Celebrating Scholarship and Creativity Day 2009

ABSTRACTS

ARRANGED ALPHABETICALLY BY DEPARTMENT AND FIRST AUTHOR SURNAME

**ART**

**Easter Vigil: creating an artist’s book for liturgy.** ANDREW V. JULO (Dr. Rachel Melis, Art)

Both an endeavor in visual art as well as Christian theology, the book I have created contains the eleven Biblical readings used by Roman Catholics around the world during their annual celebration of the Easter Vigil. I have printed each of these sacred texts through letterpress – a centuries old form of printing in which individual pieces of type are set by hand to create complete texts. Combined with contemporary handmade photographs, prints, and drawings, this book is intended to serve as a functional object in modern Christian worship.

**BIOCHEMISTRY**

**Nucleoside analogues as antiviral drugs**

SERINA A. AUBRECHT (Dr. Abul Fazal and Dr. Henry Jakubowski, Chemistry)

Nucleoside analogues are a group of antiviral chemical compounds that are similar in structure to nucleosides (the backbone elements of DNA and RNA), but different in respect to elemental composition by the replacement of a hydroxyl (OH) group by a hydrogen (H) on their ribose sugars. They are used to prevent viral replication in infected cells and are found in chemotherapy and HIV drugs. This study analyzes the mechanisms in which these antiviral drugs function.

**Lipopolysaccharide stimulated phosphorylation of macrophage MAP kinases ERK1 and ERK2 .** KERRY BAUER, DUSTIN BENTLEY, KEVIN BETTENDORF, KATHERINE HARTJES, KATHLEEN HROMATKA, and SAMANTHA VANWECHEL (Dr. Barbara May, Biology, and Dr. Henry Jakubowski, Chemistry)

Lipopolysaccharide, a common molecule on the surface of gram negative bacteria, was used to stimulate mouse macrophage cells, components of the innate immune system.  This activation initiates a signal transduction pathway, characterized by phosphorylation of proteins.  The macrophage cells will be lysed and the phosphorylated proteins will be isolated, separated, and identified by 2D polyacrylamide electrophoresis, Western blot, and mass spectral analyses.  The techniques and procedures developed during this project could be used in future research into other phosphorylated proteins that are found to be prevalent in certain cancers such as breast cancer.

**Purification and analysis of wild type and mutant low molecular weight protein tyrosyl phosphatases.** ROBERT HLAVACEK

(Dr. Henry Jakubowski, Chemistry).

Wild type (WT) and mutant low molecular weight protein tyrosyl phosphatases (LMW-PTP) were expressed in E. *coli* as fusion proteins with glutathione-S-transferase (GST).  Successful purification of the fusion proteins and the LMW-PTP separated from GST by selective proteolysis was accomplished using GST-affinity chromatography.   Purification was monitored using polyacrylamide gel electrophoresis (PAGE), measuring absorbance at 280 nm, and monitoring LMW-PTP enzymatic activity spectrophotometrically through the cleavage of p-nitrophenyl phosphate (pNPP) at 405 nm.   Enzyme kinetic analyses of pNPP cleavage by WT and active mutants (W39F and W49F) confirmed that inorganic phosphate acts as a competitive inhibitor.   Circular dichroism spectroscopy indicated that the inactive C12S mutants (W39FC12S and W49FC12S) have secondary structure characteristic of the WT LMW-PTP.  Fluorescence quenching of the PTP W39F mutant by inorganic phosphate, phosphotyrosine, pyridoxal phosphate, and phospho-peptides is being explored as a method to characterize inhibitor binding.

**Wilson’s disease: analysis from a biochemical approach. KATHLEEN HROMATKA**

**(**Dr. Dave Mitchell, Biology)

Wilson’s disease is a rare but serious condition characterized by the accumulation of copper in the liver. Genetic mutations of the ATP-ase-7B liver enzyme result in the enzyme’s inability to function normally in its role of preparing dietary copper for expulsion from the body. The resultant accumulation of copper leads to a variety of symptoms that, if left undiagnosed and untreated, are fatal. Recent research has provided new insight into the mechanism of action behind the affected enzyme.

**The synthesis and purification of fluorescein-labeled phosphotyrosine and the study of its interaction with protein tyrosyl phosphatase using spectrofluorometric anisotropy measurements.** BENJAMIN M. MURRAY (Dr. Henry Jakubowski**,** Chemistry**).**

The purpose of this research is to synthesize an inhibitor of protein tyrosyl phosphatase, fluorescein-phosphotyrosine (FPY). Phophotyrosine (PY) was labeled with fluorescein isothiocyanate and purified using reverse-phase HPLC on a preparative C-18 column eluted with an acetonitrile gradient in an ethanolamine buffer (pH 9). The final products of the synthesis were characterized and analyzed for purity using LC-MS. The purified FPY will be used to obtain spectrofluorometric anisotropy measurements to study the binding properties of FPY to protein tyrosyl phosphatase.

**Quantitative real-time polymerase chain reaction (qRT-PCR) and its use in determining GAL 1 and GAL 10 levels in *Saccharomyces cerevisiae* .** BETH NOMELAND and EMILY HEMANN (Dr. Michael Reagan, Biology).

The research goal was to develop a qRT-PCR protocol for the quantification of the galactose-induced GAL1 and GAL10 genes in *Saccharomyces cerevisiae* using purchased primers ordered for the GAL1, GAL10 and 18S genes. The 18S gene is a ribosomal RNA gene and was used as a control to normalize calculated results. The *S. cerevisiae* cell cultures were grown in various media after which the mRNA was isolated using YeaStar RNA kit from Zymo Research. The qRT-PCR reaction was then set up using Qiagen Quantitect SYBR Green RT-PCR Kit and the Qiagen Mini-Opticon thermal cycler to quantify gene expression using fluorescence. Primer concentration optimization was needed to ensure accurate amplification results. Results will be discussed as well as uses of the method to further investigate gene transcription in future research projects.

**The fountain of youth: a biochemical explanation of physiological aging from environmental and endogenous oxidative stressors.** ZACHARY R. SHAHEEN

(Dr. David Mitchell, Biology).

The presence of reactive oxygen species, whether from environmental or endogenous sources, correlates with decreased organismal longevity and increased risks of neurodegenerative and cardiovascular diseases. Reactive oxygen species are most typically formed from metabolic activities, antibody-catalyzed ozone formation in the body, or from exogenous environmental pollutants. This typically reacts with protein residues, lipids, and DNA to form inactive proteins, lipid peroxidation, and nucleic acid structural damages. Reactive oxygen species initiate important cellular stress signaling pathways through growth and metabolic regulation, and modulate transcription factors important in cellular repair or apoptotic capabilities. Current studies look to decrease oxidative stress through caloric restriction, antioxidant dietary supplementation, or other novel therapeutic techniques.

**Crystallization of ERK-1 and RSK-2 protein complex.** VALERIE M. STEINMAN

(Dr. Henry Jakubowski, Chemistry**).**

The study of protein structure is important to help define and understand protein function. The function of the RSK-2 protein is of particular interest as studies have shown mutations can cause cancer. The ERK-1 protein is known to bind with the RSK-2 protein to activate the RSK-2 protein. We attempted to crystallize the RSK-2 and ERK-1 complex for use in X-ray structure analysis. Various domains of the proteins ERK-1 and RSK-2 were purified and combined together with different well solutions to test for optimal conditions for crystallization. Once optimal crystals are produced, then with further analysis, the changes in the original RSK-2 structure could be evaluated to understand the activation of the RSK-2 protein.

**Detection and mechanism of action for common anti-anxiety pharmaceuticals**

TYLER J. THORSON (Dr. Alison Johnson, Chemistry**)**

Many different drugs have been discovered for the treatment of anxiety and depression disorders. These drugs aim to counteract the chemical imbalance that is present in patients with these illnesses by regulating brain levels of serotonin, norepinephrine, dopamine, and other chemicals. To do this, researchers have developed many different techniques, such as Monoamine oxidase (MAO) inhibition, serotonin reuptake inhibition, and tricyclic anhydrides. Studies have been done on each form of anti-anxiety medication in an attempt to determine the mode of action at the synapse between pre- and post-synaptic membranes. Such mechanisms include enzymatic action, physical blockage of reuptake channels, and chemical blockage of channels. Each drug targets a specific brain chemical via a specific mechanism.

**The role of iron in Parkinson’s disease.**

MARIE F. ZETTEL (Dr. Brian Johnson, Chemistry).

Parkinson’s disease one of the largest neurodegenerative diseases today. The causes are not well understood; however there is a high correlation between regional iron buildup and Parkinson’s disease. The role of iron in Parkinson’s has been unknown until recently. Scientists have been able to show that excess brain iron reacts with hydrogen peroxides causing oxidative stress and cell death. Two possible explanations for buildup of iron in the brain are protein misregulation and problems with the brain-blood barrier. In order to decrease destructive iron levels, chemists are developing molecules that would remove harmful iron from the brain and stop neurodegeneration.

**BIOLOGY**

**Time-lapse video of distinct germination patterns in plants.** MELISSA J. BACH, JENNA M. POLLARD, and MEGAN E. VAN LOH (Dr. Stephen Saupe, Biology).

We compared germination patterns of three types of plants: monocot (corn), hypogeous eudicot (peas), and epigeous eudicot (cucumbers). Several seeds of each species were planted in separate containers and placed side by side in a filming chamber. We provided water and light for the plants and used time-lapse video to film their germination and growth over the course of one week. Our video provides a direct comparison of the three types of germination patterns.

**Competitive response in radish plants.**

BRANDON BAKER, BRIAN ELLINGBOE, and CHRIS HAUGEN (Dr. Stephen Saupe, Biology).

Using radish plants our group sought to understand the impact of competition among seeds for space, nutrients, and water. Seeds were planted and grown in a film canister with varying seed densities and monitored with time-lapse photography. Plants exhibited changes in leaf and stem size. Our results show that germination rates decrease as competition increases.

***Candida albicans* growth and biofilm inhibition by metabolites of lactic acid bacteria.** KERRY M. BAUER and ABBY M. WALCH (Dr. Ellen C. Jensen, Biology).

The chemical compounds' effect on *Candida albicans* was determined by monitoring planktonic growth and biofilm formation in a multiwell plate. Lactic acid and sodium lactate did not inhibit *C. albicans* growth or biofilm formation. Whereas butyric, formic, and propionic acid along with butanol and propanol had a significant inhibitory effect. Our data do not support the long accepted belief that lactic acid produced by lactic acid bacteria is responsible for suppressing growth of *C. albicans*, as well as other human pathogens, on human epithelial surfaces.

**The effects of increased FKBP51 levels in the glucocorticoid treatment of Eosinophilic Esophagitis.** CATHERINE BOUSKA (Drs. Julie Caldwell and Marc Rothenberg, Cincinnati Children’s Hospital Medical Center, and Dr. Michael Reagan, Biology).

Eosinophilic Esophagitis (EE) is a recently discovered allergic disease that is characterized by an accumulation of eosinophils in the esophagus. In a previous clinical study, half of EE patients treated with the glucocorticoid drug Flovent responded to the treatment. Our study examined why Flovent worked for half of EE patients by creating a model system in esophageal epithelial cells. The results indicated that the gene FKBP51, which was highly expressed in patients who responded to the drug, was an important regulator of the drug’s cellular pathway and high levels of FKBP51 can perhaps help predict whether a patient will respond to Flovent treatment.

**Awn rotation and its use for dispersal shown through time-lapse imagery.** ERIN BURNS, BECKY CAREY, KELSEY PERREAULT, and JILL PYATT (Dr. Stephen Saupe, Biology)

The response of Porcupine grass (*Stipa* sp.) awns to dehydration was filmed using time-lapse photography. Awn movement was observed on both rough and smooth surfaces. The awns’ rotational response is thought to be of use in seed dispersal. When the awns are exposed to a rough surface, they were able to drill into the substrate. This movement appears to act as a seed dispersal mechanism by allowing the seed to be drilled further into the soil.

**Survey of freshwater gastropods found in Saint John’s Arboretum.** MAUREEN K. CAMPBELL (Dr. Jeanne Lust, Biology).

Freshwater gastropods of Saint John’s Arboretum were collected in order to assist in an all‐taxa biological inventory of species of this area. The goal of this study was to identify the gastropod species, their specific habitats, abundance, and seasonal changes in abundance. With this information, it was possible to investigate biodiversity, correlations with water quality, and changes in diversity over time. Our results show that the greatest number of gastropod species was found in lakes, while the fewest number of species was found in the pond and wetland areas. Furthermore, we found a positive correlation between water quality and diversity of gastropod species.

**Etiolation in action: a study of plants’ response to being grown in darkness.** JOSEPH CARR, CHRISTI NOWAK, and ANDREW STEVENS (Dr. Stephen Saupe, Biology).

This time-lapse video documents the growth of sunflower seedlings that were initially kept in complete darkness. As a result of this treatment, the seedlings were spindly, had apical hooks, and lacked chlorophyll, a condition known as etiolation. Several days after germination, the seedlings were exposed to light. While they recovered somewhat, developing chlorophyll and losing their apical hooks, they remained spindly because the light levels were too low for normal growth.

**Using time-lapse videos to document the effect of the root cap on gravitropism.**

ANN DRESSEN, CONNOR McINTEE , ANDREW STEINFELDT, and RYAN ROSENBERG (Dr. Stephen Saupe, Biology)

Root growth has been a long time fascination as roots are always able to grow down into soil following the path of gravity. It is theorized that this phenomena, gravitropism, is a result of a functional process found in the root caps of the plant. We studied the effect of the root cap in gravitropism using the time-lapse movie technique. Our movie uses a creative story line to depict the importance and reasoning behind root growth and its growth following gravity.

**Macrofossil analysis of Lake Hilary sediment.**

JOY M. GERDES (Dr. Gordon Brown, Biology).

 Lake sediments preserve microfossils and macrofossils that evince the ecological history of the lake and its surroundings. I sieved sediments extracted from Lake Hilary to discover fossils of plants, insects, microcrustaceans, and charcoal that could complement ongoing analysis of pollen to understand local vegetation history. After sieving, I bleached material with hydrogen peroxide, spread the mixture evenly on a Petri dish, and picked fossils under a dissecting microscope. In this study I describe the variety of fossils discovered in the oldest lake sediments, and discuss the ecological and climatic implications of my results.

**Presence of trematode parasites in freshwater gastropods of Saint John’s Arboretum.**

CAITLIN E. MEYER (Dr. Jeanne Lust, Biology).

Freshwater gastropod species of the Saint John’s Arboretum were tested for infection by trematode parasites. The goal was to identify which gastropod species were infected, the morphological types of cercariae found, abundance in each water source tested, and abundance as a function of water quality. Gastropods underwent testing by being subjected to a light source for 12 hours and observed under a dissecting scope for parasites. Our results show that seven different morphological forms of trematode cercaria were detected in seven species of gastropods. Additionally, results show that the greatest diversity of parasites is connected to lower water quality grades.

