of power. Lastly, the papers demonstrate how corruption and exploitation under the current leadership is manifested.

## **PREDICTORS OF FY2010 FEDERAL SPENDING IN THE UNITED STATES**

**Katherine Marie Wagnon, Department of Political Science and the Honors College**

**Faculty Sponsor: Drs. James T. LaPlant, Department of Political Science, and  
Ofélia Nikolova, Honors College**

This quantitative study investigates total federal spending per capita and the various major categories of federal spending across the American states for FY 2010. The demographic, socio-economic, and political predictors of per capita federal spending across the states are explored through multivariate regression analysis. The key independent variables in this study are population density, poverty rate, percentage 65 and older, bureaucrats per capita, tax capacity, seniority, and the percentage of the vote for Obama. Total federal spending per capita and the major categories of federal spending for FY2010 across the 50 states serve as the dependent variables in this analysis. The multivariate regression analysis revealed bureaucrats per capita, population density, percentage of individuals 65 and older, House seniority, and percentage of votes for Obama were statistically significant. Furthermore, this study utilized ANOVA to test if region has played a declining role in the distribution of federal spending. The data analysis revealed region is explaining less of the variance in federal spending, and the disparity across regional divisions has been steadily declining since 1975.

## **SOCIAL MEDIA AND THE ARAB SPRING**

**Alexander F. Lawhorne, Department of Political Science**

**Faculty Sponsor: Dr. James Peterson, Department of Political Science**

This paper examines the political upheavals in the Middle East which began taking place in early 2011, looking specifically for a relationship between social media (such as Twitter and Facebook) and the organization of these social movements. The paper begins by examining social media and how they are used to inform and influence the public. It then proceeds to detail the social movements within the Arab World and why previous movements which were organized without social media were unsuccessful. The paper then examines specific instances of the use of social media during the Arab Spring of 2011 and whether they have been particularly important. The paper concludes by noting that social media has clearly been used as a tool for the protesters but that further research is required to know whether or not its use was a necessary condition for the uprisings.

## **SOUTH KOREA: POLITICS, CONSTITUTIONAL GUARANTEES, AND ECONOMIC RIGHTS**

**Whitney Yarber, Department of Political Science**

**Faculty Sponsor: Dr. Marc G. Pufong, Department of Political Science**

In this report, an attempt is made to illustrate the state of affairs in all matters concerning the political, constitutional, and civil rights and liberties of the citizens of South Korea. This report uses a list of sources to cross-examine these three aspects of governance in South Korea. From the political spectrum: diplomatic, economic, and military aspects are covered. From the words of the Republic of Korea's Constitution, the constitutional framework and all of the fundamental guarantees are outlined. Finally, through the civil and human rights records, an investigation of the executive government's use of power is appraised. The goal is to discover the abuses and persecutions that have gone on for four years under the rule of current President Lee Myung-bak, and even prior to his inauguration four years ago. In light of recent events, this report stands as a preposition that a government under such an authority is indeed, sustainable in the long run.

## **TRANSATLANTIC RELATIONS AND THE MIDDLE EAST: PINPOINTING ISRAEL AND PALESTINE**

**Laura N. Hanna, Department of Political Science and the Honors College**

**Faculty Sponsors: Drs. Michael Baun, Department of Political Science, and Ofélia Nikolova, Honors College**

The Middle East is an area riddled with conflict, much of which can be traced back to hatred and intolerance related to the Palestinian exodus resultant from the creation of Israel. This displacement of Palestinians has planted discontent into the hearts of six decades worth of World War Two descendants and will continue to impact generations to come— both for Palestinians and Israelis, as well as for those who dwell in the Americas and Europe. The Israeli-Palestinian issue has a strong influence on and is a source of contention for the Transatlantic relationship; this research paper investigates the history of the conflict and some of its effects, including the resources that the US and Europe have expended in trying to remedy this conflict and the global issues that the transatlantic nations have been faced with as a result. Additionally, future possibilities for reconciliation will also be analyzed in this paper

## **VOTING BEHAVIOR AND PROPOSITION 19 TO LEGALIZE MARIJUANA IN CALIFORNIA**

**Joseph A. Wagner, Department of Political Science**

**Faculty Sponsor: Dr. James T. LaPlant, Department of Political Science**

This paper examines some of the possible factors that may have influenced voting behavior during the vote for Proposition 19 in California. The proposition would have essentially legalized marijuana within the state. The analysis looks at factors such as race, percentage of foreign born persons within a community, education level, income level, and support for Proposition 8 to eliminate same-sex marriage. The units of analysis were the 58 counties in California. The analysis shows that race, controlling for outliers, had little to no correlation with the percentage support for legalization of marijuana. Per capita money income, percent of persons within a county with a bachelor's degree or higher, and opposition to Proposition 8 were all statistically significant in a positive correlation with support for Proposition 19.

## **WHAT ARE THE FACTORS THAT INFLUENCED A MINORITY INCUMBENT'S REELECTION IN THE HOUSE OF REPRESENTATIVES IN 2010?**

**Jeffrey G. Burke, Department of Political Science**

**Faculty Sponsor: Dr. James LaPlant, Department of Political Science**

This paper examines minority incumbents of the United States House of Representatives seeking reelection in 2010 and the factors that influenced the election outcome. This election was remarkably noted for the surge of Republican and Tea Party candidates replacing numerous Democratic incumbents in the House of Representatives. The analysis looks at variables such as gender, race, poverty, labor force, education, and region. The statistics in the analysis show that the percentage of men, women, whites, population living under the poverty line, population in the labor force, and region of the United States affect the support for a minority incumbent when they are running for reelection.

