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** Denotes Double Major*

AMERICAN CULTURAL STUDIES

Catherine S. Fobi

Advisor: Charles I. Nero

Trans-Atlantic Representation

The focus of this thesis is visualizing African and African American experiences. The thesis consists of video and written components. The video project is a "documentary" concerning my own familial and cultural ties to Cameroun. It explores the material and spiritual similarities and differences between my story and the legacy of trans-Atlantic enslavement. The forty-five minute "documentary" uses interviews, videos, family photographs, slave narratives, fiction, music, and storytelling. The written part of the thesis complements the video project. It provides a historical overview of the representation of Africans in cinema, paying particular attention to their exploitation in mainstream and ethnographic traditions. Further, this part of the thesis examines the representation of the relationship between Africans and African Americans, using written texts and film as a means of analysis.

Meera Malhotra

Advisor: Kiran Asher

Global Ideologies, Local Realities: Gender, Labor, and Power in Jamaica's Free Trade Zones

Over the past twenty years the rapidly globalizing system of international production has come to rely more heavily upon the wage labor of third world women. Focusing on the emergence of free trade zones in Jamaica, as one facet of the international system of production, I examine the ways in which racialized and gendered constructions are implicated in this new form of women's work. Drawing upon the works of Chandra Talpade Mohanty and Maria Mies, among other feminist scholars, I demonstrate the ways in which normative gender ideologies are imbedded in capitalist structures of wage labor. In so doing, I hope to elucidate the ways in which economic development, in its current stage, is underwritten by a set of cultural prescriptions that sanction the continued exploitation of third world women.

ANTHROPOLOGY

Katharine Y. Sidell

Advisor: Loring M. Danforth

Cultural Primatology: The Emergence of a New Paradigm in Anthropology

This thesis explores the emerging sub-field of cultural primatology, whose practitioners argue that nonhuman primate species possess culture. Using the concepts of paradigm and discourse as developed by Thomas Kuhn, Michel Foucault, and Edward W. Said I analyze the field of cultural primatology as a new anthropological paradigm located at the boundary between cultural and physical anthropology. Cultural primatologists assert that when one population of a species is distinguishable from another population of the same species by behaviors that are not explained by genetic or ecological differences, culture exists. Most also believe that culture has evolved through the apes to humans emerging before primates crossed the hominid threshold. Cultural anthropologists believe that culture is distinctly human and includes complex behaviors such as religion, symbolic meaning, and language. Most believe that culture did not emerge until after primates crossed the hominid threshold and acquired social cognition. I examine the emergence of cultural primatology in its moral and political context by analyzing animal rights organizations, the recent controversy surrounding primate taxonomy, the role of the Judeo-Christian tradition, and research methods of cultural primatology. Finally, I consider parallels between the emergence of cultural primatology and the development of cultural anthropology. I believe that cultural primatologists have satisfactorily demonstrated the existence of nonhuman primate culture.

ART

Jason M. Goldman

Advisor: Erica Rand

(II)legitimate Children: Race, Gender, and Pictures of Erotic Childhood

For many, the thought of children as erotic might conjure anxious notions about an isolated, pathological, criminal attraction: pedophilia. Many scholars argue, however, that adult fictions about children's eroticism pervade our culture in a variety of forms that range from popular films such as *Home Alone* to kiddie beauty pageants. While it remains clear that there is a lasting distinction between these shared cultural fantasies about children's eroticism and actual child abuse, several scholars suggest that the adult construction of childhood innocence — the marked lack of sexuality — presupposes the adult manipulation of children as erotic subjects. Drawing from authors like James Kincaid and Anne Higonnet, my thesis uses gender and race as primary means by which to understand the fictions adults overlay on children. I compare images of girls and boys in order to understand the differential ways they are rendered erotic for the adult gaze. In so doing, I interrogate the structures which deem some images legitimate and others obscene. Moreover, I examine how

visual conceptions of whiteness inform a race-coded fantasy of childhood purity. Using contemporary U.S. advertisements, internet images, and photographs by artists such as Sally Mann, Jock Sturges, and Starr Ockenga, I explore the ways in which visual markers of sexual allure can overlap with pictures of idyllic childhood.

BIOLOGICAL CHEMISTRY

Michael P. Danahy

Advisor: Rachel N. Austin

Catalytic and Mechanistic Investigations into Organic Hydroxylations Mediated by MCM-41 Encapsulated Metalloporphyrins

The metalloenzyme cytochrome P-450 is capable of oxidizing organic substrates by activating molecular oxygen to form a high valent iron-oxo intermediate. The process incorporates a single atom of oxygen into organic substrates such as steroids and produces water. Chemistry similar to that of cytochrome P-450 (e.g., the oxidation of cyclooctene and adamantane) has been observed in organic solvents using metalloporphyrins to mimic the active site of P-450. These metalloporphyrin catalysts are appealing to industry because they can selectively oxidize a wide variety of organic substrates under mild conditions that are much cleaner than present methods. In the system developed by our group, which I am studying, metalloporphyrins (Fe(III)-tetramesitylporphyrin and its halogenated derivatives) are incorporated in a mesoporous solid, MCM-41. When encapsulated, the metalloporphyrin catalysts are able to be recovered, are stable, and are capable of many rounds of catalysis, all in a clean aqueous environment. I have observed the oxidation of aniline, cyclooctene, styrene, and adamantane to their corresponding epoxides or alcohols with high yields.

Jessica N. Garneau and Lisa M. Howe

Advisor: Pamela J. Baker

Factors Inhibiting Bacterially Induced Alveolar Bone Loss in Mice

Periodontal disease, which affects both the gingival supporting connective tissue and the alveolar bone in the jaw, is among the most common chronic human disorders and is associated with the presence of gram negative, anaerobic bacteria, including *Porphyromonas gingivalis*. Prior studies have indicated that infection with *P. gingivalis* leads to alveolar bone loss in mice, a symptom that is also characteristic of the disease in humans. In these experiments we examined the effects of adaptive immunity as well as the medications tetracycline and cat's claw on alveolar bone loss in mice after infection with *P. gingivalis*. Infected C57BL/6J TCRA mice, which are immunodeficient (T cell deficient in the alpha chain), exhibited significantly less bone loss than did infected immunocompetent C57BL/6B4J mice. This suggests that adaptive immunity, normally protective, in fact destructively contributes to bone loss. Tetracycline, a known antimicrobial agent, and cat's claw, an herbal immunostimulant, were administered to infected DBA/1J and C57BL/6B4J mice respectively, resulting in inhibition of

bone loss compared to control mice. These experiments suggest that this method of bacterial infection in mice is useful for both immunological and therapeutic studies.

BIOLOGY

Jacob M. Kasper

Advisor: William G. Ambrose/Joseph G. Pelliccia

Phenotypic Variations in the Dog-Whelk, *Nucella lapillus*, Across a Gradient of Wave Exposure in Maine, USA

The genotype and phenotype of *Nucella lapillus*, an intertidal gastropod that exhibits nonpelagic, direct development, was measured across a gradient of wave exposure, ranging from environments with high wave energy to environments with low wave energy. Shell morphologies and allozymic variation, at three different loci (Mdh, Me-2, and Adh) were measured for all individuals. In order to provide an independent measure of wave action, maximum onshore wave action, was measured over two-week intervals by the use of a dynamometer, and compared to offshore buoy data.

Benjamin W. Murdock

Advisor: Pamela J. Baker

The BR96 sFv-PE40 Immunotoxin as a Method of Eradicating Human Cervical and Endometrium Carcinoma Cells *in vitro*

Since the National Cancer Act of 1971, substantial progress has been made in eradicating solid tumors in human patients, leading to longer life expectancies than previously possible. However, the complete elimination of cancer in a significant percentage of patients has yet to become a reality. Chemotherapy drugs currently utilized to eliminate cancer cells are nonspecific toxic agents that destroy both cancerous and healthy dividing cells. Due to this limitation, there is a need for more specific methods of killing cancer cells. This has led to the development of immunotoxins currently in clinical trials across the United States as a method of specifically targeting and eradicating tumor cells over healthy cells. Immunotoxins or "magic bullets" are chimeric molecules containing a ligand which recognizes specific cell populations that have been linked to a toxin molecule capable of killing cells. The purpose of the study is to characterize the effectiveness of the BR96 sFvPE40 immunotoxin in binding to and killing human carcinoma cells *in vitro*. Experimental results indicate that the immunotoxin is binding to and killing human cervical carcinoma cells. Additional studies are currently underway to characterize the effectiveness of the immunotoxin on human endometrium carcinoma cells.

CHEMISTRY

Jolene E. Thurston

Advisor: Thomas J. Wenzel

Lanthanide-Crown Ether Systems as Chiral NMR Shift Reagents

The compound (+)-(18-crown-6)-2,3,11,12-tetracarboxylic acid (Cr I) is studied as a chiral NMR solvating agent for ammonium salts of primary amines, amino acids, amino alcohols, and amino esters. The enantiomeric discrimination in the NMR spectra of substrates with Cr I is generally larger than observed with previously reported crown ethers. In contrast to the other crown ethers, Cr I can also be used with neutral primary amines as the amines are protonated through a neutralization reaction with one of the carboxylic acid moieties of Cr I. The addition of ytterbium(III)nitrate to the crown-substrate mixtures causes upfield shifts in the NMR spectrum of the substrate and considerable enhancements in the enantiomeric discrimination for several substrates. The shifts occur because the ytterbium binds to the carboxylic moieties of the crown. A second crown ether derived from D-galactose (Cr II) is also studied as a suitable chiral NMR solvating agent for protonated ammonium salts. A method of enhancing the enantiomeric discrimination with Cr II through the addition of lanthanide ions is described.