**Solution to the impending crisis of antibiotic resistant bacteria.** NICHOLAS D. PETERSON (Dr. Carl Lindgren, FYS).

Antibiotic resistant bacteria are a problem that has been facing humanity since antibiotics were first introduced into society. The problem has grown until today a large percentage of bacterium are resistant to some form of antibiotic. The solution to this problem lies not in reducing antibiotic use because the resistance is already developed and research has shown it is almost impossible to reverse, but through increased research into new antibiotics. The issue in developing new drugs is that drug companies find them uneconomical. To stop the slow decline of research and development new government incentives need to be established that allow drug companies to further antibiotic research and help prevent a day without antibiotics.

**CHEMISTRY**

**The synthesis and study of multi-copper oxidase active site models: structural and functional biomimetic complexes.**

JEFFREY S. BANDAR (Dr. Brian Johnson and Dr. T. Nicholas Jones, Chemistry).

Tricopper oxidase enzymes, such as laccase, ascorbate oxidase and ceruloplasmin, couple the four electron reduction of oxygen to the oxidation of substrate molecules. The mechanism of action of these enzymes is not well understood. In order to explore this class of enzymes, several copper complexes were prepared and studied. Initially, it was determined that a complex containing pyridyl copper binding sites degraded while reacting with oxygen. These results motivated the recent synthesis of a triazole containing ligand, synthesized utilizing “click chemistry” methodology. The complete syntheses, characterizations and reactivity studies of these complexes are presented in this study.

**Isolation of kumepaloxane from marine natural products.** SARAH DeMARAIS (Dr. Kate Graham, Chemistry).

Researchers have found a great interest in the isolation of marine natural products. One in particular is the compound kumepaloxane that is found in the mucus and digestive glands of the brightly colored bubble shell called *Haminoea cymbalum*. The bubble shell excretes kumepaloxane through its mucus that is used as chemical defense against carnivorous fish. The bubble shell was collected from a reef flat in Pago Bay, Guam. The isolation, structure, stereochemistry, and conformation of kumepaloxane were analyzed.

**The photodecomposition of the antidepressant pharmaceutical drug venlafaxine (Effexor) in natural sunlight.** BENJAMIN P. KRAGE (Dr. Michael Ross, Chemistry).

Venlafaxine (trade named Effexor) has been recently found as a new form of pollutant near wastewater treatment plants due to the inability to remove the chemical through current treatment processes1. Experiments were run in simulated surface water conditions to determine venlafaxine’s rate of decomposition in natural sunlight and to isolate any stable decomposition products. By means of HPLC analysis, the half-life of this decomposition process was determined to be approximately 40 hours at pH 3 and on the order of several hundred hours at pH 5 and pH 9. A series of stable decomposition products were also found to be formed. Due to the extended period of time required for decomposition, venlafaxine could prove harmful to aquatic environments. 1Schultz, M.M.; Furlong, E.T. *Anal. Chem.* 2008, 80, 1756-1762*.*

**Synthesis of two ligands to model the active site of multicopper oxidase.** BRADLEY MCGUIRE (Dr. Brian Johnson, Chemistry).

Two ligands were to be synthesized in hopes that one would be a perfect model of the active site for multicopper oxidase which would allow for the study of the reaction mechanism. One ligand contained an extra carbon in the spacer arm which would allow for greater flexibility. The other ligand would contain methoxy arms instead of the standard ethyl arms which would eliminate the problem of ethyl migration. Synthesis of these two pure ligands is still in progress; as a result it is unknown whether or not either ligand is an acceptable model for the active site of multicopper oxidase.

**Mapping the magnetic domains of Fe3O4 nanopatterns on mica (0001) using a newly developed atomic force microscopic mode: magnetic sample modulation.** HA H. PHAM (Dr. Jayne C. Garno, Chemistry, Louisiana State University, and Dr. Chris Schaller, Chemistry).

Magnetic sample modulation (MSM) is a newly-developed atomic force microscopy (AFM) imaging mode used to detect and map magnetic properties of nanoparticles on surfaces. The principle of MSM is based on using an AFM tip to detect the vibrational response of magnetic nanomaterials with the application of an external electromagnetic field. For MSM, a soft non-magnetic tip is kept in contact with the sample surface during scanning to obtain high resolution. The magnetic domains on a surface are interpreted in the resulting MSM phase and amplitude images. To test the applicability of MSM, nanopatterns of magnetite nanoparticles were generated on mica via two-particle lithography.Successful results in detecting Fe3O4 nanoparticles suggest a potential impact of MSM for interdisciplinary areas such as biomedicine, nanotechnology and material sciences.

**Progress in the total synthesis of 6-methyl pacifigorgiol.** SAMANTHA VANWECHEL (Dr. T. Nicholas Jones, Chemistry).

Pacifigorgiol is a marine natural product isolated from the sea fan *Pacifigorgia* cf. *adansil*. The structure was determined by W. Fenical and was synthesized by M.G. Martin at Cornell University.The purpose of synthesizing the 6-methyl derivative is to examine this synthetic route and for use in further study of the mechanism of biological activity of pacifigorgiol. We have successfully completed the first step, the formation of the epoxide. The second step is to open the epoxide with a higher order cuprate reaction. The side synthesis of a reactant to be used in the second step is our current focus.

**COMMUNICATION**

**The efficacy of the Inspiring Leaders Certificate Program (ILCP) in facilitating leadership development .** LAURA E. ADAMS (Don Fischer, Physical Education).

CSB/SJU students were surveyed using the LABS-III survey tool, created by Richard Wielkiewicz (2001), in order to explore their attitudes and beliefs pertaining to hierarchical versus systemic leadership styles. Hierarchical leadership emphasizes task-oriented, top to bottom leadership orientation, whereas systemic leadership promotes inclusive, horizontal orientation. Our preliminary results show that leadership attitudes and beliefs of students who have completed one or more ILCP certificates in their four years have shifted toward a systemic approach to leadership. This shift has led to the exploration of the ILCP’s efficacy in fostering systemic leadership and the modifications that may be necessary to ensure its sustainability on campus.

**Body discourse within the classroom**

CYNTHIA JEWELL SWANLUND (Dr. Jennifer Kramer, Communication).

Body discourse, the verbal and non-verbal communication about satisfaction with one’s body, is a relatively new area of research. Some research has shown that when women engage in social contexts, they expect to have their appearance commented on and praised by others. During classroom instruction, the main focus should be on learning, and the degree to which body discourse occurs during class time is unknown. This study explores the body discourse that takes place in one lower division course and one upper division course at CSB/SJU through an ethnographic approach.

**ECONOMICS**

**A dynamic general equilibrium model of the Minnesota economy.** ZHISHAN GUO

(Dr. Louis D. Johnston, Economics**).**

In spite of the importance of dynamic general equilibrium models, the majority of undergraduate economics students are not familiar with them. One of the reasons is the assumption that the math required to understand these models is beyond the knowledge of many economics majors. This paper builds a bridge between what economics students are familiar with in their undergraduate courses and a dynamic general equilibrium model. The object of study in the paper is the Minnesota economy in the long run. We hope studying a state economy can provide valuable insights to both economists and policy makers.

**ENGLISH**

**The soldier’s gaze of Wilfred Owen: how the poems *Dulce et Decorum Est*, *Apologia Pro Poemate Meo,* and *Spring Offensive* allude to the gaps of war.** NICHOLAS P. BINGHAM (Dr. Mara Faulkner, OSB, English).

Wilfred Owen’s World War I poetry captures the extremes, enigmas, and paradoxes in war. These quandaries must be part of a meaningful discussion of war, especially modern war. But as military philosopher and veteran J. Glenn Gray says, most people are “strangely incurious concerning the psychological and moral interrelations of man as warrior and as civilian.” The shape discussions of war normally take is informed more by what people wish to be true about war than by what actually happens in war. Owen’s poetry alludes to this distance, this gap in understanding, but he is only partially successful in bridging the gap. Full closure can happen only with first-hand experience in modern war.

**War of words: the effects of texting.** MARIE A. DEMARS (Dr. Ozzie Mayers, English).

As mobile phone ownership rapidly expands, so does the number of teenage texters with their penchant for clipping out vowels and endings. Barely audible amid the loud protests of grammarians, journalists, and secondary school teachers, linguists and researchers quietly say that these spelling habits do not mean youth are headed for linguistic demise: Studies are showing that students who use text messaging are not necessarily worse off when it comes to spelling and reading. Despite doomsday messages from some, texting does not represent an unintelligible new language but the evolution of new vocabulary and rules in an existing language.

**The vocabulary of fanfiction.** MEGAN GENSLER (Dr. Ozzie Mayers, English).

In the past thirty years, a new sub-genre of writing has emerged onto the amateur writing scene. Called fanfiction, an author writing in this genre takes an existing work from the literary canon and builds new stories around the original author's ideas, characters, and settings. As it has expanded beyond fan magazines onto the wider world via the internet, the fanfiction writing community has created for itself a new and derivative vocabulary to help describe and classify its work. This paper explores this new vocabulary and the purpose it serves in the fanfiction writing community by examining the history of fanfiction and the motivations authors have for using this subgenre to express themselves.

**The languages of *Pride and Prejudice.*** MEGAN R. KOLTES (Dr. Ozzie Mayers, English).

Mr. Darcy and Miss Bennet bicker. They also carry on a bit of banter. In fact, their respective languages greatly influence the story of *Pride and Prejudice.* Therefore, Jane Austen may have used language (1) as an index of character for Mr. Darcy and Miss Bennet and (2) to reveal the need for and result of a shared language discernible by both parties. Austen reveals that the result of a shared language is a movement from mistranslation and disconnection to expanded understanding and commonality.

**A creative thesis: the process of writing a novella.** EMILY PERSICHETTI (Dr. Elizabeth Johnson-Miller, English).

A creative project in the English Department, my honors thesis is a novella which explores the life of a woman in her early twenties as she reflects on her troubled past and works towards healing and forgiveness both of herself and her family. Through attempts to make peace with herself, she begins to see her trials as steps on the journey rather than impassible barriers.

**Native American language revival.**

LAURA S. SCHWARZ (Dr. Ozzie Mayers, English).

Of the 300 Native American languages within the (future) U.S. borders before Europeans arrived in North America, only 175 remain today. Some language scholars expect seventy percent of these languages to die out over the next few generations. In response to this phenomenon, many indigenous groups are attempting to revive their languages through such means as immersion and survival schools, master/apprenticeship programs, and adult language classes. It is important for these groups to revive their languages because these languages carry deep cultural values and mores, assist in decolonization, and contribute to the broader study of linguistics.

**ENVIRONMENTAL STUDIES**

**Naturalist overcomes barriers to environmental education.** BRANDON C. BAKER (Dr. Karen Bengston, Education).

Incorporating environmental education into school programs faces many barriers, such as lack of time for teachers and, lack of training and environmental literacy among teachers. Having a naturalist teach environmental education in schools may help overcome these significant barriers. Scholarly papers were reviewed and provided support for this position. In addition, standardized test scores at Northrop Urban Environmental Elementary were compared to the Minnesota state average scores to evaluate the effectiveness of an environmental education program that includes a naturalist. Overcoming these barriers to environmental education increases the potential for its acceptance in school curricula.

**Anaerobic methane digesters and manure management on dairy farms.** KATHRYN M. GREEN (Dr. Jean Lavigne, Environmental Studies)

Environmental degradation due to manure is a significant issue for farmers in the 21st century. As farmers continue to shift their agricultural practices toward Concentrated Animal Feeding Operations (CAFOs), they face growing public outcry and rising governmental pressure to manage manure more efficiently. Internationally, anaerobic methane digesters are popular as a method for dealing with excess manure. By using examples from Minnesota, this research project concludes that anaerobic methane digesters are an economically and environmentally effective solution to managing dairy cow manure.

**Management of the grizzly bear in Yellowstone National Park: a success story from 1993 to the present .** NICK GREWE (Dr. Jean Lavigne, Environmental Studies).

Grizzly bear populations have declined and their home ranges diminished due to the expansion and increase of human activities. In 1975, the US Fish and Wildlife Service listed the Yellowstone grizzly as a threatened species under the Endangered Species Act of 1973. Management plans were drafted, and in 1993 the Grizzly Bear Recovery Plan was published. The plan was successful in that the population recovered enough to delist grizzlies as threatened, but there is still more to be done for future conservation in Yellowstone and surrounding areas. Future management would benefit by focusing on education and the conservation of the grizzly’s natural food sources.

**Fashion forward: using sustainable textiles in the fashion industry.** ALIX S. HAMMERSCHMIDT (Dr. Jean Lavigne, Environmental Studies).

As many industries focus on environmental impact, the fashion industry has come to the realization that their practices are not sustainable. Environmental concerns include water pollution and the encouragement of consumer consumption, along with many others. However, there is growing interest in a more sustainable fashion industry, with the most effective and efficient practices including shifting to more sustainable textiles, such as hemp, silk, and bamboo. My research evaluates which textiles are most sustainable, available, and affordable, and is applied through my original apparel design on display during the poster session.

**Protecting the urban forest: private landowners and the Emerald Ash Borer.**

CHRIS HAUGEN (Dr. Jean Lavigne, Environmental Studies).

 Ash trees are a cornerstone of the urban landscape that represent a staple of beauty, economic value, and a cornerstone of the urban ecosystem. Individual landowners must realize the important resource there lies within their control and responsibility. This resource needs to be protected from the looming threat of Emerald Ash Borer. This paper gathers the necessary information to give homeowners the tools to make responsible and sustainable choices to protect the urban forest’s ash population for the future.

**E-waste recycling in Minnesota: current status and future goals.** JESSICA HEIM

(Dr. Jean Lavigne, Environmental Studies, and Dr. Derek Larson, History and Environmental Studies)

The U.S. generates approximately 2.25 million tons of electronic waste (e-waste) every year, with the majority ending up in landfills.  Many states, including Minnesota, have passed laws to increase e-waste recycling, and several manufacturers have begun take-back programs as well. I argue that although such efforts have brought about some improvements, much more action is needed to increase e-waste recycling rates and to address problems in the electronics recycling industry. In order to effectively deal with these issues, more rigorous goals must be aspired to and implemented.

**CSB/SJU’s climate changing diet.**

PATRICK O. KAMMAN (Dr. Jean Lavigne, Environmental Studies, and Dr. Gordon Brown, Biology).

Animal production and consumption contribute to climate change issues through the burning of fossil fuels and because of the greenhouse gasses emitted by animals. With the production of 6 ounces of beef resulting in an equivalent 9.75 pounds of carbon dioxide, carnivore diets play a major role in the many environmental problems we face today. In my research I discuss the environmental concerns and impacts with meat consumption on Saint Benedict and Saint John's campuses. After considering sustainable improvements that other schools have made, I conclude with plans for improvement for CSB/SJU pertaining to our meat-eating diet.

**Review of best-practices for agriculture in Minnesota and support shown from local farmers and consumers.** MATTHEW A. OTT (Dr. Ernest Diedrich, Economics and Environmental Studies)

Synthetic nitrogen fertilizers are largely made from fossil fuels, exacerbate climate change, and their inefficient use threatens humanity’s food security, as do declining fresh water supplies. In this paper I explore the best-practices for farming in Minnesota that improve fertilizer and water use efficiency. I focus on how cover-crops, especially the leguminous cover-crop hairy vetch, can help increase the fertility of soil and thus reduce or eliminate subsequent food crop’s requirements for synthetic nitrogen fertilizer. I also discuss how Minnesotans can support farmers in their state to plant cover-crops on the soil after the harvest of food crops.