## **WHAT FACTORS AFFECT GUN CONTROL LAWS FOR EACH STATE?**

**Douglas Smith, Department of Political Science**

**Faculty Sponsor: Dr. James T. LaPlant, Department of Political Science**

This paper examines what factors affect how strict or how lax each state is with their gun control laws. The dependent variable is the Brady Campaign scores for each state with higher scores representing stricter gun control laws (California being the strictest ranked at 79, and the lowest being Utah ranked at 0). There are seven specific independent variables that were chosen and then tested to the Brady Campaign to see how each variable affected the rank of the state. Out of the seven independent variables five of them proved to be statistically significant which were the violent crime rate, percent vote for Obama, percent that graduated college, percent poverty, and region. While these variables played the most important role in the Brady scale, the percent black population and per capita income had very little significance.

## **WHAT FACTORS INFLUENCE GLOBALIZATION?**

**Gabriella Chloe Mulholland, Department of Political Science**

**Faculty Sponsor: Dr. James LaPlant, Department of Political Science**

This paper examines the factors that influence globalization. It is a quantitative analysis consisting of 208 countries and their globalization scores. Globalization is defined as the political, social, and economic integrations of countries. This paper investigates how the following variables affected globalization: overall GDP, GDP per capita, Freedom House scores, population density (per square mile), literacy rate, technology exports, unemployment rate, and corruption index. The analysis finds that overall GDP, Freedom House scores for a country, and corruption within a country are all significant predictors of how globalized a country is. Countries with high levels of transparency (low levels of corruption) have the highest globalization scores in this study. Literacy rate, unemployment rate, population density, technology exports, and per capita GDP exhibited no relationship to globalization scores.

## **PERCEPTION OF VEHICLE SPEED BASED ON VERB USAGE AND TIME ELAPSED**

**Casey J. Holcom, Department of Psychology and Counseling**

**Faculty Sponsor: Dr. Deborah Briihl, Department of Psychology and Counseling**

Our poster will present information found during a replication of Loftus and Palmer's (1974) study, a work that suggests one's perception of a vehicle's speed will vary based upon the verb used when asking the participant about the event. The results also show that those given the verb "smashed" (rather than "hit") in their questioning are also more likely to believe that they had seen broken glass when in fact there was none present. Many studies in the field allude to the fact that one's perception or memory can in fact be manipulated. There are numerous studies supporting this finding, such as Shermer (2011), whose work centered on participants' recollection of crimes witnessed, which suggest that our memories can be easily influenced, and that it can happen without an individual knowing it. These studies suggest that memory errors can be easily created and manipulated.

## **RACE, PUNISHMENT AND VICTIMS OF CRIME – A SURVEY OF CURRENT ATTITUDES**

**Hazel R. Moon, Department of Psychology and Counseling**

**Faculty Sponsor: Dr. Jeremy Tost, Department of Psychology and Counseling**

What impact does implicit forms of racial bias have on the sentencing of criminal offenders? This study examines the impact of offender, victim and sentencer race in the severity of sentences recommended. Participants read a series of crime vignettes that either included or excluded racial identifiers and were then asked to recommend a sentence. It is predicted that these results will demonstrate significant racial bias in the sentencing of criminal offenders. The results are a pilot study that will be further expanded in the 2012-13 academic year.

## **UTILIZATION OF GENOGRAMS FOR BIOPSYCHOSOCIAL EVALUATIONS**

**Alice L. Mendez, Department of Sociology, Anthropology, and Criminal Justice**

**Faculty Sponsor: Dr. Mike Meacham, Department of Sociology, Anthropology, and Criminal Justice**

Genograms are essential tools for conducting assessments on patients by providing a multi-generational perspective of an individual's family and communal network. They illustrate relationship dynamics, identify reoccurring tendencies, and provide an insight on developmental agencies. Individuals are complex social beings, and therefore, need to be evaluated in regards to a wider social context. Since biopsychosocial examinations evaluate individuals according to biological, psychological, and social factors, genograms are fundamental resources that display relevant conditions and connections through which the core of a person can be analyzed.

## UNDERGRADUATE RESEARCH COUNCIL

The Undergraduate Research Council of Valdosta State University was organized in the fall semester of 2011. Membership includes faculty representative from the undergraduate academic departments and programs at VSU. The Council is charged with promoting undergraduate students' interest in research, with seeking ways to promote undergraduate students' involvement in research activities, and with helping faculty identify opportunities to involve undergraduates in research. The Council supports the implementation of Valdosta State University's Quality Enhancement Plan, which promotes undergraduate engagement in discipline-based inquiry.

## COUNCIL MEMBERS 2011-2012

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Ms. Kathryn Grant, Student Member

Ms. Katherine Wagnon, Student Member

The Undergraduate Research Council would like to extend special thanks to Mr. Mark Mears and Ms. Marissa Goodwin for their generous assistance with organizing the Symposium.