CLASSICAL AND MEDIEVAL STUDIES

Alyssa C. Hemmerich

Advisor: Michael E. Jones

Anglo-Saxon Kingship, King Alfred, and the Formation of an English Identity

Beneath the hedgerows of English history, mythology, and scholarly reflection lie the roots of an English national identity. Historians continue to dispute both the chronological origins and essential causes of a distinct English identity. Studies in the origins of national identities raise emotionally and politically charged questions. The relevant source material is highly problematic and often misleading. In terms of medieval England, identity and kingship cannot be separated. Charismatic leadership, ecclesiastical influence, and external military threat were all crucial components of the foundation of an English identity. My thesis defends the stance that the reign of Alfred of Wessex (871-899) served as a turning point in English history, confirming the existence of a manufactured identity. His actions within the context of the given situation decidedly produced an "English" people.

CLASSICAL & ROMANCE LANGUAGES & LITERATURES

French

Christine L. Quinan

Advisor: Mary T. Rice-DeFosse

Le Projet du *Deuxième Sexe*

Often overlooked or regarded solely as a footnote to her companion, Jean-Paul Sartre, Simone de Beauvoir has only recently been recognized for her significant contributions to the study of philosophy. Because of her thorough examination into the nature and construction of woman and femininity in *The Second Sex* and other influential works, she is also considered by many to be the founder of contemporary feminism and the women's movement in France. In my thesis, I analyze the specific impact *The Second Sex* had at the time of its publication in 1949, a time when virtually no philosophical work of this kind was conducted on women. I then investigate the reemergence of her influential work using a series of interviews that Beauvoir conducted twenty-three years later during the rise of the women's movement, or the M.L.F. (Mouvement de Libération des Femmes). Finally, I consider the implications of *The Second Sex* in light of contemporary feminism.

Spanish

Austin J. Philbin

Advisors: Richard V. Wagner/Luz María Umpierre

The Forgotten Pair: A Psychological Investigation of the Puerto Rican Mother/Daughter Relationship Through the Use of Contemporary Puerto Rican Literature

The psychological impact of the intersection between colonialism, adolescent individuation, and self-esteem in the development of the Puerto Rican mother/daughter relationship is currently unknown. This study examines the behavior exhibited by the mother and daughter from three pieces of contemporary Puerto Rican literature (*Nilda*, *Porque hay silencio*, *Cuando era puertorriqueña*) to assess the impact of the intersection. Outside readers evaluated the adolescent individuation of the daughter by ranking selected passages on four criteria: 1) self-assertiveness, 2) mutuality, 3) separateness, and 4) permeability. Grotevant and Cooper's (1986) model of individuation contains three theoretical levels, where the first level is the individuation concept itself. At the second level, individuation is sub-divided into individuality and connectedness. At the third level, there is further subdivision of individuality into self-assertion and separateness, and of connectedness into mutuality and permeability. Comparisons to Coopersmith's inventory gauged the self-esteem of the characters. Investigation of colonial influence suggests that the addition of a new category of literary interpretation for the actions of the Puerto Rican adolescent toward the mother country may be necessary. The new category, ambivalence, occurs when the daughter encounters a physical manifestation of Puerto Rico within the confines of the United States. Examination of the characters' behavior indicates that the combination of colonialism, individuation, and self-esteem creates difficulties for the development of the Puerto Rican mother/daughter relationship.

ECONOMICS

Christian A. Cheney

Advisor: Emily Mechner

Understanding Currency Crises: A Comparative Study

The rapid deterioration or forced devaluation of a nation's currency has significant effects on its patterns of trade and in turn on the overall health of its economy. This thesis uses a probit model with random effects on a panel data set with quarterly observations for thirtyfive countries from 1975 through 1999 to investigate what indicators increase the probability of a crisis and whether these indicators are significant for all regions at all times. The financial indicators — the real exchange rate, declining monetary reserves, increases in the growth rate of monetary domestic credit, and unsustainable current account deficits — all significantly increase the probability of a crisis. However, these indicators are not equally important and some regions exhibit different patterns. Institutional variables, such as banking crises and financial liberalization programs, prove to be strong indicators of currency crises, but only in emerging markets. Further, countries with an autonomous monetary authority and a stated goal of price stability have a lower incidence of depreciations and devaluations than those without.

Nadezhda A. Serebryakova

Advisor: David A. Aschauer

Causes of Currency Crises: The Russian Case of 1998

The impact of the currency crisis of 1998 on the Russian economy was detrimental: a sharp devaluation of the ruble, a collapse of the emerging stock market, and a decrease in domestic and foreign investment. Can currency crises be predicted and prevented? This thesis provides an empirical explanation of causes of currency crises in thirty-one countries, including Russia. I investigate the importance of such economic indicators as seignorage, real exchange rate misalignment, current account balance, loss of foreign reserves, terms of trade shock, negative per capita income growth, contagion effects, and budget deficits. Using a probit model with random effects on a panel data set with annual observations from 1975 to 1998, this paper determines the factors that increase the probability of a crisis. I also examine whether there is a fundamental difference between currency crises in Russia and other countries.

ENGLISH

Sze Wei Ang

Advisor: Carole A. Taylor

Boundaries of Time and Identity in the Fiction of Gloria Naylor

Gloria Naylor's fictional worlds involve problematic divisions regarding race, class, and gender, both in the thematic focus of her novels as well as through the narrative strategies and structures she employs. This thesis examines how the formation of identity and time in her fictional worlds corresponds to the actual construction of narratives that are both social criticism and art. It deals with what narration says about how time affects the African-American experience of the present, but it also addresses the way narrative time itself functions within the world of the text. The theme of finding one's own voice and identity is juxtaposed with Naylor's artful use of shifting perspectives and multivocality that gives her narratives diverse structures. The divisions within these fictional worlds also find expression in how she draws structural boundaries, which in turn creates the meaning of symbolic boundaries. Naylor's fictions develop, both formally and thematically, symbolic places related to actual worlds but without the boundaries of those worlds.

Forgan C. McIntosh

Advisor: Craig J. Decker/Robert L. Farnsworth

Studies in Austerity: Selected Translations of the Poetry of Georg Bydliniski

This thesis consists of a translation of selected works by Georg Bydliniski, a contemporary Austrian poet, followed by an analysis of the poetry. To date, Bydliniski has published six volumes of poetry along with various other works including translations of American Indian writings and children's books. His poetry has never been translated into English. The task at hand is to translate approximately 130 to 150 poems, which appear with the originals in the final text. Bydliniski's work is analyzed in order to place it within the context of modern Austrian poetry. The analysis also includes a discussion of the process of translation as it relates to both languages. Both an English- and a German-language version of the analysis appears in the thesis. A short biographical introduction to Bydliniski precedes the translations.

Sara J. Milstein

Advisor: Sanford A. Freedman

The Evolution of Hebrew from a Religious Poetic Language to a Secular Poetic Language through the Lens of Yehuda Amichai

This thesis explores the evolution of Hebrew poetics from its roots in liturgical or "synagogue" poetry to its present day occupation in Israel as "secularized poetry," through the lens of the poet laureate of Israel, Yehuda Amichai. While Amichai shows a deep affinity and admiration for several medieval poets of Spain, namely Shmuel Hanagid, Yehuda HaLevi, and Solomon Ibn Gabirol, his

own poetic style emerges as both a revolutionary and political one, as he dares to combine religious prayers in the same verses as army chants, demonstrating the discordance and despair he experiences in turning from his "father's God." In one particularly autobiographical volume, *Travels of the Last Benjamin of Tudela*, Amichai delves into personal issues of guilt, despair, and loneliness in light of his upbringing, immigration, and eventual dissent from Orthodoxy. Poems from this volume occupy the second chapter's discussion in order to represent Amichai's most all-pervasive concerns. The final chapter culminates in a comparison among translators, assessing their skill in capturing Amichai's most important objectives. The thesis serves to present Amichai as a poet in a series of Hebrew poets, and as a writer emerging with a unique and bold poetic style that allows him to express his most intimate struggles in a simple, yet distinctly raw, voice.

Justin F. Scheck

Advisor: Steven C. Dillon

Building the House of Being: Seeing Through Heidegger to *Finnegans Wake*

James Joyce's *Finnegans Wake* has been criticized, explicated, and interpreted to no end; however, most of this criticism fails to approach the book as something more than linguistic sophistry. By developing an understanding of Martin Heidegger's conceptual constructs of existence and its "in-the-world", one can look at *Finnegans Wake* in a new light, as a text that serves to illuminate our own world. By using Heideggerean thought as expressed in *Being and Time* and the later writings, themes of building, human existence, temporality, and linguistic world-making come to the forefront in the consideration of the *Wake*, and provide a better understanding of Joyce's undertaking.