**Cohousing communities as sustainable solutions to suburban sprawl.** LYNSI M. PASUTTI (Dr. Jean Lavigne, Environmental Studies).

Considering *sustainability* in reference to ecological, economic, and social concerns for the future, suburban sprawl has proven to be unsustainable over the past half century. In the social dimension, sprawl has been linked to vehicle dependence, feelings of isolation, and the loss of a sense of place among its residents. Focusing on the social aspect of sustainability, I have researched cohousing as an alternative. Consisting of private homes supplemented by common facilities, actively planned and designed by residents, cohousing is less environmentally degrading and brings a sense of community back into neighborhoods.

**Weighing Minnesota’s options for combating urban runoff pollution.** JOHN SMITH

(Dr. Jean Lavigne Environmental Studies, and Dr. Gordon Brown, Biology.)

As of 2008 over 80 percent of the U.S. population lives in urban areas. A chief threat to neighboring environments and urban public health is runoff pollution caused by paved and impervious surfaces such as roads, parking lots and roofs. Water flowing across these surfaces accumulates and carries chemicals, bacteria and debris harming human and ecosystem health and is a primary source of flooding and erosion. For my research I investigated the cost-effectiveness of rain gardens, green roofs and porous pavement in combating urban runoff for urban private lots in Minnesota.

**The impact of student computing on power consumption and CO2 emissions**

MATTHEW C. STEINRUECK (Dr. Jean Lavigne, Environmental Studies).

Like many other colleges and universities, the College of Saint Benedict and Saint John’s University (CSB/SJU) have seen a dramatic increase in computing for both business and learning purposes over the past decade. Often overlooked are the environmental impacts of computing, specifically energy consumption. This paper examines the role that computing has played in carbon emissions at CSB/SJU. By examining policies and programs that have worked for businesses and other colleges, I will then explore possible ways to reduce energy consumption and emissions from computing at CSB/SJU.

**Paper reduction practices to implement at the College of Saint Benedict and Saint John’s University to reduce student paper consumption on campus.** REBECCA R. VETSCH (Dr. Jean Lavigne, Environmental Studies)

Paper consumption at colleges and universities has a large environmental impact and many institutions are working towards reducing their consumption. The College of Saint Benedict and Saint John’s University have begun to make an effort to reduce consumption by implementing duplex printing, but could take further measures to reduce their impact. After evaluating paper reduction strategies used by other universities, I propose new methods to reduce our paper consumption and ultimately, our environmental footprint.

**FIRST-YEAR SEMINAR**

**Co-ed participation: beneficial or not for males and females.** DULCE AGUILERA (Janna LaFountaine, Physical Education and FYS).

Playing in co-ed sports has both negative and positive outcomes on children. There are reasons why children should not play together or why they should stop at a certain age. Some examples include the potential increase in sexual harassment and stereotypes. In addition, skill levels vary, as well as psychological and physiological differences separate males and females. The positive outcome of playing co-ed sports outweighs the negative effects.

By playing co-ed sports males and females set an example of equality, by eliminating certain stereotypes. For example, women become more competitive and men become more cooperative in the work field.

**Paying a price for success.** ALY BRANDELL (Janna LaFountaine, Physical Education and FYS).

Young athletes dreaming of success are taking their training to the ultimate level. Instead of intense training before and after school, young athletes are moving to sports academies to focus more intently on improving themselves in their particular sport of interest. Although these academies might provide the best chance at a professional career for these young athletes, they also introduce many negative effects such as drawbacks in education, social and family factors. Opinions are mixed regarding the benefits of attending sports academies, but overall, research suggests that these elite athletes are receiving more opportunities for success.

**Why the fuss over college football?**

MICHAEL BROOKMAN (Janna LaFountaine, Physical Education and FYS**)**

This is a critical look into the Bowl Championship Series (BCS), which was created to formulate postseason match-ups to determine the number one team in Division I college football. It does this by using computer rankings, team rankings, Associated Press polls, and coaches’ polls to select teams for each of the five bowl games. Fairness, exclusion, and uneven distribution of funds are some of the hot subtopics that have surfaced. Most experts agree that the BCS is flawed; however uncertainties surrounding the use of a playoff system stand in the way of change.

**Racial domination in professional sports.**

DANIELLE M. CORDES (Janna LaFountaine, Physical Education and FYS).

This is a review of how and why certain races dominate the professional sports, and the varying viewpoints associated with this controversy. African-Americans dominate the NBA and most other major leagues. It is shown that African-American teens have a 1 in 4,000 chance of playing in the NBA and Caucasian athletes have a 1 in 90,000 chance. This presentation will focus on whether these facts are due to genetics or multiple other factors such as differences in lifestyle or training.

**Loud vs. soft.** DAVID R. CROWLEY (Janna LaFountaine, Physical Education and FYS)

“It doesn't matter if you win or lose, it’s how you play the game” (Anonymous). “Winning isn’t everything, it’s the only thing” (Lombardi). These quotes introduce the concept of playing to win, or playing to have fun. Each coach has a different style of coaching, whether it is with positive reinforcement such as, compliments and a genuine pat on the back, or with negative reinforcement including talking down to players, and pressuring them to perform. Most players flourish with the positive support, on the other hand some players thrive on the negative coach’s intense demands and pressure.

**Boycott? or not?** KRISTIN DONNER (Janna LaFountaine, Physical Education and FYS).

The 1936 Olympic Games was one of the most controversial games in World history. Many people wanted the United States to boycott the Games because of Hitler’s actions in Europe. They claimed these games gave Hitler a chance to advertise his beliefs and the Aryan race. The opposing side argues that it could ruin an athlete’s career to boycott the Olympics. During this time period, the United States displayed discrimination towards blacks similar to what was happening to Jewish citizens in Germany. The United States ended up not boycotting the 1936 Olympics, however, looking back, the 1936 games should have been boycotted.

**Fanatical spending.** BRANDON M. DOWNS (Janna LaFountaine, Physical Education and FYS).

Painted chests and ridiculous headgear, the fans are adorned and ready to give their team the loudest home field advantage. The general taxpayer and their government, however, may not always be so willing. Stadiums are expensive endeavors, and there are those who do not believe stadium projects deserve public funding. Fans, players, and owners may all respond differently than an average Joe or a wealthy person when asked if they believe government should pay for new stadiums. Economic and cultural arguments dominate the debate over whether or not professional sports teams should build stadiums using taxpayer dollars.

**Should college athletes be paid?** SUSAN GYORFI (Janna LaFountaine, Physical Education and FYS).

Some view the exchange of benefits, money and gifts to college athletes as information which should be publicized and accepted. Yet, others view the exchange of benefits too stressful for athletes and believe there should be a reduction in publicizing college sports so athletes are able to focus on their education, meaning one should stick with the **“**out of sight, out of mind**”** deliverance of benefits to athletes.  College life experience for athletes would become more enjoyable and less stressful through offering more benefits, gifts and money, negotiated by each school to balance out their sport work load.

**Violence in sports and its effects on children and adolescents .** NERISSA M.J. HANNA (Janna LaFountaine, Physical Education and FYS).

There have been many arguments and perspectives about whether violence in youth athletics is acceptable or not. Also there are some controversial arguments that violence in sports should be acceptable, especially in contact sports. Some young athletes are encouraged to play dishonestly and violently to deter their opponents from winning. Violence in sports has proven to be an issue in society and because of the effects on children that aspire to be athletes; it is an unacceptable aspect of sports that needs to be regulated.

**Equal or not.** SAMANTHA KIESER (Janna LaFountaine, Physical Education and FYS)

Title IX was passed in order to improve opportunities for females in education. It was passed in 1972 and states “No person in the United States shall on the basis of sex, be excluded from participation in, be denied benefits of or be subjected to discrimination under any education program or activity receiving federal financial assistance.” Even with all the improvements that Title IX has achieved for girls, some say that there is still a huge gap in support for men’s and women’s sports.

**Salary cap: where to draw the line.** ALEX M. KLEHR (Janna LaFountaine, Physical Education and FYS).

Does Major League Baseball need a salary cap? A salary cap would eliminate any monopolies forming today in baseball. If this would occur, all-star players could end up being dispersed among many different teams and divisions. Major League Baseball must enforce a salary cap because eventually the competitive balance will get out of hand, creating an uneven league with only a handful of dominant teams, as well as causing coaching to become less important and teams able to buy their World Series ring.

**Sport specialization and young children.**

MAX McHUGH (Janna LaFountaine, Physical Education and FYS)

Specializing in sports is a very controversial topic in sports society today. Single**-**sport athletes practice year round to improve their skills. However, these athletes are susceptible to burn-out, injury, and may not reach their full potential as athletes. On the other hand, multiple sport athletes will be less likely to get burned out and can work on a variety of skills which may help reduce overuse injuries. Multiple-sport athletes are well rounded, are less likely to succumb to burn-out or injury, and more often reach their full potential as athletes.

**Animal usage for human entertainment: right or wrong?** CAROLINE J. SMITH (Janna LaFountaine, Physical Education and FYS).

In just one year, 800 Thoroughbred racehorses die from race-related injuries in North America (CHAI). Imagine 8,000 beautiful, innocent horses being driven to premature deaths in horseracing in one decade, all for the sake of human entertainment. This number is large; however, unfortunately it is reality. On the other hand, there are individuals who see horseracing as a sport that honors and beautifies horses. There are many sports that use animals as a form of entertainment for humans, specifically horseracing, bullfighting, and rodeos, but because of their cruelty and danger to these animals’ well-being, these sports should be abolished.

**No time? the life of a college athlete.**

ALEX S. TUNGLAND (Janna LaFountaine, Physical Education and FYS)

A large portion of a person’s life can be spent participating in the sport they love. For some, though, the love of the game and participating in it changes after high school. These individuals are faced with the decision of choosing whether sports still fit into their life along with the new academic pressures of college, pressures of meeting new people and possibly even pressures of an on-campus job. So, is participation in intercollegiate athletics beneficial or detrimental to a student athlete? Research indicates that there are benefits and drawbacks to participating in college athletics.

***ESPN* : worldwide leader or Wal-Mart lookalike?** MATTHEW G. YOUNG (Janna LaFountaine, Physical Education and FYS).

The expansion of *ESPN* throughout the years has had positive and negative effects on the sports media industry and society, with the negatives drawing parallels to the unappealing aspects of the Wal-Mart chain of stores. This sports network monopolizes the industry, hires below-average employees, and sometimes sells a sub-par product. Conversely, the network provides a service to millions of sports fans, popularizes sports, and makes an effort to promote diversity. Although it sometimes produces a sub-par product and inflicts damages upon sports, the positives outweigh the negatives, and *ESPN* deserves the title “The Worldwide Leader in Sports.”

**HISPANIC STUDIES**

***Los Mapuche y el Estado Chileno: la lucha por reconocimiento y preservación.*** JAMES M. ALBRECHT (Dr. Bruce Campbell, Hispanic Studies).

Los Mapuche, el principal grupo indígena de Chile, han experimentado desintegración cultural desde que la llegada de los primeros europeos. Con la inserción de Chile al mercado global en años recientes y el subsecuente desarrollo económico del país, los deseos de los Mapuche han sido ignorado en la política nacional en el interés de dicho desarrollo. Aunque los Mapuche representan una minoridad de la población Chileno, han conseguido la atención de los políticos gracias a la formación de varias organizaciones, junto con otros grupos marginados, que luchan para defender sus derechos. Estas organizaciones ahora amenazan la estabilidad del estado Chileno.

**Political unrest in the Republic of Bolivia.**

SERINA A. AUBRECHT (Dr. Angela Erickson-Gruessing, Hispanic Studies).

Bolivia is a land-locked country in Latin America torn in half by its western indigenous populations and eastern, white European descendents. With the election of coca-advocate Evo Morales in 2005 as Bolivia’s first indigenous president, a new focus has been brought to the United States “War on Drugs” in which the US is seeking to eradicate coca production, the main source of income for many poor, Bolivian indigenous. This study seeks to determine how Bolivia has come to its present-day state of political unrest and its relation with the United States.

**The popular Frida Kahlo.** AVENIDO, RACHEL **(**Dr. Elena Sanchez Mora, Hispanic Studies).

Frida Kahlo was an early to mid-twentieth century Mexican painter. Many of her works include self-portraits and a mixture of nature and modern symbols. Though she was often overshadowed by her husband, Diego Rivera, the famous muralist, the recent wave of interest in Frida Kahlo’s work shows a more positive acceptance than when she was living. This project seeks to examine how cultural symbolism in her art has been received, and what factors contributed to the changing popularity of Frida Kahlo’s work.

**Hispanic Studies portfolio project.**

KRISTEN BLACKIE (Dr. Eleonora Bertranou, Hispanic Studies).

With each reflective essay I not only examine the ways in which I have grown academically from each course I participated in, research paper I wrote and exam I took, but also the ways in which I have grown emotionally, intellectually and spiritually from the people I’ve met, things I’ve seen and experiences I’ve encountered while attending college.  This portfolio helped me to see that over the past four years I have not only poured my time, money and heart into studying Spanish as a language, culture and life but with it also came a better understanding of the world and our overall human race.  For if there is anything I’ve learned while studying at St. Benedict’s it is that, much as I taught the people of San Pedro Pinula, we are all naturally intertwined whether it be through identity, language, anatomy or religion; an intertwining that is reflected in my portfolio, studies and general growth as not only a student of Hispanic Studies but also a student of pre-medicine, a student of learning, a student of experience and a student of life.

**Los efectos de la política exterior de los Estados Unidos en América Latina: La Doctrina Monroe y la Enmienda Platt.** JAMI BUNTJER (Dr. Elena Sánchez Mora, Hispanic Studies).

The focus of this paper is the significant impact of two key foreign policies of the United States on the development of Latin American countries in the nineteenth and twentieth centuries. The Monroe Doctrine, issued in 1823 by President James Monroe, asserted U.S. opposition to European intervention in New World conflicts. Although its original intent was to protect the recently independent new republics of Latin America, it became a justification for U.S. intervention in this region. The New Deal, issued by President Franklin D. Roosevelt to help the US economy recover during the Great Depression of 1929, consisted of a sequence of central economic planning and economic stimulus plans; although its main purpose was to solve the U.S.’s own problems, it also created the Platt Amendment, which increased economical intervention in Cuba through sugar trade.

**A developmental journey: Hispanic Studies portfolio project.** COURTNEY P. BURNETT **(**Roy Ketchum, Hispanic Studies).

This presentation will chronicle three years of education in the department of Hispanic Studies at the College of Saint Benedict and Saint John’s University. It will describe a journey of the impact of extensive Spanish courses and experiential learning through the study of culture, literature and linguistics. In the portfolio and presentation, I will offer an insight into how the courses taken at the College of Saint Benedict/Saint John’s University and how an opportunity to study abroad in Segovia, Spain have enhanced my Spanish skills tremendously, using writing samples, journals and reflections to recount my progress and experiences.

**Behind the scenes: *The Making of a Micro-Lending Documentary.*** ANDREA CARROW (Dr. Marina Martin, Hispanic Studies)

The concept of giving microloans to impoverished entrepreneurs has proven successful in many Asian countries and has been replicated since then in many developing nations around the world. The question is: Will this method yield the same astonishing results in developed and advanced economies? Andrea Carrow, along with three other CSB/SJU students, independently traveled to Chile. During their trip, they interviewed and recorded both micro-lending organizations and micro-loan recipients with the intention of creating the second student-produced educational documentary in the series of under-told global issues (The first being on Fair-trade Coffee in Guatemala the previous year).  Throughout her presentation, Andrea will not only speak on the process of micro-lending but will also take you behind the scenes with video clips and insider experiences.

**Portfolio presentation in the Hispanic Studies major at CSB/SJU.** SARAH J. CHUPPE (Dr. Angela Erickson-Grussing, Hispanic Studies)

This presentation is an overview of a collection of work spanning a four-year period in the College of Saint Benedict/Saint John’s University Hispanic Studies program. These works include academic essays, research papers, personal journal entries, and reflections on my growth and development in the Spanish language in both the classroom and during my study abroad experience in Segovia, Spain. My education in the Hispanic Studies program has included oral, written, and cultural interaction with my professors and peers on a daily basis. Specifically, I will discuss my study abroad experience and reflect upon the strengths, weaknesses and progress of my knowledge of the Spanish language and Hispanic cultures. Finally, I will highlight my plans for the continued use of knowledge gained from my major in both my professional and personal lives.

**De Guatemala a Perú: Viajes aleccionadores.**

MARIA CONROY (Dr. Marina Martin, Hispanic Studies)

The opportunity to visit the Spanish speaking countries of Guatemala and Peru were two of the most significant experiences of my college career at the College of Saint Benedict.  It has been experiences like these that have driven and inspired me to be a Spanish major.  Through a scholastic lens I have studied these two Latin American countries and will discuss what I have learned about their culture, religion, and demographics. However, in removing that lens and simply entering into these two countries as a humble member of the human race, I have learned much more than a classroom could present me with.  This project is not only a chance to share about these two fascinating countries, but to share my personal experiences and what I have learned about myself and the world in the process.

**Disparities in management of diabetes in the U.S. Latino community .** ELAINE A. COUGHLIN (Dr. Corey Shouse Tourino, Hispanic Studies).

According to the Center for Disease Control, in 2007 over 23 million people in the United States suffered from Type I and II diabetes. This disease is even more prevalent in the Latino community as Hispanics are twice as likely as Caucasians to have diabetes. This disparity in the management of diabetes is problematic because in the U.S. it is the leading cause of blindness, kidney failure, foot amputation and pregnancy complications. The project investigated factors in the Hispanic/Latino community that influence the management of diabetes including lack of insurance, diet, religion, and linguistic needs.

**El multilingüismo en España**

KATHERINE ENG (Dr. Angela Erickson-Grussing, Hispanic Studies).

According to Spain’s constitution all Spanish citizens have the right to know and utilize the Spanish language. However, although Spanish is the official language of Spain, there are many other linguistic influences present within the country. Spain is a country made up of various autonomous communities, many of which utilize their own regional language. With the strong presence of regional languages spoken in the communities of País Vasco, Cataluña, and Galicia, Spain is becoming increasingly multilingual. Today the languages Vasco, Catalan, and Gallego are recognized as co-official languages within Spain and are required to be used in equality with the Spanish language. As each community works to restore, maintain, and promote the use of these co-official languages, multilingualism becomes a more significant part of Spain’s regional and national culture.

**Anticlericalismo de España con énfasis en Erasmus.** GRANT EUSTICE (Dr. José Antonio Fabres, Hispanic Studies).

Since the beginning of Spain’s long and complicated history, religion has been a source of major contention. Coming to a head in the fifteenth and sixteenth centuries in Spain, the history books describe a broken country dependent on Catholicism as a unifying agent. Used to maintain power and oppress the weak, the sacred idea had become a tool of major deceit. One source of evidence comes in the form of a satirical story entitled *Lazarillo de Tormes* in which an anonymous author shows the hypocritical nature of Catholicism. In addition, a great Dutch thinker of the Golden Age by the name of Desiderius Erasmus of Rotterdam is known today because of his courage to stand alone against many pressing Catholic ideals. Both show with great clarity the anticlerical attitude of one of the most corrupt societies in our world’s history.

**Venciendo la censura bajo el régimen Franco: dos ejemplos de la literature.** MOLLY GUGGENBERGER (Dr. Elena Sánchez Mora, Hispanic Studies).

 At the end of the Spanish Civil War in 1939, Francisco Franco began his domineering regime characterized by strong beliefs in Catholicism and nationalism, which lead to his extensive censorship of literature, theater, and art in general.  Spain lost many artists who fled into exile to escape his authoritarian control.  Those who stayed in Spain criticized Franco’s absolute power by hiding the underlying meaning of their works through ambiguous language. Two of these authors, Antonio Buero Vallejo and Ana María Matute, created parallels between fictitious characters and themes and the dictatorial administration of Franco.  My purpose is to show how, through the manipulation of language, these authors were able to overcome the censorship employed by Franco during this period.

**A Spanish perspective on health.**

STEPHANIE HALL (Dr. José Antonio Fabres, Hispanic Studies)

I started my career at CSB/SJU as a biology major with a focus in pre-physician’s assistant, but I soon discovered my passion for Spanish. Not wanting to leave behind the heath field, I tried to emphasize medicine and biology in my Spanish classes. Even though my classes allowed some specialization in study, it was my experience abroad that really taught me about health care in Latin American communities. Upon my return from Guatemala, I was able to work as a Spanish medical interpreter in a community hospital where I developed my speaking skills further. The union between Spanish and health care is a specialty I will continue to pursue as I look to the future.

***El habla y la relación entre la gente:* how Spanglish influences the life of its speakers.**

ERICA HANSON (Dr. Nelsy Echavez-Solano, Hispanic Studies).

Today, there is a great debate about the influence of ‘Spanglish’ and how it affects two different languages in the United States, English and Spanish. It is difficult to ignore this subject since Spanglish is present in various areas of communication, including the Internet, which functions as one of the technological ways that has permanently established a place in our culture. Indeed, another consideration of the influence of Spanglish is one’s home and parents because if they encourage their children to be bilingual, they would find more young people using Spanglish. Contrary to some scholars, such as Lipski, I believe that Spanglish does not affect a person’s academic learning negatively, but rather enriches his sociocultural development as it reveals the growing impact from the clash of these two cultures. Therefore, it is necessary to re-examine the significance of Spanglish, the general context about the debate, bilingualism vs. code-switching definitions, and the influence of Spanglish in the home and daily life.

**El futuro de los derechos de las mujeres: Una comparación entre Argentina, Chile y los Estados Unidos.** STEPHANIE HARWOOD (Dr. Eleanora Bertranou, Hispanic Studies).

Women’s rights throughout the world have progressed tremendously since the beginning of the twentieth century. In the last twenty years, in particular, countries have passed significant legislation protecting the rights of women. Many times, passage of this legislation occurs at the same time in multiple countries throughout the world. Unfortunately, women have not yet reached total equality, and there are still numerous rights to be secured for women worldwide. The past legislation combined with local and global trends leads to the question of what the future holds for women’s rights. Four of the most important pieces of women’s rights are women in the government, women in the workforce, women’s reproductive freedom, and violence against women. Through a comparison of the past and present women’s rights legislation on these four topics, in Argentina, Chile and the United States, I hope to determine the future of women’s rights in these countries.

**Movilidad urbana: el uso de “Bus Rapid Transit” como transporte sostenible en ciudades Latino Americanas.** ANGELA HAWKINS (Dr. Bruce Campbell, Hispanic Studies, and Dr. Ernest Diedrich, Economics and Environmental Studies).

As the rate of urban migration continues to increase, cities across Latin America are faced with the challenge of accommodating ever-growing populations paired with a concern for reducing their environmental impact. Efficient transportation is key to the livelihood of any city. Heavily congested urban centers like Bogota and Mexico City have now opted to increase their mobility by implementing a system called Bus Rapid Transit (BRT), an integrated bus system comparable to that of above-ground rail. BRT uses high capacity buses that operate in designated lanes and stop at specified stations where passengers pay for their fare and board from elevated platforms. The innovative system can be implemented at a fraction of the cost of a metro, and at a much faster rate. By reducing dependence on private vehicles and lowering a city’s environmental footprint, BRT provides a viable form of transport for cities on a path of sustainable development.

**The Italian influence in the linguistics of the Spanish language in Buenos Aires, Argentina.**

BRIAN HERRIG (Tania Gómez, Hispanic Studies).

During the eighteenth and nineteenth centuries, millions of Europeans immigrated to Argentina and with them they introduced their traditions and cultural aspects of their countries to Argentina. Immigrants from Russia, England, France, and many others from Spain caused their own impacts upon the Spanish linguistics in Argentina, but the strongest impact on the linguistics was the impact of the Italians in Buenos Aires. The Italians adapted to the culture while usually having to learn the Spanish language. Many Italians attempted to learn Spanish, often with little effort or self-learning, which led to the contact language known as “cocoliche.” This contact language disappeared after the next few generations but the Italian influence remained in the Spanish linguistics in Buenos Aires. Since these Italian immigrants arrived in Argentina, the Spanish within Buenos Aires has changed dramatically from the Italian influences. By studying the Spanish in Buenos Aires, one can determine that the Italian influence is still present today in the Spanish phonetics of Buenos Aires.

**Implications of cultural frameworks in international business analyzed through literature.** RACHEL HORN (Dr. Eleonora Bertranou, Hispanic Studies and Dr. Wendy Klepetar, Management)

Cultural differences cause tension and misunderstanding in international corporations and with those working across country borders. To understand these cultural differences, frameworks to measure value structures have been developed. The findings from the analysis can then be applied to international corporations in order to better understand their counterparts in Latin America. This thesis will examine the cultural frameworks present in Latin America as seen through the writings of Latin American authors.

**Los Elementos Sociolingüísticos del Espanglish: Un Idioma, Un Dialecto o Una Transición Social?.** JOSEPH BRYAN HUGHES (Dr. Angela Erickson-Grussing, Hispanic Studies Department).

The Spanish language has always been in contact with English throughout the history of the United States. From the colonization of Florida, to the Mexican-American War and even more recently, the influx of Central and South American immigrants into the United States demonstrate how these two world languages are continually in close proximity. Nevertheless, in the United States where this fusion is most prevalent, to be Hispanic and to speak Spanish cannot necessarily be equated. This is because of the existence of a large immigrant population that does not exclusively speak Spanish or English but instead an intermediate blend of the two predominate languages: Spanglish. Following this flood of new immigrants have been attempts to characterize and define this new ‘dialect’ via the study of its linguistic characteristics, and social impact on the people who speak it. Still, the sad reality is that the future of Spanglish is unknown due to its failure to fully unite the two languages.

**Spanish portfolio project.** ZACHARY D. HUNTER (Dr. Bruce Campbell, Hispanic Studies).

My portfolio contains four academic writing samples accompanied by reflective essays. Topics include the demise of the October Revolution in Guatemala, the effects of the Enlightenment in Spain, the brief and prolific life of Federico Garcia Lorca, and the Golden Age competition between careers in Letters or Arms, famously articulated in the first part of *Don Quixote*. Also includes my diary written over the course of a semester-abroad in Guatemala, an essay exploring Cervantes’ great work, and a final reflection paper on my four-year study of Castilian Spanish.

**The *Road to Seville*: An exemplary novel.**

ZACHARY D. HUNTER (Dr. Scott Richardson, Modern and Classical Languages).

Inspired by Cervantes, this short fiction explores the effervescent, and often dangerous, atmosphere of the Spanish Empire at the close of the 16th Century. Two old friends meet on their way to the great port city of Seville, eager to try their luck in a new world. A chance encounter at a roadside inn will complicate their plans, however, and both will discover that catching up is no simple matter when the past takes the shape of a capital crime.

**El Español Isleño en Luisiana.** EMILY ILKKA **(**Dr. Nelsy Echávez-Solano, Hispanic Studies).

As most people know, there is a large population in the United States today that speaks Spanish. Many of these people come from island nations such as Cuba, Puerto Rico, and the Dominic Republic and reside in states such as Florida or New York. In addition to these popular locations to live, there is another place where a different type of Spanish language is spoken. Unheard of to many, is a small population of Spanish speakers in Louisiana who speak Isleño Spanish. They are descendents from the Canary Islands and have brought with them their own specific linguistic characteristics including phonology, morphology, syntax, and lexicons. Besides having brought characteristics from Spain, they share some qualities with other island dialects of the islands previously mentioned. Not only sharing these linguistic characteristics with other island nations, many characteristics reflect the influence English has had on this the Isleño language. This is attributed to the close proximity and integration with the English speaking population. It is important to recognize and remember Isleño Spanish and the culture and history it carries with it. It should be not be forgotten as one of the Spanish languages spoken in the United States and should be preserved to share with future generations.

**Las Abejas: modern day resistance against indigenous oppression .** ELISSA ANN LIEBERG (Roy Ketchum, Hispanic Studies)

The Acteal Massacre on December 22, 1997 epitomized the oppression of the indigenous people of Chiapas, Mexico. Forty-five unarmed citizens were killed by paramilitary forces in a church in Acteal where they were seeking refuge. The victims all belonged to *Las Abejas,* the Bees, a pacifist group formed on the basis of unequal land distribution. *Las Abejas* seek to organize as bees and to nonviolently “sting” their oppressors. This project will explore the identity of *Las Abejas* through their use of women’s roles, religion, and the international attention brought to Acteal after the massacre.

**Identity, stereotyping and the politics of assimilation.** ANDREA LIEDER (Dr. Corey Shouse Tourino, Hispanic Studies)

In the Sixteenth century, the Spanish conquered the Aztecs of Mexico. In destroying all of the native culture, the native people were stripped of their identity. Not until the coming of Lady Guadalupe did the re-birth of a dignified mestizo and mulatto identity arrive. Today, Latino children in the U.S. suffer an identity crisis within the national school system that affects immensely their success in the classroom. Out of five million children that do not speak English in the United States, the majority are Latinos. This project will explore and describe how the challenges of identity, stereotyping and the politics of assimilation are the major obstacles to these students and the education that they receive.

**The reflection of the transformation of Sor Juana Inés de la Cruz in her works.**

MEGAHN LILLYBLAD (Dr. Christina Hennesy, Hispanic Studies)

This paper explores the transformation of Sor Juana Inés de la Cruz and how this transformation is reveled through her works. Sor Juana had a tremendous impact on the feminist world because her writings were against the norms of society for women during her period in history (1648-1695). Today, many historians consider Sor Juana one of the first feminists. But, at the end of her life, Sor Juana stopped writing and transformed into a religious woman devoted to her faith. The works of Sor Juana reflect this transformation from a feminist to a devout nun, especially three specific writings. First, in *La Respuesta a Sor Filotea de la Cruz*, Sor Juana explained her desire to develop her intellect, and her election to join the monastery to continue her studies. In addition, she emphasized the rights of all women to study and teach each other. Second, in her “Poemas de amor," Sor Juana was able to write about love, an act that was against societal rules for women, especially nuns, with a form of symbolic writing. Third, a text written by Sor Juana and discovered in 1992, revealed her transformation. This text was titled *Protesta* and it demonstrated her new dedication to the church at the end of her life and inferences about what may have caused the termination of her writing. *La Respuesta a Sor Filotea de la Cruz,* “Poemas de amor," y *Protesta* explain in different formats the beliefs of Sor Juana Inés de la Cruz throughout her life, and explore the changes in her beliefs that lead to her transformation.