ENVIRONMENTAL STUDIES

Susannah K. Canfield

Advisor: William G. Ambrose

Chemical Analysis of Anthropogenic Heavy-Metal Contamination and its Relation to Land Use in the Webhannet River Marsh, Wells, Maine

Cores (2 m in length) were taken, using vibracoring techniques, from two salt marshes in Wells and Phippsburg, ME, in order to examine the differences in modern anthropogenic heavy metal pollution trends between a highly developed site and a relatively pristine one. Sediments were dissolved in aqua regia leachate, and concentrations of Cu, Fe, Mn, Pb, and Zn were determined using Inductively Coupled Plasma Emission Spectroscopy (ICP). Loss-on-Ignition analysis was completed in order to determine the percent organic material throughout the core. ¹³⁷Cs dating was used to relate recent temporal patterns in the metal concentrations to land use. Concentrations of those metals that are primarily a result of anthropogenic activities increased in the top 20 cm of sediment in the Wells core with Pb and Zn more than doubling and Cu increasing only slightly. The recent increase in these pollutant metals is coincident with Wells' highly developed surroundings, which contribute

contaminated runoff and groundwater to the marsh. Those metals typically associated with natural weathering processes, including Fe and Mn, increased slightly in the top 20 cm, but with other minor variations throughout the length of the core. Results suggest that salt marsh sediments are ideal for reconstructing recent changes in local and largescale anthropogenic pollution.

Robin E. Dodson

Advisor: Curtis C. Bohlen

Global Warming: Sea Level Rise and Coastal Wetlands in Maine

Within the next 100 years, the coastal wetlands of Maine will be significantly altered as a result of sea level rise due to the phenomenon of global warming. Coastal wetlands exist along approximately 20% of Maine's 5,970 km coastline. Coastal wetlands provide valuable ecosystem services such as habitat for endangered species and fish larvae. Although wetlands have been able to adjust to previous changes in sea level because of their ability to accrete sediments and migrate landward, the accelerated sea level rise expected in the next 100 years will likely result in a significant reduction of coastal wetland area. The fate of the coastal wetlands ultimately depends upon policies, both existing and prospective, which would regulate coastal development near wetlands and coastline maintenance. These policies, both at the state and federal level, may help mitigate wetland loss in the future as well provide insurance mechanisms for services lost to wetland reduction. For this study, sixteen quads were randomly chosen to represent the coast of Maine. For each quad, appropriate National Wetland Inventory data and contour information were spatially analyzed under three sea level rise scenarios using ArcView GIS. Percent reduction calculations were made for each quad and then extrapolated to obtain calculations for the entire coast.

Ethan L. Miller

Advisor: William S. Corlett

Species Trouble: 'Animals,' 'Humans,' and the Possibilities of Biosocial Justice

The oppression of multiple groups of "human" beings in the West has been (and continues to be) interconnected to the oppression of non-human "animals." Indeed, the "human" and the "animal" can be understood as biosocially-produced identities that mutually shape one another. Analytical separation between the "human" and the "animal" risks reproducing discourses of domination in one realm while seeking liberation in another. After examining some of the ways in which these oppressions are mutually constituted, I develop a categorical framework through which to examine the pitfalls and promises of various "human" and "animal" liberation strategies. Recognizing the limitations of these strategies, I turn to two contemporary theorists whose emancipatory concerns address both the "human" and the "animal." Negotiating between Val Plumwood's critical attempts to dismantle the dualisms that structure many forms of oppression and Donna Haraway's visions of boundary transgression, interspecies world-construction, and situated solidarities, I seek to articulate a strategy that interrogates oppressive constructions of the "human" and "animal," recognizes common kinships while respecting differences, and opens up possibilities for responsible interspecies relationships.

GEOLOGY

Kara Bristow

Advisor: J. Dykstra Eusden

Kinematic Analysis of Hermit Island: the Norumbega Fault Zone, Southwestern Maine

A kinematic structural analysis of an area in Casco Bay, Maine is used to determine the tectonic history behind a portion of the Appalachian Mountains. Hermit Island has been affected by the regional Norumbega Fault Zone, which is a northeast trending dextral strike-slip system. Through kinematic analysis of the area a better understanding of general strike-slip faults and brittle-ductile deformation of rocks were gained. The area of study is located in southwestern Maine on the tip of Small Point at Hermit Island. The Casco Bay area is a peninsula dominated by large rocky outcrops with rare sandy beaches, it is a classic glacial drown coastline. The rock types are composed of interbedded calcsilicate, schist and quartzite layers with some intruding granite veins that trend to the northeast. The mineral assemblages include quartz, garnet, feldspar, staurolite, and tourmaline. Quartz-andalusite-sillimanite veins are in abundance and indicate temperature and pressure conditions of formation of 650°C and .25Gpa (\approx 10km depth). Indicators show an overall right-handed sense of shear. Most of these structures are defined by reoriented veins with antithetic slip (boudin strings), asymmetric clasts and pods, asymmetric S- and Z-folds, sinistral kinks, quartz rods, and non-cylindrical sheath folds. These indicators demonstrate that early ductile deformation took place at depths of greater than 10 km below the earth's surface, and was followed and overprinted by ductile-brittle deformation at and above 10km. As rocks were stripped off the surface by erosion the shearing which began as ductile became brittle-ductile then finally brittle. The site at Hermit Island directly relates to the tectonics associated with the strike-slip movement of the regional Norumbega Fault Zone.

Frederick T. Brown

Advisor: J. Dykstra Eusden

The Faults and Stratigraphy of the Gulf of Slides Area, Presidential Range, New Hampshire

A section of Mt. Washington, New Hampshire, southeast of the summit and mostly below the alpine zone was the area of study for this thesis. A map of the bedrock geology was created in an on going process of mapping the structural geology of the Presidential Range. The purpose of this study was to constrain Acadian tectonism by investigating the variations of stratigraphy and structures, with emphasis on the faults, that occurred during the Devonian Acadian Orogeny. The five formations that were found in this area were metasedimentary rocks deposited in the Devonian and Silurian. Within the area, two phases of faulting, three phases of ductile deformation and a late phase of brittle faulting were identified. The earliest phase of deformation (D0) is characterized as a premetamorphic normal fault that cuts out the Silurina Madrid and Smalls Falls Formations and is deformed by all later phases of folding. The normal fault of this study was named the Graham Trail Normal Fault. D2, is a thrust fault phase, termed the Glen Boulder Thrust Fault in this area. It truncates an F1 fold and also cuts out the Silurian Madrid and Smalls Falls Formations, leaving the

Devonian Littleton Formation juxtaposed against the Silurian Rangeley Formation. D4 was the cause of the major fold structures as well as the most extensive event in the area. The Mesozoic (?) Glen Ellis Falls Fault, in the southeast part of the study area, is characterized by brittle faulting, fractures and vuggy silicified zones.

Katherine M. Heggeman

Advisor: Lois K. Ongley

Remediation of Arsenic Contaminated Water Using the Sorption Capabilities of the Soyatal Formation, Zimapan, Mexico

Arsenic contaminated drinking water in the Zimapan Valley of Hidalgo, Mexico is a health concern. The Soyatal Formation, a Cretaceous shaly limestone has been shown to adsorb arsenic. The aqueous arsenic adsorbs to the kaolinite and illite present in the shale beds of the Soyatal Formation. Sorption isotherms quantifying arsenic sorption to the Soyatal Formation were measured experimentally using contaminated waters with varying arsenic concentrations and rock/water ratios. This shale has an adsorption capacity of about 150 milligrams of arsenic per kilogram of rock. Preliminary analysis indicates that 2 kilograms of crushed Soyatal is sufficient to decontaminate 140 liters of water. With occasional stirring, each decontamination cycle can process twenty liters of water in twenty-four hours. This low-tech, low-cost remediation technique will make clean drinking water available to even the poorest residents of the Zimapan Valley.

Benjamin R. Trafton

Advisor: Michael J. Retelle

Late Holocene Paleoclimate Reconstruction Using Laminated Sediments from Meromictic, Cape Hurd Lake, Devon Island, Nunavut, Canada

Annually laminated sediments from high Arctic lakes provide important paleoclimate records for a region of the Canadian Arctic where high-resolution records of climate change are presently lacking. A cross-basin transect of sediment cores was recovered from Cape Hurd Lake, southwestern Devon Island, Canada (74° 33' 35.5"N and 89° 36' 50"W). Cape Hurd Lake is a deep flat-bottomed coastal meromictic lake at sea level with a maximum depth of 55 meters and anoxic, hypersaline bottom waters overlain by a cap of brackish to normal salinity water. The lake is recessed in a broad coastal plateau upon which sits a small ice cap that provides the lake with runoff with terrigenous sediment during the melt season through one of its two main inlet streams. Laboratory analyses of sediments include down-core measurements of magnetic susceptibility, loss-on-ignition, and grain-size. Petrographic thin sections were prepared for analysis of lamination thickness and composition. The laminations are couplets of fine-grained terrestrial mud and opaline diatomaceous biogenic sediment that may originate from ice algae. Laminated sediments provide information on the distinct seasonal sedimentation processes in the lake, which are controlled by environmental conditions including ice thickness and snow cover, summer melt processes, and annual precipitation.