**A positively integrated world.** ERIN M. LIPP (Roy Ketchum, Hispanic Studies).

The world that we live in is extremely interconnected. The vision, or way in which people think is what determines their actions. The purpose of my senior project is to demonstrate the interrelation of the world, focusing especially on the interrelatedness between Latin America and the United States. This paper also explores the effects of the United States’ actions on these third world countries. Based on the fact that the world is highly interrelated and that one’s actions have consequences, a person can then help make positive contributions to the world. The first step in the process of making positive changes to the world is changing many of our commonly perceived beliefs. One of which is that the progression of westernized countries is isolated or separated from the progression of third world countries. The exploitation and reliance on these third world countries by companies in the U.S and Europe proves that the progression of both regions is interrelated. Capitalism, consumption, and impunity are three ways that have promoted the exploitation of third world countries and have created “invisible” people in Latin America. These “invisible” people are those that have contributed to the progression of the United States, but are not recognized for these contributions; on the contrary they suffer because of them. If we can adapt the realistic vision that the resources and labor of the third world have helped advance the progression of the first world and we recognize the negative effects of this imposition, it is possible to make changes to better the world that we live in, one that is shared by everyone.

**¡Latina es poder!: el impacto positivo de la mujer Latina en la fuerza laboral de los EEUU.** RACHEL M. LOFTUS (Alexis Howe, Hispanic Studies).

Latina women have positively impacted the United States workforce. While many existing stereotypes continue to pigeonhole Latina women in certain jobs (such as the garment sweatshops) that offer low wages and poor working conditions, many of them have discovered their personal independence and turned this negative situation into a positive. The film “Made in L.A. / Hecho en Los Angeles” shows the plight of three Latina women garment workers who persevere through difficult conditions and fight to improve U.S. labor laws. These women encompass the strength and ability to compete in today’s workforce and they offer inspiration to all women.

**Argentine politics and soccer intertwined**

AMANDA M. MASTRIAN (Dr. Bruce Campbell, Hispanic Studies).

During the 1970’s, Argentina’s politicians used their affiliation with soccer and the popularity of soccer to create a diversion for Argentine society, turning citizens away from focusing on the harsh realities of everyday life under the rule of General Videla, and instead focusing their attention on the successes of Argentinean soccer teams.  Argentina hosted the 1978 World Cup, and Argentina’s politicians used soccer to their advantage, diverting world attention away from the violation of human rights that were occurring in Argentina, such as the “disappearing" of thousands of people, and instead focusing on the population of Argentina’s passionate soccer fans.  Politicians intertwined politics and soccer, therefore creating another manner for the state to control the sentiment of Argentinean society.

**Senior portfolio project.** ROBYN L. MEYER (Dr. Patricia Bolaños Fabres, Hispanic Studies).

As a capstone to the Hispanic Studies Major, I have completed a portfolio which highlights my progress toward the academic goals that I outlined the first semester of my first year. These goals included developing the ability to communicate fluidly with native speakers and learning legal vocabulary in Spanish. The project includes four academic writing samples, four reflective essays, an extracurricular writing sample, and a senior reflective essay. Academic progress is clear through the development of a stronger command of the subjunctive, conditional, and future tenses. In addition to these items, the evaluative results of entrance and exit exams are included which demonstrate improvement in verbal and written proficiency. Finally, the project contains a copy of my undergraduate thesis project in Political Science, entitled “Paralyzed Politics: Immigration Reform in the U.S. Congress, 1986 and 2007.

**El Retrato del Desafío por la Perspectiva Narrativa: *Temblor* por Montero y *Reivindicación del conde don Julián* por Goytisolo.** JENNIFER MURRAY (Dr. Patricia Bolaños, Hispanic Studies).

The dictatorship of Francisco Franco in Spain led to the censorship of a myriad of artists. In response to this, many literary figures spoke out against his control in their works by either challenging his power while at the same time avoiding his censorship, or by directly criticizing the systems that arose out of his dictatorship. Rosa Montero’s *Temblor* and Juan Goytisolo’s *Reivindicación del conde don Julián* challenged the social and political systems imposed at the time under Franco by employing a series of different mechanisms of defiance. Although both authors utilize similar means of disobedience and challenge, their gendered narrative perspectives set them apart. Montero’s *Temblor* and Goytisolo’s *Reivindicación del conde don Julián* demonstrate the ways in which dissident writers in Spain were able to dispute traditionally held views using the same methods and yet differentiate themselves by their unique perception of gender.

**Ariel Dorfman: poesía como un medio para contextualizar la experiencia del exilio.**

VICTORIA PIEHOWSKI (Dr. Eleonora Bertranou, Hispanic Studies).

Political dissonance has been the dominant milieu for many twentieth century Latin American writers. Inevitably, exile – a sociopolitical and geographic eviction – became an important theme in the literary output of these men and women. Ariel Dorfman, a Chilean exile and academic, produced an important body of poetry surrounding his own experience with the Pinochet coup and subsequent escape to the United States. This work shows the scars of three exile-related conflicts that plagued Dorfman during his life: first, the irony of having to seek asylum in a nation which contributed financially and martially to Chile’s national discord; second, the presence of an ambivalent memory of one’s home country; and third, the geographic and emotional disconnection between an exile and the country which he once called home.  All of these contribute to an exile experience which author Sophia McClennen describes as inherently “fragmented.”  Dorfman’s poems provide a method of contextualizing the exile experience that historical documents cannot.

**Senior project proposal.** MARY SCHLETTY (Dr. Marina Martín, Hispanic Studies).

For my Spanish senior project I propose to create a series of PowerPoint presentations, designed for teaching beginning to intermediate-level Spanish classes. My purpose is to initiate class discussion as students follow sample dialogues centered on a given topic. The power points will include topics such as how to introduce yourself, how to give directions, themed vocabulary lists (e.g. The family, food, clothing, etc.), and various Hispanic culture lessons. Through the power points students will learn new vocabulary, review grammar, and will learn about traditions from Hispanic cultures. Pictures will accompany all power points to assist in the learning process by making the presentations more attractive, accessible, enjoyable, and memorable for students. My research paper centers on theories of teaching and language acquisition and incorporates the PP. teaching methods. For my final project presentation in April I will pick one lesson and present it as if I were a Spanish teacher conducting class and/or discuss ways to successfully teach Spanish as a second language.

**Peruvian national identity: the contradiction.**

MAUREEN SCHLEY (Roy Ketchum, Hispanic Studies).

Peruvian national identity is fundamentally based in the Incan history that is ever-present in modern-day Peruvian society. The indigenous political movements of Peru have been deemed unsuccessful although most Peruvians identify with the indigenous or Incan national history. José María Arguedas (1911-1969), a mestizo of Spanish and Quechua descent, was a Peruvian novelist whose work reflects the indigenous struggle to fit into a modern society while still maintaining the traditional indigenous way of life. By utilizing Arguedas’ novel “*Los Rios Profundos”* this project explores social exclusion of the indigenous. It also looks at new social and political movements that might improve their status.

**Domingo Faustino Sarmiento’s vision for Argentina.** SEAN T. SPOONER (Roy Ketchum, Hispanic Studies).

Domingo Sarmiento has been called the architect of Argentina. He is also one of the most debated authors/politicians of the Cono Sur. Sarmiento’s most famous work entitled *Civilization and Barbarism*, explores the dichotomy between the civilized and barbarous citizens of Argentina. He uses various genres: fiction, non-fiction, biography, and political pamphlet to explore this dichotomy. By trying to unravel this mixture, I hope to shed light on whether it matters what genre this text falls under. I will attempt to situate the text historically as well as show its enduring importance in our ever globalizing world.

**Writing and learning in the Hispanic Studies major.** MARK STEELMAN (Dr. Jose Antonio Fabres, Hispanic Studies).

This is a presentation on the writing and learning process of a Hispanic Studies major through the use of a Learning Portfolio. A Learning Portfolio is a purposeful collection of works that characterizes the learning experiences of the portfolio owner and allows all progress to be easily seen over the given period of time. Through the use of written essays, research presentations, study abroad experiences, and creative writing over the four years, the author can identify the struggles they have had and how their Spanish skills have improved and matured over time.

**Bilingual Education in United States schools.** MICHAEL SWANBERG (Tania Gomez, Hispanic Studies).

The debate over bilingual education for English language learners (ELL) has been an ongoing battle for decades. Opponents see integrated bilingual (as opposed to English-only) education as a deterrent to learning English and a burden for schools, students, and future employers. Supporters of bilingual education believe that using the basic literary knowledge of a native tongue is the most effective way to teach a secondary language. With a historical look at the progress of bilingual education in the United States and at the studies done on its effectiveness, specifically related to Spanish-speaking ELLs, I propose a plan for the future of U.S. ELL education.

**Arrojando luz sobre los femicidios de Ciudad Juárez.** KELLY A. TROM (Dr. Elena Sanchez Mora, Hispanic Studies).

Femicides, the atrocious acts of violence towards women committed in the border city of Juarez, Mexico, since 1993, continue to be unsolved. While families report their missing children, investigations are stalled and the culprits are left untouched. Speculations lead the victims’ families to lay blame on drug traffickers, the government, the police and employers of the Maquiladoras, creating an atmosphere of distrust and insecurity. My purpose is to raise awareness of these inhumane acts that deeply affect the families of the young, innocent victims.

**Diego Rivera: leading an artistic movement for the people of Mexico.** JACQUELINE M. VANMOER (Dr. Bruce Campbell, Hispanic Studies).

The Mexican Mural Renaissance, beginning in the 1920s, is an important part of Mexican history because the murals of this movement tell the history of Mexico, made art available to the masses and gave Mexico an art form to call its own. Diego Rivera was one of the leaders of this movement. He painted several murals across Mexico and a few in the United States. Rivera’s works demonstrate the goals of the Mural Movement; they tell a story of the Mexican people, are displayed in public buildings for all to appreciate and help to develop a style distinctly Mexican.

**Lecciones de música: *la utilización de música en la clase de idiomas.*** MARITA VIEVERING (Dr. Gladys White, Hispanic Studies).

Music is a unique learning tool that not only facilitates creative expression but also language learning in the classroom. The advantages of using this art form to increase comprehension of a target language can be observed and evaluated through a variety of lenses. By examining the psychological benefits of music on the brain, the idea of “musical intelligence” for diverse learners, and the increase of self esteem through creative stimulation, the advantages of this methodology will be authenticated. Finally through the exemplification of interdisciplinary music lesson planning, will show the both the utilization and practicality of this differentiated teaching tool. Through these benefits, it is clear that music is a way to increase learning, incorporate culture, promote wonder and facilitate creativity in the language classroom.

**El Debate del Idioma: El bilingüismo en el Puerto Rico contemporáneo.** LISA WAGNER (Dr. Elena Sánchez Mora, Hispanic Studies).

Language has always been a divisive issue for United States citizens. It is even more so for the citizens of Puerto Rico. This small island has been bi-lingual since 1898, when the United States military landed at Guánica; however, many Puerto Ricans feel uncomfortable with the presence of two languages on their island. Both Spanish and English are stigmatized in the streets, in the schools, and by the government. The Spanish language serves as a mark of identity and pride for the Puerto Rican people; however, many citizens consider Puerto Rican Spanish inferior to Spanish spoken in other nations. The English language provides a means for Puerto Rican success; however, many Puerto Ricans believe that to speak only English is to betray one’s identity. The stigmatization of both languages, a Puerto Rican trademark, ultimately culminates in a sense of insecurity among members of this tiny island’s largely bi-lingual population.

**HISTORY**

**How did the New York Times’ portrayal of Native Americans evolve between 1935 and 1950 and why?.** ANDREW S. BALL (Dr. Julie Davis, History).

Native Americans have fought against racism and negative imagery since Columbus set foot in the western hemisphere in 1492. Native Americans began seeing increased economic opportunities due to the onset of World War II causing more interactions between the Native Americans and the white majority in the workplace. The focus of this presentation is to determine if this increased interaction and migration of Native Americans to large cities, along with their participation in the war, caused a change in how a major media outlet portrayed them.

**Policies of Minneapolis Public Library and Andrew Carnegie’s philanthropy.** SARAH B. BIRO (Dr. Martha Tomhave Blauvelt, History).

The great Steel King, Andrew Carnegie, spent the last years of his life giving his money to public libraries; he believed they were the best way a man could distribute his wealth to the community. As a result of this belief in philanthropy, Carnegie played a major role in the development of free public libraries across the United States by providing the funds for building. Minneapolis Public Library is one of these libraries that received Carnegie funds. The policies of Minneapolis Public Library reflect Andrew Carnegie’s philanthropy in large part to the head librarian during the time, Gratia Alta Countryman.

**Why did the Anti-Federalists lose the constitutional ratifying convention in Massachusetts in 1788?** THOMAS HANSON (Dr. David Bennetts, History).

In my research I looked into the ideology of the Anti-Federalists to get a sense of what they feared about the Constitution as it was delivered in Massachusetts. What I have found is that the Anti-Federalists were very reactionary towards this new government and did not take into account the adaptability of the new Constitution and its potential for governing the United States.

**Parliament and competing theories of cholera.**

JOHN M. POWERS (Dr. Cynthia Curran, History).

In 1832, a cholera outbreak hit London. Its cause was untraceable so the two governing theories of medicine attempted to explain how it spread. One claimed correctly that drinking contaminated water caused cholera. The other claimed that exposure to airborne miasma or pollutants caused cholera. Both attempted to convince Parliament to enact reform, but the piecemeal reforms enacted did not prevent a second epidemic in 1849. Following this, Parliament clearly sided with the miasma theory despite a lack of evidence. By examining a variety of primary and secondary sources, I intend to examine why they made this choice.

**Selling the Strategic Defense Initiative to Congress.** ALEC C. PRAMHUS (Dr. Ken Jones, History)

Traditional argumentation has pointed toward Ronald Reagan’s communicative skills as the quintessential piece to sell the Strategic Defense Initiative to Congress. While his rhetoric was crucial to selling the SDI, the historical context of the time made Reagan’s push for this technologically impossible program seem like an essential component for American security in the Cold War climate. I examine Reagan’s role as the “Great Communicator," but explore further other factors that contributed to Congress appropriating billions of dollars to fund the SDI.

**Rough hands & sun-burnt noses: understanding femininity on the homestead frontier .** ELYSE RETHLAKE (Dr. Martha Tomhave-Blauvelt, History).

In the early twentieth-century, population rates across the Northern Plains skyrocketed as people migrated to open land to homestead. Many of these people were young, unmarried women seeking economic or social independence. Their experiences, derived from their letters and memoirs, explain how and why they overcame or conformed to their contemporaries’ gender roles.

**The unique relationship of the College of Saint Benedict and Saint John’s University as depicted by university yearbooks, 1960-1975.**

CAMERON E. SCHNEIDER (Dr. Annette Atkins, History).

The College of Saint Benedict and Saint John’s University have a unique relationship that has been fostered over several decades. I will determine how the College of Saint Benedict and the Saint John’s University yearbooks depict that relationship between the years 1960 and 1975.

**Worldviews of Minnesota bluegrass music.**

JOANNA LYNN STELZNER (Dr. Ken Jones, History)

Bluegrass music in Minnesota represents many different viewpoints regarding the band member’s worldviews. Examination of lyrics presents themes that vary from alcohol and drinking to religious views of salvation. I am working to discover why there are such themes and what is unique about Minnesota bluegrass lyrics compared to elsewhere in the United States.

**Thomas Paine’s conception of human nature and its effect on government.** PAUL M. ZAWACKI (Dr. Martha Tomhave Blauvelt, History).

Thomas Paine wrote extensively on human nature and government during the late 18th century. He often expressed an idealized conception of humanity, though occasionally contradicted his earlier writings on the topic. Paine also believed that government was often unnecessary and an impingement

on the rights of humanity. Through my research it seems that Paine believed humanity was innately good and that government should be minimized to reflect that status.

**INTERDISCIPLINARY STUDIES**

**Microlending in Chile: a documentary film.**

TOM ALLEN, ASHLEIGH LEITCH, MARTINS KRONBERGS AND ANDREA CARROW (Terri Barreiro, McNeely Center for Entrepreneurship).

The concept of giving microloans to impoverished entrepreneurs has proven successful in many Asian countries and since, has been replicated in developing nations around the world. But will this method of lending yield the same astonishing results in developed and advanced economies? A team of four CSB/SJU students traveled to Chile where they interviewed and recorded both micro-lending organizations and micro-loan recipients with the intention of creating the second student-produced educational documentary in the serious of under-told global issues (The first being on fair-trade coffee in Guatemala the year prior).  Throughout the presentation, the students will not only show the documentary, but will also take you behind the scenes with insider experiences.

**Mayo Innovation Scholars Program .**

LINDSEY CONROY, MEGAN KACK, CHAKONG THAO, DELTHIA MCKINNEY (Dr. Lisa Lindgren, Management, and Dr. Barb May, Biology).

The 2008-09 Mayo Innovation Scholars will provide information on the structure of the program and summarize and highlight the scientific and market research which they presented at the Mayo Clinic in March of 2009. The Mayo Innovation Scholars Program is a cross-disciplinary program available to participants from both business and natural science majors.

**MODERN AND CLASSICAL LANGUAGES**

**CHINESE**

**Exploration of modern Chinese popular music**

BENJAMIN S.D. CASNER, (Dr. Sophia Geng, Modern and Classical Languages).

The songs that become most popular are those that strike a chord with the questions, concerns, and ambitions of the culture in which they are written. This performance of four or five popular Chinese songs will have a PowerPoint presentation in the background showing the transliteration and translation of the songs.

**Evaluation of the U.S. and China relations and the role of the Flying Tigers during World War II.** SHAWN DALY (Dr. Sophia Geng, Modern and Classical Languages).

I will conduct a historical evaluation of the U.S. and Chinese relations and the role of the Flying Tigers during World War II. This project will consist of two parts. First I will present a historical analysis of relations between the U.S. and China during World War II. Second I will present personal interviews and accounts from pilots of the Flying Tigers. These interviews will be conducted with at least one Flying Tiger and at least one of the Flying Tigers weathermen. Both parts of the project will be presented by billboards and if possible recordings of the interviews. This project will allow a written record of Chinese and American pilots and their historical experiences during World War II.

**A Chinese poem: *Looking at Spring Time.***

ABBIE M. HELMINEN, ALLISON R. MUCCIO, ALYSSIA M. PICKSTOCK, MEGGAN A. REINERT, and JAKE N. WALETZKO (Dr. Sophia Geng, Modern and Classical Languages )

We would like to present a historical translation and artistic interpretation of a Chinese poem: *Looking at Spring Time.* We will display a poster of the beautiful Chinese calligraphy which we will transcribe along with a Power Point presentation that will display our own artwork as an interpretation of the poem. During this Power Point we will record our voices (over traditional Chinese music) as we recite this poem in its native Chinese language. We will also provide some historical background on another poster that will describe the poem’s author and origin.

**Daoism in Chinese culture.** NICK LAHTI, ROB GABRIELSON, KATHRYN HAUFF, VICTORIA LY, PATRICK HEGEL, and PHILLIP WHITCOMB (Dr. Sophia Geng, Modern and Classical Languages)

By exploring the history and roots of the Daoist philosophy, we will be able to better understand the Chinese culture and philosophies. We will then gather and analyze research to make conclusions and present it to the class. When we present this to the class we will provide interesting information and examples of how China has been influenced from the Daoist philosophy.

**Burgers and chopsticks.** JAKE PETERSON, ZACH STERNAL, HANNAH NELSON, and PA NHIA LEE (Dr. Sophia Geng, Modern and Classical Languages).

China has been a target for the expansion of global fast food giants. We will analyze the effects that this new “food culture” has had on the health of China’s people. China has historically had better physical health due to the traditional diet. We will inspect the past and current situation by reading research articles and books, as well as discussing with our Chinese peers.

**History and evolution of Chinese writing system.** TAYLOR PETERSON, ABI PASSE, REDMOND FRASER, and GABRIEL WAGNER (Dr. Sophia Geng, Modern and Classical Languages).

The Chinese written language was first developed in about c. 1200 BCE during the Shang dynasty. The characters were essentially zodiographs etched onto the surface of bones and are known today as the Oracle Bones. As time progressed and Chinese culture got more complex, so did the writing system. Slowly the oracle bones developed into traditional characters which later developed into the modern simplified characters which we see today. The creation and evolution of Chinese characters is closely interwoven with the development of the culture and we would like to present that to our fellow students.

**Ethnic groups of China.** AMANDA PHAN, LINDA PHAN, PANYIA CHENG, SOMY XIONG, and BERNICE DAVID (Dr. Sophia Geng, Modern and Classical Languages).

When we think of China, we categorize the population as just Chinese. Amazingly, there are many ethnic groups with their history deeply rooted on Chinese land. There are fifty-six unique ethnic groups currently residing in China. Within these fifty-six ethnic groups, we will be discussing the five largest ethnic groups. The ethnic groups are Tibetan, Miao, Korean, Mongols, and Zhuang. Using a poster board, we will present the backgrounds of these ethnic groups and how they influence Chinese culture.

**Connection between Chinese folktales and geography.** MATTHEW J. SPRING

(Dr. Sophia Geng, Modern and Classical Languages).

The rivers of China are in danger of drying up. These rivers have sustained the people of China for thousands of years. Without these rivers, not only would life itself have been a struggle, but culture may not have flourished as it has. The rivers are foremost in art and flow through the oral culture of the country. While maps show the physical source of these rivers, folktales show their meaning and source in the hearts and minds of the people.

**Evaluation of the sentiment of the younger Chinese generation towards Japan.** SEVERIN THOMPSON and JOE KANE (Dr. Sophia Geng, Modern and Classical Languages).

We will conduct a research project concerning Sino-Japanese relations. This project will consist of two parts. One part will consist of a general presentation of the history of Sino-Japanese relations. The second part will consist of an anonymous survey, conducted in Mandarin, of students from the People’s Republic of China who attend either CSB/SJU or SJP. This survey will incorporate both multiple choice and free response sections with the goal of analyzing the impression of Sino-Japanese relations upon the younger Chinese generation. The statistical results will be presented in a bilingual format.

**FRENCH**

**An analysis of the linguistic divide in Belgium.**

SAMANTHA ERICKSON (Dr. Charles Villette, Modern and Classical Languages).

The project will analyze the scission between Flemish and French speakers in Belgium. It will primarily focus on the historical reasons for the linguistic and cultural divide. Additionally, research will cover another multi-lingual country, Switzerland. The project will compare and contrast the formations of the two countries and the rapports among different cultural groups in each country.

**France’s Muslim relations and the head scarf law.** MARYELLEN JASPERS (Dr. Camilla Krone, Modern and Classical Languages)

France’s ever-increasing Muslim population brings a new cultural dimension to the country. An outward sign of this growing community is the head scarf worn by some Muslim women. The Muslim presence alongside the *Français de souche* (white French citizens of European origin) has caused controversy. In contrast to France’s tradition ideals of integration, assimilation, *laïcité* (secularism) and unity, values proudly upheld in its public schools, many members of the French Muslim community see the veil from a religious and community-oriented perspective. I will present the many facets of the head scarf debate from both a historical and a modern perspective.

**Barack Obama in the press: what he means for French minorities.** ROBERT SHIELDS MEVISSEN (Dr. Charles Villette, Modern and Classical Languages).

For minorities in France, the election of Barack Obama was not only a triumphant moment for America's racial relations, it signified a change for them as well.  Looking at news sources from America, France and other European countries, this presentation will examine in what manner they covered Obama's campaign, election, and inauguration, and use this coverage to determine how French minorities reacted to these events.

**The dilemma of the Socialist Party and the future of left-wing politics in France.**

SAMUEL J. RAPPE (Dr. Nathanial Dubin, Modern and Classical Languages)

For a third straight presidential election cycle, the French Socialists suffered defeat. In many ways, the fate of France’s Socialists has mirrored the changing political landscape throughout Europe. This paper will examine France’s Socialist Party and the problems they face, both organizational and ideological, as well as French political culture midway through the presidency of center-right leader Nicolas Sarkozy.

***Ici on parle français*: a comparative study of two French-language programs**

ANNA M. ROACH (Dr. Karen Erickson, Modern and Classical Languages)

My project is a comparative evaluation of the French language curriculum at the elementary and college levels, identifying features that could be implemented into both programs for greater success. Brain research suggests that learning a second language is more feasible and efficient at a younger age, especially when students are immersed in the cultural environment. My project shows the results of my observations of kindergarten classes at Normandale Elementary School as well as of French 111 courses at CSB/SJU. Based on research and observation, I critique the curriculums and offer a proposal for improved learning.

**CLASSICS**

***Feriae Sub Monte Ignis*.** SARAH STERGIOS (Dr. Scott Richardson, Modern and Classical Languages).

My goal in doing this project was to successfully translate an English book into authentic Latin. I have explored the nature of translation and attempted to make mine so accurate that an ancient Roman could pick it up, read it, and fully understand it; while keeping the authenticity and meaning of the original work. In doing this project, I have employed many of my skills in the areas of Latin grammar, syntax, and accurate cultural idioms.

**GERMAN**

**The role of poetry for Jewish women in Nazi concentration camps.** MELISSA HENDRICKX (Dr. Lisa Ohm, Modern and Classical Languages).

Poetry became a survival mechanism for many Jewish women living in Nazi concentration camps during World War II. By examining their poetry in its original German, we discover that women used poetry to express powerful emotions, bear witness to the horrors of the Holocaust, affirm their humanity, question their religious identity, transcend suffering, and deal with painful memories. Studying prisoners’ poetry provides us unprecedented access to events of the Holocaust and a better understanding of the role literature plays in traumatic situations.

**Birds as a manifestation of the conscience in German *Märchen.*** ROBERT SHIELDS MEVISSEN (Dr. Andreas Kiryakakis, Modern and Classical Languages).

The study of *Märchen* can shed very important insight into the human condition. Recurring symbols and motifs are especially important to understand human behavior. According to Carl Jung in *Zur Phänomenologie des Geistes im Märchen*, they represent elements of the unconscious. I agree with Jung that these symbols may represent the unconscious; however, it is my contention that they are merely a *physical manifestation* of the unconscious, whose function is to warn or help a character to accept the promptings of his/her conscience. I will use the motif of the bird and its role in *Märchen* to illustrate this idea.

**MATHEMATICS**

**Trivial multiplication in rings.**

WILLIAM J. CAPECCHI (Dr. Tom Sibley, Mathematics).

We investigate the conditions on the additive group of a ring so that the only multiplication compatible with this addition is the trivial one, for which a\*b = 0 for all a and b in the ring.

**Partial orders on groups.** MELISSA GROSS (Dr. Tom Sibley, Mathematics)

A partial order < on a group G satisfies if a < b, then ac < bc. We investigate properties of partially ordered groups.

**Galois theory for rings.** BRENDAN KOELSCH (Dr. Tom Sibley, Mathematics)

We investigate to what extent the connection between subgroups of automorphism groups and subfields of extension fields can be replicated with selected rings and their extensions.

**Groups with averages**

JASON LUTZ (Dr. Tom Sibley, Mathematics)

A group (G,\*) has averages if for all a and b in G, there is some c in G such that a\*b = c\*c. We investigate properties of groups with averages.

**Finite groups and geometries.**

ROB McMILLAN (Dr. Tom Sibley, Mathematics).

By defining an absolute value, every group acquires geometric structure. We investigate the interaction of the algebra and geometry of groups.

**The probability that two elements generate a group.** FRU NDE (Dr. Tom Sibley, Mathematics).

We investigate the probability that two randomly chosen elements of a finite group generate the entire group, assuming that the group has two generators. We look at various families of groups.

**Group sequences.**

DAN PARR (Dr. Tom Sibley, Mathematics)

A finite group G can be sequenced if some ordered list of its elements a, b, c, … has the property that the list a, ab, abc, … lists all the elements of G without repeats. We investigate which groups can be sequenced.

**Partial ordering on rings**

KARLA SCHOMMER (Dr. Tom Sibley, Mathematics)

A partial order < on a ring R with multiplication \* satisfies: if 0 < a and b < c, then a\*b < a\*c. We investigate properties of partially ordered rings.

**NUTRITION**

**Caffeine increases maximal oxygen consumption in female college-aged recreational athletes.** ASHLEY DAVENPORT and LAURIE VERANT

(Dr. Mani Campos, Biology, and Dr. Amy Olson, RD, LD, Nutrition).

Caffeine is used by athletes to enhance performance. Most research on caffeine uses time to exhaustion tests in male athletes.

We examined the effects of caffeine in female athletes by using a maximal oxygen consumption (VO2 max) test. Average

VO2 max increased 4.8 percent, runtime increased 4.7 percent, but maximal heart rate did not change with caffeine. Furthermore, with caffeine there was a significant decrease in RPE at the end of the last completed test stage. A low dose of caffeine significantly increases VO2 max and allows runners to work harder at the same peak heart rates.

**Iron deficiency in division III male cross country runners.** SARAH GERVAIS and JESSICA WALKER (Dr. Amy Olson, RD, LD, Nutrition, and Dr. Manuel Campos, Biology).

Iron deficiency in males is rare; however, male runners have increased iron losses that may result in decreased athletic performance. Our purpose was to assess the iron status of the runners and identify subjects who are iron deficient. Mean iron intake was 25.07±9.17mg (RDA for males is 8 mg/day). Initial mean serum ferritin was 99.03±70.43 ng/mL; values <20 ng/mL may impair performance. Final mean serum ferritin was 126.78±80.86 ng/mL. After 12 weeks, only two (5 percent) of the original eight subjects with low serum ferritin values remained <40 ng/mL. The incidence was 21.0 percent, which is high enough to warrant routine screenings for iron status.

**Cranberry juice as an adjunctive therapy for periodontal disease.** ELIZABETH A. HAAGENSON (Dr. Jayne L. Byrne, Nutrition).