GERMAN, RUSSIAN & EAST ASIAN LANGUAGES & LITERATURES

German

Daniel J. Gavin

Advisor: Craig J. Decker

Die komische Figur im Volksstück: Meister der Verschmelzung von Komik und Ernst

The term "Volksstück" (popular comedy) frequently conjures up notions of a trivial genre that only serves as a form of socially affirmative entertainment. Accordingly, the Volksstück is often neglected in the study of Austrian literature due to its allegedly insignificant and superficial nature. I believe that we need to abandon such preconceived ideas and examine the comical character in these dramas in order to see how they make use of improvisation, word plays, and parody to advance social criticism. My thesis focuses on three pivotal stages in the evolution of the "Volksstück" and its attending comical figure: 1) The "Hanswurstiaden" of the eighteenth and early nineteenth centuries; 2) the plays of Johann Nepomuk Nestroy and Ferdinand Raimund in the mid-nineteenth century; and 3) the dramas of Ödön von Horváth in the early twentieth century. Through analysis of texts from these three time periods, I aim to demonstrate that the comical character does maintain a critical function in relation to the socio-political affairs of their respective epochs.

Kate H. Kenoyer

Advisor: Denis M. Sweet

Das Bauhaus: Eine Vision des "Neuen" in der Weimarer Republik

After the defeat in World War I and before the rise of Nazi power in World War II, Germany's Weimar Republic existed in a state of political and social unrest and economic chaos. Weimar conditions provoked disunity within society and encouraged radical movements that confronted the outmoded traditions of the Kaiser era. My thesis analyzes the establishment of the Bauhaus under the direction of Walter Gropius as one of the most prominent attempts to overthrow society's old conventions. By concentrating on Gropius' goals of the Bauhaus proclaimed in the Bauhaus Manifesto, I focus on the school's ambition to create an egalitarian community that would point toward a better world. I address Gropius' idea of eliminating class divisions and arrogant barriers between craftsman and artist, and teacher and student as driving forces behind the success of the movement. In conclusion, I argue that the Bauhaus, through its unified application of art, architecture, and technology in the school's workshops, is a vehicle for dramatic reform in twentieth-century society.

Forgan C. McIntosh

Advisor: Craig J. Decker/Robert L. Farnsworth

Studies in Austerity: Selected Translations of the Poetry of Georg Bydlinski

This thesis consists of a translation of selected works by Georg Bydlinski, a contemporary Austrian poet, followed by an analysis of the poetry. To date, Bydlinski has published six volumes of poetry

along with various other works including translations of American Indian writings and children's books. His poetry has never been translated into English. The task at hand is to translate approximately 130 to 150 poems, which appear with the originals in the final text. Bydlinski's work is analyzed in order to place it within the context of modern Austrian poetry. The analysis also includes a discussion of the process of translation as it relates to both languages. Both an English- and a German-language version of the analysis appears in the thesis. A short biographical introduction to Bydlinski precedes the translations.

Matthew A. Payson

Advisor: Denis M. Sweet

Die romantische Suche nach der wirklichen Wirklichkeit: Ludwig Tieck als Exemplar

The German Romanticists were a young generation of writers and artists frustrated and disappointed with the results of the Enlightenment. They felt that the world around them and their relationship to it could not be sufficiently understood only using the intellect, and that a secularized world was too narrow a view to adopt. Therefore, they sought to reform the human consciousness of self and of the world in which they lived. This thesis analyzes some of the works of Ludwig Tieck, a good example of Romanticism in Germany. I show that Tieck furthered the work of the Romanticists in his writing through specific means. First, Tieck asked the Romantic question, "What is the true reality? Is there one?" He then attempted to answer it in the reforming of the relationships between humanity and nature, and humanity and the supernatural. Tieck reshaped the Enlightenment's model of humanity as the dominating force in the world through the use of the intellect and science, into the Romantic (and specifically Tieckian) model of humanity as merely representing a small piece of a larger whole, where nature and the metaphysical together represent the principal forces.

Japanese

Megan C. Tobin

Advisor: Melissa L. Wender

Dystopian Images in Mariko Ohara's "The Most Beautiful Boy in the World"

Modern America tends to view Japan as a fast-paced haven of electronics and flashing lights. This viewpoint is further reinforced by the growing popularity among American youth of Japanese animation, much of which falls within the science fiction genre. This emphasis on the modernization of Japan is cultivated in our science fiction where many authors portray Japan as the epitome of technological advancement. William Gibson, a prominent North American author whose works helped define the subgenre of science fiction called cyberpunk, uses Japan as a model for many of his futuristic settings. He depicts Japan as the originator of all upcoming modern advancements, especially in the surgical and genetic meshing of the human body directly with technology. Given this image of Japan in American science fiction, I plan to examine Japanese viewpoints concerning the future of mechanization as seen through Japanese science fiction to determine how they compare. I translated "The Most Beautiful Boy in the World," written in 1997 by Mariko Ohara. Through an analysis of the

themes of this short story, I examined Japan's advancing technological strength as seen by the author and her contemporaries. By enumerating concerns about the place of computerized devices in the human body and the ill effects of industrialization on both environment and humanity, which result here in war and pollution, this story presents a pessimistic view of science and technology. Ohara paints technological prowess in a negative light and shows the ways in which it can undermine rather than contribute to the healthy progress of society.

HISTORY

Katherine S. Dodson

Advisor: René Harder Horst

Raising Voices: The Mothers of the Plaza de Mayo and the Politics of Maternal Empowerment

The Mothers of the Plaza de Mayo, a human rights group in Argentina comprised entirely of women, first organized in 1977 to protest the government-endorsed "disappearances" of their children under the military dictatorship of 1976-1983. In a country in which military repression and the oppression of women were commonplace, the Mothers cultivated a unique socio-political association that paradoxically rejected and encompassed elements of traditional Argentine "female" roles. Without abandoning their machismo-inspired position in the private sphere of the home, the Mothers developed a new public identity that reflected the primacy of motherhood and "collective maternity." With their blend of militancy and motherhood, the group embodied many of the essential elements of *feminismo de la diferencia*, or difference feminism. In their public demonstrations and their political ideologies, the Mothers of the Plaza de Mayo drew upon their unique experiences as women to carve out their own place in the country's patriarchal political dialogue.

Rebecca A. Goetz

Advisor: James S. Leamon

Private William Dorr's March to Quebec: A Study in Historical Ambiguity

William Dorr was only nineteen years old when he left his native Roxbury, Massachusetts, to join Benedict Arnold's 1775 expedition to Quebec. Dorr, like many of his comrades, kept a journal of his experiences crossing the Maine wilderness and fighting the British at Quebec. The rediscovery of his original manuscript and its transcription offers a unique opportunity to examine the events of the march from the perspective of an ordinary soldier on the first offensive action of the Revolutionary War. But more importantly, the study of Dorr's diary can offer insight into solving a puzzling historical problem: several of the diaries kept by men on this expedition are nearly identical to one another in content and form. Although historians have pointed out this phenomenon, none have yet tried to explain it. While this question cannot be answered definitively, there are several possible explanations that break new historical ground worth considering. Lastly, in tracing Dorr's life after the American Revolution as a new settler in Hallowell, Maine, the life and outlook of one veteran come into focus.

INTERDISCIPLINARY STUDIES

Heather E. Adkins

Advisor: Michael J. Retelle/Bruce J. Bourque

Geoarchaeology of Merrymeeting Bay, Coastal Maine: Correlations between Late Holocene Sea-Level Rise and Human Occupation

Merrymeeting Bay, located on the central coast of Maine, is a culturally rich area that exhibits a long continuity of human occupation. The purpose of this thesis is to correlate the paleogeographic evolution of the Bay and its archaeological record. Rising sea levels throughout the Holocene impacted human settlement along the coast of Maine. Corresponding increases in tidal range not only affected the surficial environment, but also lead to changes in ecological productivity of estuarine resources. These changes required aboriginal peoples to adapt, and these adaptations are recorded within the archaeological record. Insights to the development of these adaptations can be gained in this comparison of the archaeological record to the paleoenvironment. This thesis hypothesizes that the prehistoric settlements located on Merrymeeting Bay correspond to knickpoint locations, known as waterfalls, in the paleochannels. These areas were crucial historic and prehistoric resources that allow early settlers to catch fish. Acoustic seismic traverses confirmed the location of two presently drowned knickpoints on the lower Androscoggin River and one at the mouth of the present Muddy River. The two paleoknickpoints on the lower Androscoggin River were found in the region of Cow Island and Freyee Islands. Plotting the present elevation of these knickpoints on the sea-level curve for the Maine coast gives a relative date of inundation. These dates in conjunction with dates of occupation from archaeological sites allows a complete assessment of the settlement pattern, focused specifically cultural responses to sea-level rise.

Rachel R. Cymrot

Advisor: Georgia N. Nigro

The Adolescent Children of Lesbian Parents: Perceptions of Family, Work, and Friends

My thesis is the first to study adolescent children born to lesbian parents. I focused on their perspectives of family: their perceptions of division of labor, support networks, experiences with homophobia, and their ideas on the meaning of family. I conducted in-depth interviews with twelve participants between the ages of twelve and eighteen and analyzed the data using the grounded theory method. After coding each interview, I compared and contrasted the common themes addressed by each participant. As with most children, these adolescents are beginning to spend more time with their peers and often receive conflicted messages regarding the value of their family structure versus the societal image of a "traditional" family. Most participants were in the process of working out this conflict and forming their own ideas about the meaning of family, and specifically, the value of lesbian-headed families. Several themes ran through each interview: participants said that their parents' personalities, skills, and schedules determine household chores; they felt that family is based on love and commitment, not blood relation; some were "out" about their family, whereas others felt they could not tell people for fear of their reactions; most dealt with teasing from friends, whereas a few

had never faced homophobia; some participants felt curiosity regarding fathers, whereas others felt ambivalent toward male role models. Factors such as geographic location and family's involvement in organizations played a part in participants' experiences with acceptance.

Jamie L. Homer

Advisor: James G. Richter

Culturalism and Globalization in Catalonia, Spain: An Examination of the 1992 Barcelona Olympic Games

This investigation examines how the modern phenomena of nationalism and globalization have shaped the manner in which Catalonia, Spain defines itself as a region in relation to both Spain and the world at large. The thesis focuses on the avenues through which Catalonia strives to create a distinctive regional identity while maintaining amiable relations with the center and seeking recognition in the international sphere. Emerging from forty years of repression under the fascist dictatorship of General Francisco Franco, Catalonia has struggled to revitalize regional culture through the promotion of the vernacular language, the reinforcement of ritual, and the employment of symbols. Though demanding recognition of political and cultural autonomy from the government in Madrid, Catalonia does not advance propositions for independence from the center. Instead, Catalans request acceptance of their distinction and a certain respect for their regional desires of stimulating Catalan culture and their international objectives of interacting in global society. Examination of the 1992 Barcelona Olympic Games exemplifies efforts to define Catalan identity on the world stage. Acting as a host for this tremendous international spectacle, Catalonia seized upon opportunities inherent in the bidding and mobilization processes as well as the actual hosting to advance its cultural distinctiveness and encourage recognition outside national borders. Further, the technological innovations advancing media capabilities allowed Barcelona's modernization, Catalan ritual, and Spanish unity to reach an international audience, thereby fostering means for shaping and reshaping identity.

MATHEMATICS

Elizabeth H. Sharp

Advisor: John A. Rhodes/Bonnie J. Shulman

Paul Erdős: His Work and Legacy

Paul Erdős was one of the most prolific and eccentric mathematicians of the twentieth century. He published over 1,500 papers and lived a nomadic life, never having a permanent home or position. This thesis explores both Erdős' contributions to number theory and combinatorics, and Erdős as a symbol of the mathematics community. The thesis begins with an overview of his major contributions to many branches of mathematics, then studies in detail his proof of Bertrand's Postulate and his contribution to Ramsey Theory. Next, I examine the significance of Erdős as a hero and icon within

the mathematics community. I offer evidence that this image is part of a pattern of exclusive practices within the community, and then consider additional means by which the community creates an elite society. Focusing on how mathematics is portrayed and what a mathematician is expected to be, I look at the ways in which these images are perpetuated in the classroom and written texts. Finally, I propose alternative ways in which mathematics could be taught, learned, and presented in order to create a more inclusive society of mathematicians.

Caleb M. Shor

Advisor: John A. Rhodes

Elliptic Curves and Their Applications to Cryptography

The field of cryptography has grown very rapidly in the past twenty-five years. Once used primarily for military purposes, cryptography is now in everyday use, such as in internet commerce, automated teller machine transactions, and cellular phone communications. This thesis focuses on the theory of elliptic curves and their uses in cryptography. It explores elliptic curve analogs of traditional cryptosystems, as well as the use of elliptic curves for attacking current cryptosystems.

Peter C. Staecker

Advisor: Peter N. Wong

Coincidences of Mappings on Smooth Manifolds

The thesis investigates fixed-point and coincidence theory for smooth mappings on Riemann surfaces. Our primary approach to these areas is via the Lefschetz number, defined first in terms of oriented intersection theory and secondly in terms of the de Rham cohomology of differential forms. Substantial expository work on preliminaries is presented, explaining the basics of differential topology, oriented intersection theory, and differential forms theory. The goal is to make a definitive statement concerning Lefschetz fixed-point and coincidence numbers of smooth mappings defined on Riemann surfaces, in particular the Torus. Possible generalizations in the general theory of Riemann surfaces are also presented.

MUSIC

Courtney A. Elf

Advisor: William R. Matthews

Three Compositions for Chamber Ensembles

This thesis project is a portfolio of three multi-movement compositions for chamber music ensembles. The pieces, written for string quartet, chamber choir, and flute and piano duo, reflect the diversity of musical interests and influences I have had throughout my studies at Bates. *String*

Quartet in D Minor is in four movements, with the first two reminiscent of the music of the Romantic Era and the second two influenced by Middle Eastern dance music. The chamber choir composition *Tie Hristos (To You, Christ)* is a set of six a capella vocal pieces about the life of Christ. The movements deal with the Immaculate Conception, birth, baptism, Crucifixion, death, and Resurrection of Jesus. The music of these pieces demonstrates the blend of Western and Eastern European musical traditions in the Orthodox Church. The flute sonata *Duet in E Flat for Flute and Piano*, in three movements, is influenced by the music of Copland, Ravel, and American vernacular styles.

Carey L. Sargent

Advisor: Emily W. Kane/Amy C. Beal

Performing Rock, Performing Gender: A Qualitative Study of How Women Musicians Subvert Gender Norms within Rock Music

This study combines sociological theories regarding the accomplishment and performance of gender with ethnomusicological and musicological writings on the creation of gendered musical meanings in performance. Within this frame, I study how certain women rock musicians accomplish gender within their musical performances. Specifically, the performers studied are Stevie Nicks, Bonnie Raitt, Meshell N'Degeocello, and Cindy Blackman. These performers were chosen to represent a range of styles and instruments within rock, rather than to act as a sample which produces generalizable results. By viewing videos of their "live" performances and treating this viewing as a form of qualitative field observation, I unearth how these performers subvert normative conceptions of gender that exist within the masculine discourse of rock music. Each performer has a unique way of subverting these gender norms by destabilizing the masculine subject of rock music. Concluding this study, I assess the value of rock music as a medium for women's expression.

Jennifer A. Winslow

Advisor: James P. Parakilas

Putting Chamber Music on the Public Stage: Arriaga's String Quartets and the Viennese Tradition in Early Nineteenth-Century Paris

In 1822, a young Spanish musician traveled from Bilbao, Spain to the Paris Conservatoire where he would study, perform, and compose for the last four years of his short life. Juan Crisóstomo de Arriaga was a composer of several works, including a set of three string quartets, which today are his best known works among performers, audiences, and musicologists. This thesis looks at the development of the string quartet and the Parisian reception of this musical genre upon Arriaga's arrival at the Conservatoire. Through his studies and contact with a trio of musicians who were composers themselves (Luigi Cherubini, Pierre François Baillot, and François Joseph Fétis), Arriaga was encouraged and inspired by the ways in which they represented the development and appreciation of the string quartet. I also examine the way that Arriaga's string quartets represent a response to the string quartets of the Viennese masters (Haydn, Mozart, and Beethoven), as well as a response to the Parisian reception of these works.

NEUROSCIENCE

Carly A. Dell'Ova

Advisor: Nancy W. Kleckner

Characterization of Inhibitory Glutamate Responses in Motor Neurons Involved in Feeding Behavior in the Pond Snail, *Helisoma trivolvis*

The pond snail *Helisoma trivolvis* uses the neurotransmitter, glutamate, to modulate feeding behavior. Two individual neurons from the buccal ganglia of the snails, B5 and B19, have been identified as motor neurons involved in feeding. These neurons are inhibited by glutamate. This inhibitory action of glutamate in *Helisoma* and other invertebrates contrasts its actions in vertebrate animals, which are almost always excitatory. The present study is an examination of the pharmacology of the receptors mediating the inhibition by glutamate. Intracellular recording techniques were used to examine glutamate analogs for their ability to mimick the actions of glutamate in cells B5 and B19. Quisqualate, a known glutamate receptor agonist (activator), mimicked the actions of glutamate in all cells tested. The agonist ACPD inhibited B5 neurons, but not B19 neurons, whereas ibotenate was ineffective in both cell types. Known blockers of vertebrate glutamate receptors had no effect on the inhibition by glutamate in any of the neurons tested. These data suggest that B5 and B19 neurons might contain receptors with slightly different pharmacology, and that the receptors in B5 neurons resemble glutamate receptors in *Aplysia*, another mollusk. These receptors might also be distantly related to vertebrate metabotropic glutamate receptors. Further research with compounds known to affect metabotropic receptors will help discern the mechanism by which glutamate, acting at its receptors, causes inhibition of neuronal firing.

Nicholas W. Miller

Advisor: Cheryl M. McCormick

The Modulatory Effect of Androgens on the Lateral Bed Nucleus of the Stria Terminalis in the HPA Axis in Male Rats

The lateral bed nucleus of the stria terminalis (BNST) is involved in the control of hypothalamic-pituitary-adrenal (HPA) function. However, the effects of stimulation and lesions of the lateral BNST on HPA function appear to depend on whether the animal is examined under basal or stress conditions, the type of stressor used, and the sex of the animal (Herman et al., 1997; Gray et al., 1993; Feldman et al., 1990; Dunn, 1987). The present study investigates whether androgens influence the role of the lateral BNST in the control of the HPA axis in response to restraint and ether stress. Male Long Evans rats were given either electrolytic or sham lesions to the lateral BNST using stereotaxic placements derived from Paxinos and Watson (1986). At that time, rats were also gonadectomized, and half of each surgery group received subcutaneous silastic implants of dihydrotestosterone (DHT) or blank implants. Following one week of recovery, rats underwent a twenty-minute period of restraint stress and tail blood was collected at various timepoints. The following day the same rats underwent ether stress and were decapitated to obtain trunk blood and brains for histological analysis of lesion placement. Plasma samples were assayed for levels of corticosterone using radioimmunoassay. Post

hoc analysis indicated that among DHT-treated groups, those with lesions to the lateral BNST had significantly lower corticosterone levels than shams. Among blank-implant groups, those with lesions of the lateral BNST had significantly higher corticosterone levels than shams. These data suggest that the effects of lesions to the lateral BNST are contingent upon circulating androgen levels.

PHYSICS

Alicia M. Soderberg

Advisor: Eric R. Wollman

Efficiency Calculations for the Rate of Supernovae at High Redshift

Preliminary results are reported for the rate at which supernovae of Type Ia occur at large astronomical distances. Supernovae rate estimates have been computed based on data provided by the High-z Supernovae Search Team. Extensive search simulations were carried out in order to determine the average efficiency for the method of supernova discovery. The existence of serious biases in the search process necessitated statistical correction to the simulated efficiencies. These biases include 1) the inability to resolve supernovae in the luminous regions of galaxy centers, 2) the efficiency of the telescope, and 3) the misidentification of supernova candidates as other transient astronomical objects. Application of correction factors to the supernova statistics results in a rate supernovae defined in terms of time, area of sky, and brightness. This calculation can be directly applied to studies of the nearby supernova rate as well as the star formation rate of the early universe.

POLITICAL SCIENCE

Brendan J. Hahey

Advisor: Douglas I. Hodgkin

Difficult Choices: Why People Run for President

This study attempts to gain a greater understanding of why individuals decide to run or not to run for president, the most powerful office in the country. In order to gain this understanding the 1988 and 2000 elections are analyzed in the hope of acquiring a nuanced perspective on this important aspect of presidential politics. With at most a few dozen candidates to choose from, most of the choice has been removed before voters even get a chance to voice their opinion. This thesis investigates decisions both by candidates who actually ran for president and by those promising candidates who did not get involved. By qualitatively and quantitatively analyzing the reasons behind their decisions a greater understanding is reached about what factors influence a politician's decision making process.

Ogniana V. Ivanova

Advisor: James G. Richter

Historical Institutionalism Influencing the Privatization Results in Russia, Bulgaria, and the Czech Republic

Privatization in Eastern Europe proved to be one of the most important and controversial issues in the transformation of post-communism. In this study I examine three countries — the Czech Republic, Bulgaria, and Russia — that applied an identical method of privatization — voucher privatization — with very different results. The Czech Republic is considered the success story, Bulgaria is somewhere in the middle of the road, and Russia is in a complete disarray. I use insights from the historical institutionalism approach to explain these variations in the outcomes of one and the same policy, following the different political and social paths taken by Bulgaria, Russia, and the Czech Republic throughout their histories both prior and after the imposition of socialist regimes there. I argue that the divergence of institutional structures built in them for the periods examined is the key to the puzzle of differential privatization results.

Joshua D. Myles

Advisor: William S. Corlett

Class and the Liberal Tradition: An Unlikely Partnership

As the distribution of wealth in the United States has become so distorted that the richest one percent of the population controls forty percent of the wealth, the liberal tradition has come under attack. Although liberalism promotes the rights of the individual, inequalities within its political and social institutions often make it difficult for citizens to exercise their rights. Will Kymlicka and Anne Phillips have tried to respond to these challenges by creating a place for new social movements or social groups. Their attempts to address race- and gender-based inequalities ignore, however, the problem of class. Group rights appear to conflict with the individualism of contemporary liberal theorists, such as John Rawls, Susan Okin, and Amy Gutmann, who are concerned with persistent inequalities, and yet also fail to address class inequality satisfactorily. I argue that any possible solution to the problem of class inequality, whether individual or group based, requires a synthesis of race, class, and gender. My work leads in the direction of a new form of liberalism, one which addresses the causes of inequality instead of merely compensating for unequal and unjust results.

Matthew J. Schlobohm

Advisor: William S. Corlett

Rethinking Justice and Unity: Towards Democratic Solidarity and a Revitalized Left

In light of the current fragmentation of the American Left and its relative ineffectiveness in combating a resurgent neoliberalism, my primary concern is how the Left can rethink and rework the unity necessary for political and social change without falling into the old traps of marginalizing culture, essentializing identity, and suppressing difference. This can only occur by scrutinizing the points of convergence and important particularities between the politics of recognition, class politics,

and environmental politics. After exploring current tensions on the Left, I engage with debates between Nancy Fraser and Iris Marion Young about the connection between the politics of recognition and socioeconomic politics and then turn to David Harvey and Laura Pulido to connect these debates with environmental politics and place. I conclude by looking at this work in relation with grassroots struggles occurring at different levels in order to put forth a new conception of coalition politics.

Mary G. Sedney

Advisor: James G. Richter

Evaluation and Accountability: The New Policy Agenda and Support of Microlending in Russia

This thesis examines accountability structures in the foreign aid regime within the framework of the New Policy Agenda. Under the Agenda, non-governmental organizations (NGOs) are seen as builders of civil society and have become a favorite aid disbursement tool of many donors. Microlending, a recent trend in development assistance, represents a prime manifestation of the New Policy Agenda, as it helps build both social and economic networks at the grassroots level. The New Policy Agenda has resulted in greater funding for and awareness of NGO work, but does possess some drawbacks. Governments' and international organizations' donor agencies often call for programs structured and run so that accountability takes an upwards direction. This thesis' case studies cover three tiers of the aid regime: a donor agency, a Northern NGO, and a microlending program supported by the donor agency and implemented by the Northern NGO to determine how these organizations interact in terms of establishing, administering, and evaluating programs. The microlending program examined is indeed structured, administered, and evaluated according to donor requirements, skewing accountability upwards. However, its emphasis on local capacity building and self-sustainability indicate program legitimacy and potential for possible change. Similar to most foreign assistance activity, this program presents a mixture of positive and negative characteristics, but seems to be progressing toward a localized, beneficiary-oriented structure.

Emily D. Upshur

Advisor: Kiran Asher

Los Movimientos de Las Mujeres Dominicanas: Rethinking the Political — Gender and Politics in the Dominican Republic

Recent feminist scholarship has suggested the need to expand the understanding of "politics" and "the political" to reveal the fundamental presence and contributions that women make to the study of politics. An expanded notion of what is political is necessary in order to understand these forms of participation. Drawing on research that questions these notions, participation is evident in the Dominican Republic where women remain skeptical and distant from formal politics, but have created a vibrant and active movement to address both basic needs of their communities and to question larger societal structures. While organized women are not visible in the political history of the country, there is no doubt that women are acting politically and continue to have a profound impact on the shape of politics.

PSYCHOLOGY

Jonathan M. Adler

Advisor: Kathryn G. Low

"I'm going to live forever!" Fame, Narcissism, and Self-Complexity in Fans and Celebrities

Celebrity is arguably the common denominator to which all of contemporary American popular culture can be reduced. Celebrities are so pervasive in our public interaction — populating all fields from entertainment to politics to sports to academics — that they have come to encapsulate the essence of American society, influencing virtually every individual. A historical examination of celebrity from a sociological and social-psychological perspective provides the background for the current research on audiences, the ubiquitous fans of fame. Empirical inquiry into the nature of fans was conducted in a two-part study. First, a survey was developed to assess attraction to celebrity and audience type according to the model proposed by Gamson (1994). It was shown to be both reliable and valid in both test and re-test samples. Second, an investigation into two characteristics of fans were assessed: narcissism and self-complexity. Narcissism was measured with the Narcissistic Personality Inventory, a widely-used assessment tool. Self-complexity was evaluated with an innovative card sorting task, developed by Rafaeli-Mor et al. (1999), building on extensive previous research stemming from the work of Linville (1987). It is expected that the data will show a positive correlation between narcissism and attraction to fame as well as a negative correlation between complexity of self and attraction to fame. Path analyses are conducted to explore the further relationships between variables. A third part of the research provides a case study of a celebrity in hopes of illuminating the effects of fame on the individual experiencing it, in addition to those that influence the masses of fans observing and creating it.

Emily T. Evans

Advisor: Kathryn G. Low

Gender Roles and Depression in Women: An Investigation into the Relationship between Depression in Women and the Change in Quantity and Expectations of Social Roles in the Twentieth Century

Depression threatens women's health and quality of life today. Women suffer from depression at two to four times the rate of men (A.P.A., 1994). Additionally, over the last century there has been a dramatic increase in reports of depression in women (Robins, Helzer, Weissman, Orvaschel, Gruenberg, Burke, & Reiger, 1984). Three possible explanations for the increase in depression have been probed — biology, reporting bias (artifact theories), and the influence of gender roles — but they have yet to account for this difference. Because biology is constant over time and artifact theory is unlikely to explain the magnitude of change in prevalence, the influence of gender roles is the most likely explanation (Nolen-Hoeksema, 1987). It has been proposed that over the last hundred years there has been a change in demands and expectations of roles (Chant and McIlwaine 1998). Given that gender roles affect depression, this study explores the relationship between depression in women and how the strain associated with role expectations and number has changed over the last hundred

years. In order to investigate the hypothesis that women's roles have changed over the last century and that these changes have made women more vulnerable to depression, two methods were employed. First, a sampling of *Ladies Home Journal* issues from 1930 was compared to issues from 1999. Results and themes, which emerged from differences in advertisements and articles, is discussed. Second, women of two generations were interviewed about their roles, mood, and depression. Semi-structured interviews allowed the eleven participants to generate topics and themes. Consistent with the research, contemporary women disclosed more depression than elderly women did. Elderly women as a cohort reported fewer roles, simpler expectations for those roles, and little role strain. Contemporary women discussed themes of finding a balance among their roles. These themes and additional results and conclusions is discussed.

Michael E. Kitces

Advisor: Drake R. Bradley

Statistical Power in Split-Plot Factorial Designs

An *a posteriori* power analysis of sixty-three two-way split-plot designs from the 1995 issues of *Behavior Neuroscience* was performed to compare the power on the between- vs. within-groups factors of each experiment. Despite claims that neuroscience researchers investigate effects that are inherently large to begin with, and therefore do not need large samples to achieve acceptable statistical power, the results showed that power was grossly inadequate. Analyses of the published data under various assumptions yielded mean power ranging from .4761 to .3686 for the between-groups factor, .6523 to .5437 for the within-groups factor, and .4812 to .3490 for the interaction. This demonstrates that power is inadequate in neuroscience research, and that neuroscience experiments do not in fact produce inherently larger effect sizes.

Elizabeth P. Meade

Advisor: Robert S. Moyer

The Effect of Brief Media Exposure to the Muscular-Ideal on Males' Affect and Body Satisfaction

Body image research has historically focused on females and the desire for thinness. However, recent evidence suggests that males also experience considerable dissatisfaction with their bodies. Specifically, men wish to be more muscular, a trend which parallels the increasing musculature of both male magazine models and male action figures. The primary goal of the present study is to assess how exposure to this "muscular-ideal" impacts adolescent males' body satisfaction, anxiety, mood, and concept of the ideal physique. A group of undergraduate males was exposed to a set of advertisements taken from popular men's magazines that depicted muscular male models. The participants then completed a series of questionnaires that assessed anxiety level, mood, body satisfaction, and current vs. desired physiques. A control group of male participants did not view the advertisements before completing the questionnaires. Based on previous research it is hypothesized that exposure to the muscular ideal will heighten anxiety levels, depress mood, and increase body dissatisfaction.

Alison B. Megroz

Advisor: Kathryn G. Low

Social Support and Cardiovascular Reactivity in Women: An Examination of the Effects of Personality Differences and Quality of Support

Social support has been found to buffer the impact of psychological stressors that lead to illness (Kamark, Peterman, & Raynor, 1998; Lepore, 1998; Gerin, Milner, Chawla, Pickering, 1995). The relationship between social support and cardiovascular reactivity is by no means straightforward; it is influenced by factors such as quality of support and individual differences. This study examines the ability of social support to influence cardiovascular reactivity (systolic blood pressure, diastolic blood pressure, and heart rate) in sixty-one women performing a speech task in one of five conditions: alone, supported, or not supported in the presence of a friend, or supported or not supported in the presence of a stranger. In addition, individual personality traits were examined using the Cook-Medley Ho Scale to examine the effects of socially avoidant, hostile, and cynical attitudes on the ability to benefit from support, and social support networks were examined using the SSQSR. Consistent with past research (Snydersmith & Cacioppo, 1992; Kamark, Manuck, & Jennings, 1990), participants tested without support in the stranger condition showed significantly higher levels of systolic blood pressure reactivity than those in either friend condition. Further analysis revealed that support was less effective in decreasing reactivity than having a friend present, suggesting that the quality of support is a factor in the social support-reactivity relationship. Finally, data indicated that more hostile participants show greater increases in systolic blood pressure reactivity when supported in the stranger condition than other groups, indicating that individual personality differences play a part in reactivity.

Austin J. Philbin

Advisors: Richard V. Wagner/Luz María Umpierre

The Forgotten Pair: A Psychological Investigation of the Puerto Rican Mother/Daughter Relationship Through the Use of Contemporary Puerto Rican Literature

The psychological impact of the intersection between colonialism, adolescent individuation, and self-esteem in the development of the Puerto Rican mother/daughter relationship is currently unknown. This study examines the behavior exhibited by the mother and daughter from three pieces of contemporary Puerto Rican literature (*Nilda*, *Porque hay silencio*, *Cuando era puertorriqueña*) to assess the impact of the intersection. Outside readers evaluated the adolescent individuation of the daughter by ranking selected passages on four criteria: 1) self-assertiveness, 2) mutuality, 3) separateness, and 4) permeability. Grotevant and Cooper's (1986) model of individuation contains three theoretical levels, where the first level is the individuation concept itself. At the second level, individuation is sub-divided into individuality and connectedness. At the third level, there is further subdivision of individuality into self-assertion and separateness, and of connectedness into mutuality and permeability. Comparisons to Coopersmith's inventory gauged the self-esteem of the characters. Investigation of colonial influence suggests that the addition of a new category of literary interpretation for the actions of the Puerto Rican adolescent toward the mother country may be necessary. The new category, ambivalence, occurs when the daughter encounters a physical manifestation of Puerto Rico

within the confines of the United States. Examination of the characters' behavior indicates that the combination of colonialism, individuation, and self-esteem creates difficulties for the development of the Puerto Rican mother/daughter relationship.

Sarah M. Putnam

Advisor: Georgia N. Nigro

An Evaluation of a Whole Class Language Intervention Program in a Kindergarten Classroom

Concern about school readiness has fluctuated over the years with the passing of federal legislation. A key component in assessing readiness for kindergarten is a child's language development. Children who have language delays or disorders are at risk for academic difficulties, social difficulties, and affective disorders. Speech therapists often work with these children individually in school as part of an early intervention program. However, current research also emphasizes the benefits of whole class language development programs, coordinated by both a classroom teacher and a speech therapist, as a method of preventing later language delays. The purpose of this thesis was to develop and assess such a whole class language program, focusing specifically on expressive language. This study compared the expressive language skills of a morning kindergarten class, the experimental group, and an afternoon kindergarten class, the control group, both before and after an intervention program. The intervention program, designed by the school speech therapist, the classroom teacher, and the author, consisted of five weekly sessions, lasting twenty minutes each, with the focus of each session matching the teacher's theme of the week. Categorization, graphing, looking for details, patterns, and storytelling were used to build the students' expressive language. This project will benefit the school system by helping teachers discover effective methods of preventing language delays, thereby reducing the number of academic and social difficulties children encounter later.

Sarah M. Teillon

Advisor: Cheryl M. McCormick

Menstrual Cycle and Gender Differences in Spatial Ability: Relation to Salivary Cortisol Levels

There is a small, but reliable, sex difference in performance on spatial tasks, particularly those involving mental rotation (Linn & Peterson, 1987). One hypothesis is that variations in sex hormone levels produce sex differences and individual differences in spatial ability. Estrogen has been suggested to have negative effects on spatial performance in studies that have examined spatial ability in women during different phases of the menstrual cycle. However, the menstrual cycle effects on spatial performance are small and not consistently found. Further, other factors that affect performance also vary across the menstrual cycle. For example, estrogen facilitates cortisol release in response to stress. Thus, differences in performance may involve stress-related factors rather than estrogen levels per se. In this thesis, the associations among gender, menstrual cycle phase, stress levels, and performance on the Primary Mental Abilities Test of Spatial Relations was examined in a sample of eighty-three undergraduates. Physiological stress was determined using radioimmunoassay for salivary cortisol levels. Perceived stress was determined

by self-report and the Profile of Mood States Questionnaire. Women were divided into three groups on the basis of self-report: follicular phase, luteal phase, and oral contraceptive users. Data analyses examines the relationship between stress and performance on spatial tasks, and whether cortisol levels can account for at least part of the variation in performance between and within the subject groups. Do poorer performers perceive the spatial test as more stressful? Do poorer performers have higher levels of cortisol regardless of menstrual cycle phase?

RELIGION

Andrew D. Bunton

Advisor: Robert W. Allison

Deuteronomistic Warfare as a Means to a Covenantal Community

The Book of Deuteronomy describes God as a being that supports and even assists Israel in warfare against other nations. This perception of God can be quite troubling to a modern theist, who wants to believe that God prods humanity toward peace, not war. The author of the Book of Deuteronomy, however, perceived the institution of Holy War as a tool to better the Israelite nation. For he believed that warfare, and the Deuteronomistic laws regulating this warfare, prepared the way for the Israelites to enter into a Covenant with God. From a socio-historical perspective, the Deuteronomist was correct in his belief that warfare could better the nation of Israel. The "Book of the Covenant," on which the Book of Deuteronomy is based, was written during a state of national turmoil. The Assyrian conquest had left the remnants of Israel desperate for a sense of identity and a way to account for their defeat. The warfare that the Deuteronomist advocated could potentially meet these needs by drawing the Israelites into a new sense of community — a community defined in part by recognition of a common goal and enemy. Through the exploration of these issues surrounding the Deuteronomist's representation of the divine approval of warfare, my thesis presents the Book of Deuteronomy as providing the framework for a unified community of God-fearing Israelites.

Anne E. Linder

Advisor: Thomas F. Tracy

Brigit: The Making of a Saint

Saint Brigit is one of the most revered figures in Ireland. Along with Saint Patrick and Saint Columba (also called Columb-Cille), she is one of the three patron saints of the island. Recent work, however, has shown that a number of Roman Catholic saints, especially those reported to have lived in the period of Christian conversions, are of questionable historical validity and may actually never have existed, except as pagan deities. It has been suggested by a number of Celtic and medieval scholars that Saint Brigit may be one such saint, and the idea merits investigation. This thesis seeks to answer the questions: Is there evidence that Brigit existed as a pagan goddess before appearing as

a saint? What do we know of Celtic paganism? If Brigit did exist, what can we see of that identity in the person of the saint? And do we see significant differences between the goddess and the saint? Through the use of a variety of both primary and secondary textual sources, I will show that Saint Brigit was, in fact, adopted from a similarly named Celtic goddess, and that her present identity as a saint features elements of the pagan goddess and yet still conforms nicely to medieval Catholic ideals of female saints.

Maria T. Mendoza

Advisor: Mishael M. Caspi

The Rise and Cause of Two “Nationalities” in the Philippines: the Christian North and the Muslim South

In 1966, Cesar Adib Majul wrote an article calling for a sense of “national community” amongst the Christian and Muslim Filipinos. He believed that Christians’ Philippine Revolution in the nineteenth century and the three hundred years of Muslim struggle against the Spanish domination could both be interpreted as a movement of racially and ethnically related peoples to unite as a single nation of Filipinos. In my thesis, I argue that the Muslims’ resistance and the Christians’ eventual resistance against Western powers do not constitute a call for “national community.” If anything, the coming of Islam and Christian Spain brought the rise of two “nationalities” — one Muslim Filipino and the other a Christian Filipino. I will briefly discuss the importation of the crusades by the Spaniards that served as the breakdown between the north and the south. The spirit of the crusade helped color the Spaniards’ relationship with the Muslim Filipinos. This helped to make the Muslim and Christian Filipinos strangers to each other as the Christian converts continued the war of crusades. This strangeness was still influencing the minds of the Filipinos four centuries later as the country throbbed with violence. The 1970s were marked with great animosity between the Christian Filipino and Muslim Filipino, as the latter wished to gain independence from the Philippines and the former, who dominated the government, refused to grant that wish. I will analyze the historical circumstances that thrust these two “nationalities” into one Philippine state and the problems of their religious, economic, social, and political accommodation to each other that impeded that achievement of a unified consciousness.

RHETORIC

Pamela K. Connors

Advisor: Charles I. Nero

Less Than or Equal To?: The Rhetoric of Mathematics Writing

This study examines the assumptions made by mathematics writers about how math should be taught and to whom. Using a rhetorical analysis based upon audience and language, I examine two contrasting perspectives about mathematics pedagogy. One relies upon the metaphor, “math is a

language” and it supports the idea that mathematical truth is accessible to all. The other uses the metaphor, “math is a computational system” and it privileges an idea that mathematics is an elite way of knowing. This study further explores the argumentative nature of mathematics textbooks and their potential to create or alienate audiences. Particular attention is given to women as audience members for mathematics texts.

Daniel B. Siskind

Advisor: Charles I. Nero

An American Zion: Jewish Rhetoric in the Nineteenth Century

This thesis examines the concept of America as the promised land in nineteenth-century Jewish rhetoric. The definition of America as a promised land is fundamental to American civil religion and it relies heavily upon Jewish culture and history. Yet, America as a promised land was a paradox for Jews in the United States. Would becoming American require Jews to renounce ideas about a future return to Palestine? Could Jews become American and still be Jewish? Could Jews, like other groups, exploit America’s civil religion to gain degrees of freedom denied them in Europe? I examine answers to these questions and others that arise from the paradox of Jewish experience in America in three nineteenth-century addresses: Moses Seixas’ “An Address of the Newport Congregation to the President of the United States of America,” Mordecai Manuel’s “Noah’s Address at Ararat,” and Isaac Meyer Wise’s “The Fourth of July.”

Alicia D. Smith

Advisor: Stephanie Kelley

The Writing on the Wall: Republican Murals in Northern Ireland as Enthymematic Visual Argument

This study conducts an analysis of how Republican murals in Northern Ireland, relying solely on images, function as visual argument. A closer examination of three main categories of murals — victimization, resistance, and solidarity — reveals that these murals make arguments using strategies particular to their category. Republican murals are an example of how the minority Catholic and Nationalist population, long denied access to main stream media, has seized upon the mural form to express its arguments and opinions on the Troubles of Northern Ireland. The resulting rhetorical analysis of these murals demonstrates that non-discursive forms are capable of making more than a statement. They make entire arguments.

Adam A. Thompson

Advisor: Charles I. Nero

Sammy Sosa, Mark McGwire, and the Not so Equal Playing Field

This thesis examines the bias in the Mark McGwire-Sammy Sosa home run race within Major League Baseball and in *Sports Illustrated*, *The Chicago Tribune*, *The New York Times*, and *The St.*

Louis Post Dispatch. During Major League Baseball's 1998 season, Irish-American McGwire of the St. Louis Cardinals and Dominican-American Sosa of the Chicago Cubs made a much publicized assault on Roger Maris' record of sixty-one home runs hit in one season. At season's end, McGwire finished with seventy home runs and Sosa had sixty-six, setting a new standard for what *Sports Illustrated* calls "the most revered mark in sports." The bias favoring McGwire has its origins in nineteenth-century American "sports culture." The characteristics of the "sports culture" were nationalism, racial stereotyping, pro-Protestantism, and support for white supremacy. The legacy of "sports culture" remains and can be observed in the media's image of McGwire as a white redeemer and Sosa as a beneficiary of America. These images of McGwire as American prototype and Sosa as recipient of its bounty alternately lifts white self-image and reinforces a hegemonic ideology of racial superiority/inferiority.

SOCIOLOGY

Karen M. Bilodeau

Advisor: Emily W. Kane

Snakes & Snails & Ponytails — The Only Difference Makes All the Difference: Parents, Children, and Gender

The scholarly literature indicates that before children are born, parents maintain stereotypical gendered perceptions about their children. Both mothers and fathers have been shown to believe that their daughters are more delicate than boys, and they tend to believe that their sons are more active and stronger than girls. Relying on both interviews with and observations of parents, this research conducts a qualitative analysis of parental beliefs to determine if parents maintain gendered perceptions of their three- to five-year-old children. Parental beliefs about the extent, origins, and desirability of gendered traits in their young children are explored, and supplemented with observational data regarding gendered patterns in parents' interactions with their children. The results of these analyses suggest that many parents maintain beliefs and engage in interactions that perpetuate gender stereotyping and highly gendered outcomes for their children.

Carey L. Sargent

Advisor: Emily W. Kane/Amy C. Beal

Performing Rock, Performing Gender: A Qualitative Study of How Women Musicians Subvert Gender Norms within Rock Music

This study combines sociological theories regarding the accomplishment and performance of gender with ethnomusicological and musicological writings on the creation of gendered musical meanings in performance. Within this frame, I study how certain women rock musicians accomplish gender within their musical performances. Specifically, the performers studied are Stevie Nicks, Bonnie Raitt, Meshell N'Degeocello, and Cindy Blackman. These performers were chosen to represent

a range of styles and instruments within rock, rather than to act as a sample which produces generalizable results. By viewing videos of their “live” performances and treating this viewing as a form of qualitative field observation, I unearth how these performers subvert normative conceptions of gender that exist within the masculine discourse of rock music. Each performer has a unique way of subverting these gender norms by destabilizing the masculine subject of rock music. Concluding this study, I assess the value of rock music as a medium for women’s expression.

WOMEN’S STUDIES

Meera Malhotra

Advisor: Kiran Asher

Global Ideologies, Local Realities: Gender, Labor, and Power in Jamaica’s Free Trade Zones

Over the past twenty years the rapidly globalizing system of international production has come to rely more heavily upon the wage labor of third world women. Focusing on the emergence of free trade zones in Jamaica, as one facet of the international system of production, I examine the ways in which racialized and gendered constructions are implicated in this new form of women’s work. Drawing upon the works of Chandra Talpade Mohanty and Maria Mies, among other feminist scholars, I demonstrate the ways in which normative gender ideologies are imbedded in capitalist structures of wage labor. In so doing, I hope to elucidate the ways in which economic development, in its current stage, is underwritten by a set of cultural prescriptions that sanction the continued exploitation of third world women.

Jessica Ann Ripton

Advisor: Francisca López

An Examination into the Representations of Puerto Rican Women in the Traditional Discourses Surrounding Insular Sterilization

This thesis examines the programs, providers, and funders of sterilization in Puerto Rico from the early 1920s until the late 1970s. It concentrates on the traditional discourses that have shaped the issue of insular sterilization. The traditional discourses examined include the discourses of population control, nationalism, Catholicism, and mainland and insular feminism. Examining the specific ideologies, political forces, and economic forces that shaped each of the discourses, I attempt to draw out the fundamental limitations inherent in each discourse. The fundamental limitation on which I concentrate is how each discourse framed women’s “choice” in relation to sterilization. While each discourse presented Puerto Rican women’s “choice” in a different manner, each representation of that “choice” served to write the women who made the “choice” out of the discourse. My thesis attempts to expand on the discussion of Puerto Rican women’s “choice” by positioning that “choice” within their political, economic, and social reality.