Cranberry juice has several health benefits. Cranberry juice has anti-adhesion properties for prevention and treatment of urinary tract infections. These properties in cranberry juice may also benefit people with periodontal disease. Components in cranberry juice also inhibit inflammatory processes which can lead to the progression from gingivitis to periodontitis. There are risks and benefits associated with the use, but there is potential to use cranberry juice as an adjunctive therapy for periodontal disease.

**Significant risk of dehydration in young soccer players.** ABBY MILTON (Dr. Amy Olson, RD, LD, Nutrition, and Dr. Manuel Campos, Biology).

Soccer is played in a continuous manner with limited opportunities for athletes to rest and rehydrate. Young athletes are more prone to heat-related illnesses. Our purpose was to assess the risk of dehydration in youth soccer players recruited from two local youth soccer associations. Most players (82 percent) started their games dehydrated and failed to drink sufficient fluids to improve their status during the game. On average players should consume between 1200-1800 mL during competition, but some subjects consumed less than 500 mL. The tendency for these young athletes to start their games dehydrated places them at risk to develop heat-related illnesses.

**The role of omega-3 polyunsaturated fatty acid in the treatment of the physical symptoms of rheumatoid arthritis.** NICOLE D. SAND (Dr. Jayne L. Byrne, Nutrition).

Rheumatoid arthritis is an autoimmune disease characterized by inflammation in the joints. Dietary acids potentially impact the degree of inflammation experienced by people with rheumatoid arthritis. Omega 3 polyunsaturated fatty acid is a time-dependent and dose-dependent solution to alleviate the physical symptoms of rheumatoid arthritis.

**Vitamin D status and stress fractures in division III male cross-country athletes.** JESSICA WALKER and SARAH GERVAIS

(Dr. Manuel Campos, Biology, and Dr. Amy Olson, RD LD, Nutrition)

Stress fracture occurrence is high among runners and one of the risk factors is poor vitamin D status. Our purpose was to evaluate vitamin D status in cross-country male runners through the year. Vitamin D declined significantly by December since the UVB rays are not sufficiently direct to maintain vitamin D synthesis during the winter months despite adequate dietary intake on average. These results support the need to consume dietary sources of vitamin D above the current dietary recommendations or obtain controlled UVB exposure during the winter months.

**PEACE STUDIES**

**Resistance and reemergence: immigration and drug resistant tuberculosis in the United States.** CAITLYN E. LOTHIAN (Dr. Jeff Anderson, Peace Studies, and Dr. Jeff Kamakahi, Sociology).

Tuberculosis is spreading in the United States, and it seems related to the new waves of immigrants entering. However, one cannot blame the immigrants, for tuberculosis has instead been profoundly influenced and shaped by political and social forces. Tuberculosis has transformed from a virulent disease to a drug-resistant nightmare, which presents new difficulties and costs associated with treatment and prevention. In this presentation, I plan to address the dangers and problems posed by tuberculosis and its drug-resistant variations, and how this crisis provides the United States with the opportunity to reformat the health system to improve care for all people.

**PHILOSOPHY**

**Miraculous belief: David Hume on the possibility of miracles.** REGAN J. BECKER (Dr. Stephen Wagner, Philosophy).

“Of Miracles,” by David Hume, has been a hotbed of debate since its publication in 1748. In this paper, I argue for a reading of Hume’s essay that takes Part I and Part II as a continuous argument, in which Hume formulates a method in Part I and applies the method to historical miracle claims in Part II.

I also focus on the misinterpretations of Hume’s critics and discuss how, using Hume’s epistemological framework, we can come to a better understanding of the essay. I show how Hume’s methodology has practical implications for assessing any historical miracle claim based on testimony and discuss these implications for many religions founded on miraculous events.

**PHYSICAL EDUCATION**

**College of Saint Benedict women’s basketball teams’ physiological data assessment: the story it tells.** ALISON M. GRESBACK (Don Fischer, Physical Education).

Physiological data were collected on the College of Saint Benedict Women’s Basketball team from 2001-02 to 2008-09 (n = 100; 189 data sets). Through data analysis by position, normative ranges were established. Position-specific relationships were identified between specific test scores and the coach’s perception of the individual’s basketball performance. Lastly, it was determined that not all of the agility tests contributed uniquely to understanding the athlete’s physiological abilities therefore indicating some redundancy in the testing procedures.

**Variations in perceived vs. measured aerobic capacity in division III female collegiate soccer players.** ALISON M. PAGLIACCETTI (Don Fischer, Physical Education).

Twenty-one division III female collegiate soccer players were tested in the fall of 2008 to determine their individual level of aerobic fitness. Each athlete performed a VO2 max test and intermittent endurance test to quantify their respective aerobic capacities. The results were compared to the coach’s subjective rating of the athlete’s aerobic fitness level to determine if the coach’s perception of the athlete’s aerobic capacity differed from that which was measured. The results of this study will help determine the value of laboratory and field tests in determining the aerobic fitness of division III female collegiate soccer players.

**The relationship between dance training background and a dancer’s ability to perform a double pirouette with ideal technique.**

ALLISON M. SEIFERT (Don Fischer, Physical Education).

Ten members of the College of Saint Benedict Dance Team (five with primarily a ballet background, five with primarily a jazz background) performed double pirouette turns while being videotaped from the front, side, and above. Biomechanical analysis was performed using Dartfish video analysis software and a checklist of key elements that define ideal technique. Statistical methods were used to determine the relationship between turn technique and dance training backgrounds. This information can be used to more effectively teach double pirouette turn technique.

**PHYSICS**

**Alignment and improvement of interferometer with conversion to visible light compatibility.** ERIC D. BUSS (Dr. Dean Langley, Physics).

A large interferometer that uses an invisible laser as a light source was altered so that it could be more easily aligned and could use a visible light source. Several components were built and implemented to facilitate such improvement. These additions allow for a visible light source to be used as the interferometer input and allow for faster and easier interferometer alignment.

**Comparative analysis of the wavefront curvature in the near field of highly focused lasers.** WILLIAM J. CAPECCHI (Dr. Dean Langley, Physics).

A fairly accurate equation for the radius of curvature of a laser wavefront can be derived by solving Maxwell’s paraxial wave equations using spherical waves. Actual lasers exhibit both spherical and planar wave characteristics which results in a breakdown of the approximation for radius of curvature in highly focused and rapidly spreading lasers. Using a He-Ne laser, a CCD camera and a highly stable single lens interferometer I am attempting to discover the behavior of the wavefront curvature in the near field.

**Water purification powered by solar energy.**

THOMAS M. COLEMAN (Dr. Adam Whitten, Physics)

Designed, implemented and improved a water purification system that is run under conditions simulating a battery charged via a solar panel. Several types of contaminated water will be tested, including brine, dyed, lake/stream and chemically polluted. The efficiency of the purification will also be determined. This device could act as a stand-alone device for purification of water in rural areas that are short on potable water.

**Analysis of aerodynamic properties of various objects.** JOHN M. FLEISCHHACKER

(Dr. Jim Crumley, Physics).

A wind tunnel is a chamber that sends air through it via a fan in order to calculate aerodynamic properties. Various objects were placed into the wind tunnel with varying winds speeds to determine the fluid mechanics and the aerodynamics of the objects. Some of the objects tested were a Frisbee, a baseball and other various bodies. The results help give the basic idea of why a curveball curves and why a Frisbee stays in the air. These results can be used to explain various other aerodynamic questions.

**Optimization of frequency response based on speaker cabinet baffle shape.** PETER A. FROEHLING (Dr. Thomas Kirkman, Physics)

Differing baffle shapes were implemented on speaker cabinets while retaining compression chamber dimensions and driver specifications. Optimal, flat frequency response was the desired outcome. This is achieved by pushing the low frequency roll off of the frequency response due to the baffle step down to lower levels, as well as smoothing out higher frequency ripples. Resultant response graphs were compared in order to optimize.

**Pulsing laser design and ultrashort pulse measurement.** RYAN HOWE-VEENSTRA (Dr. Dean Langley, Physics).

This research project is split between two parts: construction of a pulsing Titanium Sapphire Crystal Laser, and the measurement of its pulse lengths. The laser produces pulses with time lengths on the order of several femtoseconds, making them extremely hard to measure. Frequency Resolved Optical Gating (FROG) is one method used to measure such short pulses, and it is being implemented for this project. Correct alignment of the FROG equipment allows software to determine the time length of the pulses the laser produces.

**Correlation of wind speed to power generated of a Whisper 600 windmill.** ZAFIR N. KHAN (Dr. Adam Whitten, Physics).

A windmill (Whisper 600) was constructed at the observatory along with an anemometer. The power output produced by the generators was measured and logged while the wind speed was measured using the anemometer in units of voltage. Data collected were analyzed and a correlation of the wind speed and power generated were evaluated.

**Efficiency of an electrical conversion circuit for a wind turbine.** ARIC J. LITCHY (Dr. Adam Whitten, Physics).

This senior research project is a presentation on measuring the efficiency of an electrical conversion circuit. The circuit takes inputs from an alternating three phase current wind turbine and converts it to direct current so that a battery can be charged. A different circuit was designed to measure the voltages and currents that are inputs and outputs to the conversion circuit so that the power was able to be calculated. The wind turbine had a mounting constructed for it and was tested at various wind speeds.

**Calculation of group-delay dispersion and cubic dispersion for a titanium-sapphire laser.**

CHEN MIN (Drs. Dean Langley and Sarah Yost, Physics).

The negative group-delay dispersion (GDD) and cubic dispersion (CD) of the prism sequence are determined from derivatives of the resulting sum with respect to wavelength. The GDD is important to compensate for other forms of dispersion which will occur in the cavity of a titanium-sapphire laser system. However, when laser pulses are shrunk in time duration, the mathematical description becomes the CD form. In order to minimize reflection losses of the prism rotational positions, the GDD and CD are often the experimentally interesting parameters. In this paper, I use data from a titanium-sapphire laser experiment and the literature to calculate the GDD and CD limit.

**Solar panel efficiency.** ANTONIO NAVA JR. (Dr. Adam Whitten, Physics).

I will be discussing the efficiency of solar panels. I will talk about the tracking device I am constructing which I will be using in my experiment. I will be using the measurements from the power output of the solar panel when they are tracking the sun and then compare it with the power output of solar panels when they remain in one position for the entire day. From these data, I will calculate what gain in efficiency there is between the two situations.

**Discovering correlations between the properties of gamma-ray bursts.** CAROLINE A. REGINATO (Dr. Sarah Yost, Physics).

Gamma-ray bursts are luminous gamma-ray events that are associated with massive star death. We implemented an algorithm from literature to calculate a standard variability of a gamma-ray light curve that is emitted from these gamma-ray bursts. Using this algorithm and data taken from the Swift database, we were able to compare the variability to other properties, such as luminosity and burst duration, of the bursts to determine if a correlation exists. We used documented gamma-ray bursts that were collected by the Swift telescopes from 2006 through 2008. These correlations, or lack of correlation, might better explain the physical processes that occur during these powerful bursts.

**Scanning tunneling microscopy.** ANTHONY SCHULTE (Dr. Thomas Kirkman, Physics)

Scanning Tunneling Microscopes (STM's) are able to, under ideal circumstances, resolve features of only a few nanometers **—** and are among the only mature technologies capable of producing high-resolution images of atomic structures. Saint John's University has previously been in possession of an incomplete STM apparatus which has been incapable of operation or imaging of any type. The goal of this effort was to develop the remaining apparatus necessary to allow basic operation of the STM to open the doors to future experiments which may be conducted with such an instrument, including but not limited to: Tip Geometry Vs. Resolution experimentation, Tunneling Current/ Voltage/ Mode of operation effects on imaging, and other tests on the effects of Quantum Tunneling. Specifically, the tasks necessary to bring the instrument to a useable state included: development of a Hardware/Software interface scheme, and developing software capable of providing the granular control of the hardware desired for the conducting of the types of experiments sought to be performed by the SJU Physics Department. A National Instruments Data acquisition (DAQ) card was leveraged to interface the existing STM hardware control unit with a Linux-based Computer Terminal. A C++ application was created and implemented to coordinate the ballet of hardware and software operations necessary to perform a imaging scan, and record and store the resulting data in a useful format. Test scans have confirmed that the software/hardware control scheme developed is functional, yet for reasons suspected to relate to poor STM probe precision and test standard (160 nm gold nanogrid) condition, atomic resolution has not yet been realized.

**Controlling growth of ignition fuel for inertial confinement fusion.** LANCE WHEELER (Dr. Jim Crumley, Physics).

The NIF (National Ignition Facility) project is a twenty-year effort to achieve inertial confinement fusion by focusing two million Joules of laser energy in 192 beams at a two-millimeter hollow, spherical target. The target is filled with a 75-micron thick frozen layer of a deuterium and tritium (D-T) mixture. When the laser impacts the surface of the target, conditions inside the capsule reach temperatures and densities so intense the isotopes fuse together and release energy. Stringent specifications on the fuel layer inside the target are crucial to the fusion reaction. Computer controlled processes were developed to improve the yield of the growth of these layers. X-ray imaging and image processing techniques were used to successfully grow deuterium ice layers through an automated process.

**POLITICAL SCIENCE**

**Socio-economic impacts of rural road development in south Asia.** BENJAMIN BRIESE (Dr. Manju Parikh, Political Science).

Started in 1994, the motor road connecting the district headquarters of Beni, Jomsom, and Lo Monthang in Nepal’s north-central district of Mustang is nearing completion. Well-documented case studies show that these rural road development projects affect virtually all aspects of life in nearby communities. This presentation examines societal changes in cultural traditions, agriculture, migration, health, and tourism, to assemble a comprehensive picture of change caused by road development projects in rural societies of South Asia.

**The Hong Kong Model United Nations Conference.** SEAN CHING, BARRY GRIFFIN, CATHERINE HANSEN, KELLIANNE LAUER, MOLLY MAXBAUER, and ANTHONY SCHMIDT (Dr. Matt Lindstrom, Political Science)

Six students from the College of Saint Benedict and Saint John’s University traveled to Hong Kong to participate in a four day Model United Nations Conference. It was the first-ever international Model United Nations delegation from the two schools. CSB/SJU was one of only two American delegations at the conference. Our project was sponsored by The Eugene J. McCarthy Center for Public Policy and Civic Engagement.

**Trade liberalization: on the U.S.-Peru free trade agreement.** DANIEL HALLER

(Dr. Gary Prevost, Political Science).

The 21st Century has seen a drastic shift toward trade liberalization. The United States has been a frontrunner in the ratification of these free trade agreements, stating that free trade levels the international playing field while promoting the business climate on a global scale. However, is this true for all citizens and countries involved? This presentation will examine the U.S.-Peru Trade Promotion Agreement in the light of both U.S. and Peruvian businesses and laborers in order to determine if free trade is as “free” as many have come to believe.

**Can development be walled in? An analysis of three different metropolitan regions and their varying implementation of urban growth boundaries.** JOE KANE (Dr. Matt Lindstrom, Political Science)

Recently, policymakers and public commentators have decried the increase of sprawl development across the United States. As sprawl continues, apparently unabated; policymakers are analyzing the effects of different policy tools in creating more efficient and planned development. The use of an urban growth boundary literally and figuratively draws a line around urban perimeters for growth. In a case study of three different metropolitan regions with varying implementations of urban growth boundaries, analysis will look to find any correlation between the use of urban growth boundaries and housing prices in the economic downturn and other quality of life measures in general.

**Throwing your words around: stump speeches, health care, and the 2007-2008 Democratic presidential primary agenda.** ALEX KURT (Dr. Claire Haeg, Political Science)

Throughout the 2007-2008 Democratic presidential primaries, polling indicated that voters considered health care a pertinent issue, even though there was no causal event, as was the case with Iraq, recession, etc. To what extent did the candidates, and their rhetoric, determine which issues were considered important by voters? This paper examines the frequency with which three major candidates mentioned health care before and during the primaries, and compares this with polling data, tracking candidate progress and the salience of health care through Iowa, New Hampshire, and South Carolina to analyze the correlation between stump speeches and a campaign’s ultimate success.

**From the court to Congress: judicial agenda-setting for decision reversal legislation in *Ledbetter v. Goodyear* *Tire & Rubber Company* (2007).** ASHLEIGH LEITCH

(Dr. Claire Haeg, Political Science).

After *Ledbetter v. Goodyear Tire & Rubber Co. (2007)*, Congress drafted legislation to overrule the Supreme Court. In July 2007 Congress voted down the Lilly Ledbetter Fair Pay Act of 2007, which was reintroduced and passed in 2008. Through its decision in *Ledbetter*, how has the Supreme Court acted as an agenda-setter for Congress and pay equity? What variables led the 111th Congress to pass the Fair Pay Act? I will apply Meernik and Ignagni’s model from “Judicial Review and the Coordinate Construction of the Constitution” (1997) to congressional roll call votes, Presidential polling data, and the *Ledbetter* majority and dissenting opinions. I hypothesize that the Fair Pay Act passed in 2008 because Ledbetter served as a triggering event, President Obama’s strength, and increased public mobilization.

**Paralyzed policy: immigration politics in the United States Congress, 1986 and 2007.**

ROBYN L. MEYER (Dr. Claire Haeg, Political Science)

The Comprehensive Immigration Reform Control Act of 2007 failed in June 2007. Republican pundits and constituents opposed what they labeled the “McCain Kennedy-Amnesty Bill," claiming that it resembled the 1986 Immigration Reform Control Act. Yet Republicans who supported the 1986 bill opposed the 2007 version. Using both qualitative and quantitative data, the study analyzed social, agency, and institutional factors contributing to the votes on each bill.

I conclude that members were influenced by region, state immigration laws, and party leaders.

**A desire named streetcar: an analysis of decision making behind Minneapolis’ Hiawatha light rail line.** JEFF SCHNOBRICH (Dr. Matt Lindstrom, Political Science).

The Hiawatha light rail transit line was originally projected to cost $480 million. When the first train left the station in 2004, however, the bill totaled $715 million. This paper analyzes the process that the Hiawatha project went through to get approved. The paper examines a planning technique called reference class forecasting, which intends to improve planning forecasts by comparing them to previous projects that have been completed. Applying this technique retroactively, I conclude that forecasting on the Hiawatha project could have been more accurate. The paper finishes with suggestions to improve future projects, which will continue to grow in number as light rail becomes more popular.

**PSYCHOLOGY**

**Distraction effects on concentration.** LAURA ALTHOFF, KATRINA REKER, and KATIE VOGEL (Dr. Linda Tennison, Psychology).

The present study explores the effects of distraction on concentration. The participants completed two separate grids numbered 0-100. The scrambled numbers were crossed off in chronological order with a time limit of 30 seconds per trial. The independent variable is the level of distraction, which was manipulated through a TV talk show for one trial and silence in the other. It is predicted that the trials completed in silence will score higher than the trials that used the TV talk show distraction.

**Memory retention and chewing gum.**

TIMOTHY BACKES, BRIANNE BOARDMAN, and AMANDA PHAN

(Dr. Linda Tennison, Psychology).

This experiment is designed to test the effect of chewing gum on memory. The results of the independent group that receives the gum will be compared to the results of the group that does not receive gum in terms of memory retention. We expect to find that chewing gum will have a positive effect on memory retention.

**Cognitive mindsets in a college sample.**

LEIGH BARTHOLOMEW (Dr. Laura Sinville, Psychology).

Individuals differ in educational beliefs about intelligence; some hold a fixed mindset believing that intelligence is permanently set, while others hold a growth mindset believing that intelligence is changeable through effort.  We wanted to compare the performance of fixed and growth mindset individuals through a spatial reasoning task in high- or low-stress situations (manipulated by either presenting the task as an IQ test or a game).  We hypothesized that fixed mindset individuals would perform poorly especially in the IQ situation due to the need to prove a high level of intelligence.

**Gender differences in motivation for physical activity.** KATIE C. BROWN (Dr. Rodger Narloch, Psychology).

The purpose of this study was to use observational research to examine if men and women had different motivations for engaging in physical activity. Participants were 53 females and 61 males that used a bike path which runs through three rural communities, which are near two, same-sex, liberal arts campuses. Observers recorded the gender of participants, type of activity, and whether participants were alone or in a group. Consistent with the research hypothesis, women tended to engage in physical activity in a group, which supports previous research that women participate in physical activity due to social motivations. However, inconsistent with the research hypothesis, there was no difference in whether men engaged in physical activity alone or in a group.

**To be seen or not to be seen: is it more than just the resume?** KRISTINA DeMUTH, KAITLIN ANDREASON, and ALISON GRESBACK (Dr. Linda Tennison, Psychology).

Using a between subjects design, we will measure the reaction time of respondents when choosing which candidates to hire or not hire for a certain job. One group will be asked to hire candidates based only on the information they receive in the resume.  The other group will be provided with both a picture of the candidate and his/ her resume. Reaction time will be recorded for how long it takes the respondent to hire or not hire an applicant based on the information provided. Our hypothesis is that the two groups will have significantly different reaction times.

**Alcohol priming study.** ELLIOTT ELM, CHASE BURTIS, and MICHAEL PEDERSON (Dr. Linda Tennison, Psychology)

Student’s opinions differ on the idea that alcohol has an effect on risk-taking behavior and inhibitions. However, behavior can also be affected by alcohol-related cues, not just by the consumption of alcohol alone. These cues can "prime" people’s expectations of alcohol on risk-taking and inhibitions, regardless if one is conscious of the cues or not. The present study is designed to determine if a student’s belief on alcohol and its role in risk-taking behaviors

(i.e. cheating) after being primed with alcohol-related cues. Responses will be compared to a control group with no alcohol-related cues.

**The relationship of self-esteem and neuroticism to relationship status.**

KATHERINE A. KENEFICK (Dr. Rodger Narloch, Psychology).

Fifteen researchers administered surveys to 118 participants from two private, liberal arts colleges, examining the differences in self-esteem and neuroticism ratings among college students and their romantic relationship status. This study found that self-esteem was lower for those not involved in romantic relationships. Those not involved in romantic relationships tended to have higher ratings of neuroticism. An individual may be less emotionally stable and less capable in adapting to stressful situations the higher their neuroticism rating. This seems to inhibit or deter them from being in romantic relationships.

**Memory recall and media violence.** JODI KERFELD and PAUL JOHNSON (Dr. Linda Tennison, Psychology)

We searched to find a link between media violence and memory recall and reaction times of words associated with media violence.

A randomly assigned list of violent and non-violent words was presented, followed by a violent or non-violent video clip. Participants were then tested on recall and reaction time. Procedures were repeated with a second list of words and the video not previously viewed.

We expect better recall and faster reaction time with the words associated with the previously viewed video.

**Personality profile of President Barack Obama: leadership implications.**

SARAH E. MOORE and ANGELA M. RODGERS (Dr. Aubrey Immelman, Psychology).

This study presents a personality profile of President Barack Obama and offers an empirically based framework for anticipating Obama’s performance as chief executive. The profile reveals that Obama is ambitious and confident; modestly dominant and self-asserting; accommodating, cooperative, and agreeable; somewhat outgoing and congenial; and relatively conscientious. The combination of ambitious and accommodating patterns in Obama’s profile suggests a “confident conciliator” personality composite.

The poster makes several general predictions regarding Obama’s likely leadership style, inferred from his personality profile.

**Task instructions’ effect on tenacity.**

ANDREW M. OBRITSCH, LAURA E. BLOCH, and RACHEL M. VANDERHEYDEN (Dr. Linda Tennison, Psychology).

This study was designed to test the effect that task instructions have on a person’s determination to complete an assigned task. Co-sex participants will attempt to solve digital anagrams. The participants will be told that anagrams in pink font are easier for women to solve, while anagrams in blue font are easier for men to solve. In reality, all of the anagrams are unsolvable. Participants' tenacity will be measured by recording their committed duration to solving the presented anagrams. Women are expected to spend more time solving pink anagrams, while a longer duration is expected for men solving blue anagrams.

**The inter-relationships of self-esteem, procrastination, and optimism.** AMANDA L. PETERS (Dr. Rodger Narloch, Psychology).

**The purpose of the study was to examine how self-esteem relates to procrastination, how optimism and self-esteem are related, and finally, how procrastination would then relate to optimism. Researchers distributed surveys to a convenience sample of a total of 118 college students. Each student filled out a consent form and the survey. To keep anonymity of the participants, the consent forms were detached from the surveys. The college students attended two interconnected private, Catholic, colleges. The results of the study confirmed the hypotheses that self-esteem would have a negative correlation to procrastination, optimism and self-esteem would be positively correlated, and optimism would have a negative correlation with procrastination.**

**Emotion, gender and college professors: do angry professors make the grade?** SARAH E. SCHWARZKOPF (Dr. Laura E. Sinville, Psychology)

Previous research suggests that when people in positions of leadership, especially women, violate gender stereotypes, they are harshly punished. According to gender proscriptions, it is undesirable for women, but not men, to show anger. Student participants were given a brief sample of a hypothetical professor’s tenure file that included a student course evaluation. Researchers used the sample course evaluation to manipulate the professors’ gender and reaction to a potentially angering event that occurred in the classroom. We predict that female professors will be evaluated more negatively than male professors when they are described as expressing anger in the classroom.

**The effects of cell phone use on academic achievement.** ALEC SHERN (Dr. Richard Wielkiewicz, Psychology).

This is a survey to be conducted using an on-line form developed using Forms Manager. I did a confidential and anonymous survey as part of my course requirements for Psychology 221, Applied Behavioral Statistics, in which I asked students whether they “regularly” sent text messages while they were in class. I found a significant difference in GPAs of those who did send text messages in class (M = 3.01; SD = .333) and those who did not (M = 3.34; SD = .421), *t*(73) = 3.82, *p* = .000. The effect size for this difference was .893. The main purpose of the present study is to replicate this result while obtaining much more detail regarding the extent of respondents’ cell phone use and texting behavior in relation to a number of areas including motivation, academic and social drive, and academic achievement. The study will consist of at least 200 survey respondents.

**Optimism and self-esteem’s relationship with procrastination.** SYDNEY SOLBERG

(Dr. Rodger Narloch, Psychology)

This study’s purpose was to investigate if self-esteem and optimism have a relationship with procrastination, to better aid teachers and employers in assisting those with procrastination problems.  Researchers gave a one-shot, personal interview survey to118 of their college peers, 60 females and 58 males, which measured participant’s levels of each variable through different tests. The results revealed a significant negative linear relationship between self-esteem and the level of procrastination, as well as a significant negative linear relationship between optimism and procrastination.

**A comparison of cross-sex interpersonal relationships at residentially single sex and co-educational universities.** MAKENZIE M. WRIGHT (Dr. Stephen P. Stelzner, Psychology).

The current study explores the effect of residential living environment on one’s cross-sex friendships. Participants completed an electronic survey that included a friendship closeness scale and the modern sexism scale. It was hypothesized that junior and senior students at a co-educational institution, such as the College of Saint Benedict/Saint John’s University, would have more opposite-sex friendships and that these friendships would be closer than those of students at a residentially single sex institution, such as the University of St. Thomas. Students at a co-educational university would have greater trust, intimacy, self-disclosure, and shared experiences with their opposite-sex friends than students at single-sex institutions would have. This is, to my knowledge, the first research in Psychology on this topic.

**THEATER and DANCE**

**Dancers working with professional choreographers.** ALISON CURRANS-SHEEHAN,  ALEXANDRA HAIDER,  ANNE HYLDEN, KELSEY REHWALT,  JARED SHERLOCK, and JESSICA VINING (Leigh Dillard, Theater)**.**

Five students discuss working with New York choreographer Sean Curran and demonstrate how they created some of the movement material for “Artic Aria” which will be performed. Assistant Professor Leigh Dillard and guest artist Douglas Dunn will also talk about their artistic relationship over the past 30 years and perform a section of the duet Ms. Dillard commissioned Mr. Dunn to create for the two of them.

**Two theater senior projects in directing*: No Exit* and *The Molecule.*** ANDREA KREJCI, ALISA DAVIS and CHRIS RIVERS, Chair (Adam Houghton and Dr. Kaarin S. Johnston, Theater).

Andrea Krejci directed Sartre’s *No Exit* in the fall of 2008 as her Theater Senior Project. She chose to produce the group senior project (all four actors were senior theater majors) in a “found space” in the basement of the Old Gym on the Saint John’s University campus. Alisa Davis chose to translate and direct a one-act play that was written by Patrick de Bouter who teaches French to students in Cannes during our semester in France; the students had performed the play, *The Molecule*, in French as part of their experience abroad. During the summer of 2008 Ms. Davis translated and adapted the script with a CSB/SJU student audience in mind. It was performed in December 2008 at Saint John’s University. Each director will focus on the directing process in her presentation: a) choosing the script, b) research, c) creating a production concept, d) directing and rehearsing with one’s peers, e) the audience’s experience, and f) post-production critiques. Images from the production will also be shared.

**Internships and other work in professional theater, here and abroad; six experiences**

SARAH HOWES, ANDREA KREJCI, MASON MAHONEY, AMBER OLSEN, KEVIN SPRINGER, JENNIFER RICHTER, and THERESA LEHN, Chair

Six Theater majors share their unique hands-on learning experiences in the world of professional theater and entertainment.

Sarah Howes: Brownsville Village Theatre, Nebraska, Actor & Box Office Assistant, Summer 2008; Andrea Krejci: London’s City Academy, Management Intern, Fall 2007;

Mason Mahoney: The Gate Theatre, London, Production Assistant Intern, Fall 2008;

Amber Olsen: Des Moines Opera, Carpenter, Summer 2008; Kevin Springer: Rockhouse Productions, Assistant Recording Engineer, Summer 2008; Jennifer Richter: Buchanan Associates, London, Artist Management Intern, Fall 2008.

***Castle Danger*, an original screenplay**

CHELSEA PETTIT (Dr. Elizabeth Johnson-Miller, English, and Dr. Kaarin Johnston, Theater)

The screenplay *Castle Danger* details the story of Sally Ohman, a college student struggling to kill off the protagonist of her own creative writing assignment. This work deals with the writing process, as well as the important influence that fictional characters have in our lives. Ms. Pettit will present an overview of the screenplay and show how the original idea developed over the course of the project. In addition to the written screenplay, several scenes were filmed and edited. Along with early drafts and storyboards, these filmed scenes will be used to illustrate the progression of an idea from paper to film.

NOTES: