# Bates College

2000-2001 Honors Theses Abstracts

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## **ANTHROPOLOGY**

Holloway W. Constantine *Advisor:* Steven E. G. Kemper

Study Abroad as a Rite of Passage

Students traveling abroad walk the line between being residents of their host country and being tourists. At most, students can only have moments in which they are included in the intricacies of the culture of their host country. One way that the role of students as tourists is reinforced is the self/other dichotomy that is formed prior to leaving home. In this thesis I examine the mechanisms by which students can attempt to break down the self/other dichotomy and have moments of inclusion in the culture in which they are studying. I address these issues in three segments. The first covers the advertising and propaganda of study-abroad programs as they contribute to the formation of the self/other dichotomy. The second explores tourist issues and the ways in which students get involved in the public arena of life abroad. The third focuses on the issues unique to homestay experiences and the personal relationships formed in this part of students' experiences abroad.

Holly A. Scheuhing

Advisors: Elizabeth A. Eames and Mary T. Rice-Defosse

L'Interaction des Cultures: La Littérature Malgache Ecrite en Français

This thesis examines three Malagasy novels: one written during the period of French colonization, one written during the postcolonial period, and one more modern novel. It discusses the restraints faced by three Malagasy writers who chose to write in French, using a French mode of communication, the novel. Depending partly on the time period during which the author wrote, each author transforms the novel in his or her own way to make it more of a Malagasy mode of expression. The novels are examined with the combination of literary and anthropological analyses. Ethnographic information is used to decipher the novels. In the case of the second novel, little ethnographic information is available from outside sources and therefore it is derived from within the text itself (which is highly ethnographic in nature). This study calls into question the role of language in a postcolonial setting, and the value of novels as a source of anthropological knowledge.

#### Kelly A. Spence

Advisors: Loring M. Danforth and Shuhui Yang

#### Nuosu Shamanism: Ritual and Meaning in Southwestern China

Little is known about the Nuosu subgroup of the Yi minority in China's northern Yunnan Province. Because of their history of isolation from the Han and other minorities, however, the Nuosu have developed a unique culture, distinct from any other in China. A source of identity and pride for the Nuosu are their Bimo, or shamans. Not only do the Bimo serve as religious healers, diviners, teachers, and mediators, but they also maintain and preserve a rich culture of unique religious beliefs and practices. Using my own fieldwork with the Nuosu, I examine the ritual of *Xikebu*, performed to expel evil caused by malevolent spirits. During this ritual, elaborate myths are chanted, and rites of passage such as sacrifice are performed to heal the participants. These aspects of Bimo ritual embody symbols that, to paraphrase Clifford Geertz, constitute a story the Nuosu tell themselves about themselves. To illustrate this, I draw on Clifford Geertz's interpretative anthropological approach to understand symbolism; Levi-Strauss' structural examination of myths; Turner's and van Gannep's insights on liminality within rites of passage; and Kleinman's assessments of religious healing.

#### BIOLOGICAL CHEMISTRY

Vicki P. Losick

Advisor: T. Glen Lawson

#### Identification and Evaluation of Hepatitis A Virus 3C Protease Destruction Signal

Hepatitis A virus (HAV) 3C protease is a substrate for the ubiquitin-mediated proteolytic system. The attachment of ubiquitin to a protein requires an ATP-dependent enzymatic cascade and a destruction signal in the target protein. We have identified a protein destruction signal in HAV 3C protease to be the amino acid sequence <sup>32</sup>LGVKDDWLLV<sup>41</sup>. The identification of the signal was accomplished by generating this sequence in an analogous site in the poliovirus 3C protease, which is normally a poor ubiquitin system substrate. The presence of the LGVKDDWLLV sequence in the poliovirus 3C protease resulted in the ubiquitination and proteolysis of the poliovirus 3C protease. This represents the second protein destruction signal identified in a picornavirus 3C protease. To determine if HAV 3C protease can be ubiquitinated while in the context of polyprotein precursors, we examined several 3C protease containing usual P3 region polyproteins. The HAV 3C precursors, 3ABCD and 3CD, were found to be ubiquitinated. These results differ with encephalomyocarditis (EMC) virus 3CD, which was shown previously not to be ubiquitinated *in vitro*. This may suggest that it is unnecessary for HAV 3C protease precursors to exist late in viral infection.

#### CLASSICAL AND MEDIEVAL STUDIES

Kurt M. Eilhardt

Advisor: Michael E. Jones

Patrum Vestigia Sequens (Following in the Footsteps of the Fathers): The Venerable Bede's Self-Portrayal as a Father of the Church

The Venerable Bede (673-735) was arguably the most learned and prolific scholar of the early medieval period. From his isolated monastic outpost on the northern coast of Britain, Bede lived on an intellectual frontier between Celtic and Roman traditions. Despite his isolation, Bede acquired a remarkable Latin style and a great appreciation of the Church Fathers, men who rose out of the rubble of the fourth and fifth centuries to champion ecclesiastical causes. Bede composed an impressive list of works. His scientific writings, in particular, shed a unique light on Bede's view of himself, a view that could otherwise not be understood. By considering Bede's scientific works, this thesis suggests that through his scholarly growth and his identification with a Roman rather than an Irish intellectual heritage, the Venerable Bede saw himself as the inheritor of the tradition left by the Church Fathers, and, in fact, as the next Father of the Church.

Melissa A. Mitchell

Advisor: Thomas A. Hayward

Poetry & Translation: The Art of Failure or a Failed Art?

Translators have often viewed their task as more of a burden than a privilege, creating vast amounts of translations that resemble crib notes more than pieces of literature. With all these translators and translations available, certain questions arise. Which translators and translations have added something to the life of the text? Which have not? What criteria should we apply in an attempt to distinguish the artisans from the assembly-line workers? Walter Benjamin presents us with an answer to these questions. In his "Die Aufgabe des Übersetzers" he describes a theory of translation that regards some great poets as hacks and reveres others. I study Benjamin's theory, first outlining aspects important to the field of classical poetry translation and then reviewing several essays on Benjamin written by prominent critics in an attempt to aid our understanding of this theory. Using characteristics underlined by Benjamin, I analyze three sets of poems (Latin and Greek originals and English and Latin translations), and determine to what extent the translations have met Benjaminian standards. Following these analyses, I apply my research to creating a translation of my own.

#### Mindy L. Newman

Advisor: Robert W. Allison

#### Reflecting the Sacred: Visualization and Sacred Space in Itinerarium Egeriae

Itinerarium Egeriae is the narrative of a three-year pilgrimage to Palestine conducted during the late fourth century by a woman named Egeria. The text is composed as a series of letters to Egeria's "sisters" describing her journey to locations that she feels, as a Christian, are close to God. Thus Itinerarium Egeriae contains important information regarding how fourth-century Christian pilgrims imagined sacred spaces. Egeria functions as a "mirror," "reflecting" an internalized conception of the sacred onto the physical landscape of the holy sites she visits. The purpose of this thesis is to identify and explain how Egeria visualizes the sacred—the divine presence of God—in the holy sites of Itinerarium Egeriae through the use of a four-step model: 1) Egeria internalizes a specific vision of the "heavenly" Jerusalem, the paradigmatic model of Christian sacredness. 2) Egeria accesses this image through liturgical worship and projects it onto the physical landscape. 3) The physical landscape becomes a manifestation of the sacred and is reflected back to Egeria. 4) Egeria's recognition of the heavenly image results in an increased understanding of the liturgy that is reflected back to her sisters through her writings.

#### CLASSICAL & ROMANCE LANGUAGES & LITERATURES

#### French

#### Holly A. Scheuhing

Advisors: Mary T. Rice-DeFosse and Elizabeth A. Eames

#### L'Interaction des Cultures: La Littérature Malgache Ecrite en Français

This thesis examines three Malagasy novels: one written during the period of French colonization, one written during the postcolonial period, and one more modern novel. It discusses the restraints faced by three Malagasy writers who chose to write in French, using a French mode of communication, the novel. Depending partly on the time period during which the author wrote, each author transforms the novel in his or her own way to make it more of a Malagasy mode of expression. The novels are examined with the combination of a literary and anthropological analyses. Ethnographic information is used to decipher the novels. In the case of the second novel, little ethnographic information is available from outside sources and therefore it is derived from within the text itself (which is highly ethnographic in nature). This study calls into question the role of language in a postcolonial setting, and the value of novels as a source of anthropological knowledge.

Amanda E. Cause Advisor: Kirk D. Read

#### Le Défi de la Musulmane Française

France is at a unique point in its history—socially, politically, and economically. In the wake of European unification, globalization, and technological modernization, this proud nation is reevaluating its identity. Underscoring debates on this subject is the question of immigration, and more specifically, Muslim immigration. Since the wars for independence in northern Africa in the 1960s, France has been flooded with waves of Muslim immigrants looking for both work and residence. Yet in a historically Catholic nation where *de facto* assimilation is expected and secularism is the rule, the newcomers have been awkwardly welcomed. The political arena has sent both liberal and conservative messages, while the French press has framed immigrants in both positive and negative lights. Moreover, the status of female Muslim immigrants has boldly brought questions of gender to the forefront in the battle over cultural assimilation. This thesis argues that the future of French identity must deal with the compelling issue of whether multiculturalism spurred by Muslim immigration will take root in this country that has resisted it for so long. The evidence shows that France may have no choice but to do so.

#### **ENGLISH**

Unyi M. Agba

Advisor: Carole A. Taylor

"Medea in Blackface": Exploring the Medea Myth in Contemporary Black Women's Literature

Since Euripedes first dramatized the fabled Medea in the eponymous tragedy 2500 years ago, many revisions of his original characterization have reappeared in Western tradition. In twentieth-century black American literature, from Angela Grimke's 1918 play *Rachel* to Toni Morrison's classic, *Beloved*, many writers have invoked Medea as a figure for social change. The protagonist, a female "Other," is devoid of both social and personal agency and must claim her existence or being through motherhood, which is usually threatened by either a dominant figure, or a more conceptual social demon. These texts use a cohesive literary frame of reference to allude to either a serious Medea figure or to a parody of the Medea story, as in George C. Wolfe's *The Colored Museum*. My thesis focuses on three primary texts: *Rachel, Beloved*, and *The Colored Museum* to examine how black writers have transformed the Medea myth to create alternative methods of self-definition and resistance.

#### Phoebe M. Larson

Advisors: Cristina Malcolmson and Anne B. Thompson

## Queen Elizabeth I: Representing a Female Ruler in Renaissance Society and Literature

The position of Queen Elizabeth I as ruler of England during the Renaissance posed a direct threat to an established social hierarchy, which confined women within a strictly domestic sphere beneath men. It was therefore necessary for Elizabeth to constantly legitimize her position on the throne as a female ruler, a concept deemed as unnatural to the Renaissance mind. This thesis explores the strategies employed by Elizabeth that enabled her to represent herself in a variety of forms as the occasion demanded. Examining the political writing of John Knox illuminates Renaissance attitudes towards women and reveals the hostility of men towards females in power. Edmund Spenser's *The Faerie Queene* provides Elizabeth with some positive examples of powerful female leaders, yet also attempts to direct her towards the proper behavior of a female ruler in both politics and love. Elizabeth's use of self-representation in defense of her position emerges in stark contrast to these writers through an examination of speeches made throughout her reign.

#### Susan M. Lydon

Advisor: Lillian R. Nayder

#### Jane Austen and Subversion

This thesis examines subversive messages in the marriage plots in Jane Austen's novels. Over the past two centuries, Austen's novels have met with a wide variety of interpretations. They have been dismissed as period pieces, derided as vulgar, touted as highbrow, and championed by feminists. Critics often claim that Austen's marriage plots confirm conservative values and steer clear of rebellion. I argue that Austen's use of parody and irony suggests a divergence from traditional expectations regarding women and marriage. The received life of Jane Austen, together with general ignorance about the development of feminist ideas from the beginning of the eighteenth century, has obscured her importance as a feminist moralist of the age of enlightenment. I examine aspects of Austen's life that suggest that she had subversive tendencies. Looking at all six of her major novels along with her early writings and unfinished works, I examine how Austen depicts women in her novels as victims of patriarchy, and men in her novels as failing to fulfill the authoritative role that patriarchy assigns them. I propose that with her ironic treatment of marriage, Austen actually deflates the values of the patriarchal society that she depicts.

#### Julia E. Phelan

Advisor: Katherine A. Adams

## Intersecting Oppressions: Working-Class "Standpoints" in Carolyn Chute's Merry Men

Carolyn Chute's fiction has been praised for its intricate descriptions of the community of Egypt, Maine, and for a perspective on working-class life seldom found in the literary world. However, scholars also criticize Chute's narrative structure and voice for their nonconformity to presumed literary standards. Through a reading of *Merry Men*—a novel that traces the struggle of several families to survive in an oppressive world—and an exploration of the reviews written in both praise and criticism, this thesis argues that we need to revise critical approaches toward working-class literature. Drawing upon Nancy Hartsock's theory of "standpoint," the thesis develops a theoretical foundation that attempts to uphold the class-based activism of the author without essentializing class as the only critical aspect of the text. In application of this theory, *Merry Men* is analyzed with particular attention to the intersection of class with gender, arguing that this intersection is crucial to understanding specific characters and the community as a whole. "Standpoint" is used to explore the intersecting structures of individual identity as well as the interactions among differing perspectives within the novel.

## Elizabeth A. Whiting

Advisor: Steven C. Dillon

Pynchon's Journey Beneath the Los Angeles Facades: From L.A.  $60 \mathrm{s}$  Culture to  $\mathit{The}$   $\mathit{Crying}$  of  $\mathit{Lot}$  49

This thesis studies cultural artifacts of the city of Los Angeles, California, from the 1960s, focusing on film, painting, public sculpture, and literature. These studies reveal cultural trends of isolation manifested in themes of remove, a sheen or barrier, and discontent. They emerge as the underlying voices of the city become exposed through the ways that the city is represented and the ways in which the city represents itself. The body of the work is divided into three sections. The first concentrates on the art and films of that decade that use the city as their setting. The second looks at a section of Los Angeles, Watts, and analyzes the way that area has been represented in terms of history and the Watts Towers of Simon Rodia. The third is a reading of the novel, *The Crying of Lot 49*, by Thomas Pynchon, which is set in the fictional San Narciso, a suburb of Los Angeles. This final chapter is a culmination of the previous two, using their findings to place Pynchon's work in a cultural context, providing a new way to read the novel.

#### Emily P. Winsett

Advisor: Lillian R. Nayder

#### Jane Austen and Motherhood

This thesis explores the relationship between the mother figures and their daughters in Jane Austen's six major novels. An introductory chapter reveals the nature of Austen's own relationship with her mother. Mothering tendencies in nineteenth-century England are also explored in conjunction with Austen's biography. This biographical and historical background provides the foundation for the analysis of Austen's novels.

I argue that Austen uses inadequate mothers to expose and critique women's status in society. The thesis is divided into three segments, coinciding with the three types of mothers Austen presents. The second chapter uses *Pride and Prejudice* and *Sense and Sensibility*, in which incompetent birth mothers are studied. This chapter infers that the limited world of women directly creates their childlike natures. The third chapter focuses on *Northanger Abbey* and *Mansfield Park*, in which both birth mothers and surrogate mothers are present. It suggests that a woman, whether a mother or a surrogate, is completely molded by societal values. Finally, the thesis concludes with a study of *Persuasion* and *Emma*, in which the heroines' mothers are dead. Thus, the chapter examines a girl's development into womanhood without her mother.

#### **ENVIRONMENTAL STUDIES**

David E. Levin

Advisor: J. Dykstra Eusden, Jr.

Dependence of the Fellfield Alpine Vegetation Community on the Alpine Zone Littleton Formation in the Alpine Zone of the Presidential Range, New Hampshire

Factors that influence the distribution of alpine vegetation communities are well-documented throughout the world. Detailed alpine vegetation community mapping was recently completed in the Presidential Range, New Hampshire. One of the mapped communities, fellfield, is composed of lichens growing broken bedrock blocks and seems to be poorly correlated with topographical features that typically explain the distribution of alpine vegetation communities. This study was undertaken to examine the possibility of a correlation between the fellfield community and the bedrock substrate using Geographical Information Systems. The fellfield community, although studied little, is important for alpine areas management. Management strategies are often based on protecting the obvious fragile plant communities that grow in the harsh conditions above tree-line. Therefore, trails and use areas are often routed around those communities and by default, pass through the fellfield communities due to the durable substrate on which the community grows and due to the lack of knowledge about the community. Analyses show fellfield communities growing preferentially on the dominant bedrock type of the alpine zone, possibly due, in part, to the size of the bedrock blocks.

These results indicate a need for further research and have significant implications for alpine areas management strategies.

Meredith W. Mendelson

Advisor: Lynne Bennett

Why Voluntary Regulations Fail: The Future of the Ballast Water Exchange Program

With the growing awareness of bioinvasions, the shipping industry has been targeted as a primary vector for the global transport of organisms through ballast water. A regulation under the National Invasive Species Act (1996) states that ships should voluntarily exchange their ballast water in midocean to reduce the potential for nonindigenous species introduction. This exchange presents safety hazards for vessels, as well as increased costs. This thesis examines the voluntary exchange through comparative analysis of two other voluntary programs—the chemical industry's responsible care program (a successful program), and the use of turtle exclusion devices in the shrimping industry (an unsuccessful program which became mandatory). Voluntary regulation is rarely an efficient method of environmental management. This research identifies the causes of—and potential solutions for—this inefficiency. Along with traditional research in journals and trade reports, qualitative interviews of involved individuals probe the socio-economic rationale of creating, participating, or not participating in voluntary ballast water exchange. It is anticipated that the current objections to the exchange are a result of perceived conflicting interests between the industry and science, and that if these interests were aligned, the industry would favor a ballast water management program that addressed their concerns.

#### **GEOLOGY**

Krista B. Anderson

Advisor: J. Dykstra Eusden, Jr.

Electron Microprobe Age Dating of Monazite from the Acadian Orogeny, Northern Presidential Range, New Hampshire

For this thesis a unique new method of monazite age dating was used to constrain the timing of metamorphic and igneous activity in the Presidential Range during the Acadian orogeny. In situ electron microprobe analysis was used to obtain quantitative compositional information for multiple age domains within compositionally zoned crystals of monazite. Three rock samples containing monazite were dated in this study—a granite from the Bickford pluton, a staurolite schist, and migmatitic gneiss from the Devonian Littleton Formation. Analyses for the schist yielded several older, inherited ages as well as ages of the peak Devonian metamorphism. The Bickford granite

produced late Devonian/early Carboniferous ages in agreement with previously determined ages of similar plutons in the area. Analysis of the sillimanite grade gneiss revealed Devonian ages related to peak metamorphism and intrusion of the Bickford granite, as well as Silurian and Ordovician ages inherited from detrital monazites. Results of this thesis confirm that monazite systematics can indeed preserve evidence of complex growth histories, and that previous geochronology studies in the Presidential Range may have recorded components of older inherited ages along with more recent crystallization ages.

Nicole R. Granger

Advisor: J. Dykstra Eusden, Jr.

Kinematic and Vorticity Analysis of a Transpressive Shear Zone, Prince Rupert, British Columbia

The Western Fold and Thrust Belt in the Prince Rupert-Skeena area of British Columbia shows tops to the west thrusting and has yielded an inverted metamorphic sequence. Within the Western Fold and Thrust Belt is the Prince Rupert Shear Zone, a north-south striking structure located off the coast of Prince Rupert. Lineation measurements show that there is a slight dip slip component to the shearing. A Kinematic analysis of four islands through which the Prince Rupert Shear Zone extends suggests that a late component of left-handed strike slip shear exists. The kinematics observed in the field as well as in thin sections were principally left-handed indicators, and include rotated porphyroblasts, asymmetric boudinage, mica fish, and S-C mylonites. A vorticity analysis was conducted in order to quantify the amount of pure shear verses simple shear. The results show that the rocks have experienced general shear. The kinematics and the lineation measurements support strike-slip normal faulting, which contradicts previous work done in the area.

Kristin E. Marshall Advisor: Julie E. Blue

## Contaminant Migration and Fate at the Picillo Farm Superfund Site

Picillo Farm of Coventry, Rhode Island, is a current Superfund site undergoing pump-and-treat remediation for numerous contaminants, particularly DNAPL and VOCs. The pump-and-treat system is projected to adequately clean up the site. However, rebound is expected once the system is shut down. How fast rebound will occur, and at what level, is of major concern to the 2,000 residents living between one-quarter and three miles from the site. Projected DNAPL migration may also put other aquifers at risk.

An alternative method, bioremediation, is also taking place in situ, degrading PCE and TCE to DCE, vinyl chloride (VC), and ethene. Degradation from VC to ethene is often found to be incomplete, as is the case here. How successful this process is depends on the site characteristics, and because VC is the more toxic product, it is important to identify factors for complete degradation. The migrating

plumes of these contaminants have been mapped, but uncertainties exist due to the complex heterogeneous nature of the sediments. Analysis of these maps reveals that the process is taking place and that, contrary to prior beliefs, the DNAPL is migrating. Velocities have been determined and appropriate conditions for, and type of, remediation are addressed.

Noah E. Petro

Advisor: Gene A. Clough

Analysis of the Lunar Farside Crater Oppenheimer Pyroclastic Deposits Using Clementine Multispectral Data

Multiband spectral images of the Moon made by the Clementine spacecraft are used in order to study the compositions of small pyroclastic deposits in the Nectarian-aged lunar farside crater Oppenheimer. The compositions of these deposits are compared to other pyroclastic deposits located within the South Pole-Aitken (SPA) basin as well as in the nearside Alphonsus and J. Herschel craters. Compositional variations are observed among some of the seven deposits located within Oppenheimer. Overprinting of ejected highland material from the Copernican-aged farside crater Jackson causes these variations. The lack of variation within the Oppenheimer deposits indicates that they originate from a common source region and represent a single eruptive event. The Oppenheimer deposits are also compositionally distinct when compared to other pyroclastic deposits found within the SPA basin. However, the compositions of the deposits in both Oppenheimer and Alphonsus craters and in the SPA deposits resemble those of low-Ti mature maria while the deposits in J. Herschel are unique and not comparable to the other pyroclastics examined here. The similarity to the other SPA pyroclastics and to low-Ti mare presents the possibility that the SPA mare are linked both compositionally and in source region to the pyroclastics.

Douglas S. Welling

Advisor: J. Dykstra Eusden, Jr.

The Stratigraphy and Structural Geology of the Northeast Flank of the Presidential Range, New Hampshire

Bedrock geologic mapping was performed in the northeastern flank of the Presidential Range in New Hampshire with funding provided by the U.S. Geological Survey EDMAP 2000 program. Seven different members and two sub-members of Devonian Littleton were mapped, as were the Silurian Madrid, Smalls Falls, and Rangeley Formations. Two plutons of two-mica granite and a small diorite were also mapped. A rare migmatic member of the Littleton Formation characterized the northern region of the field area. Evidence for a phase of premetamorphic faulting in this portion of the Presidential Range is absent. Original bedding,  $\mathbf{S}_0$ , was well exposed and approximately one-third of the topping directions indicated the presence of inverted bedding. Evidence of  $\mathbf{D}_1$  deformation is

most extensive throughout this study area. Regions, in which bedding  $(S_0)$  and foliation  $(S_1)$  were not parallel was common and aided in defining two macroscopic, easterly facing  $F_1$  folds, the Pine Link Nappe and the Culhane Brook Syncline. There was no evidence of  $D_2$  or  $D_3$  deformation in the study area.  $D_4$  was observed as outcrop scale and microscale crenulations.  $D_5$  crenulations were abundant in the southeastern portion of the field area.

Ewan D. Wolff

Advisor: John W. Creasy

Paleoecology and Lithofacies Evolution of the Earnley Sand and Marsh Farm Formations, Whitecliff Bay, Isle of Wight, Great Britain

The Earnley Sand and Marsh Farm Formations are mid-Lutetian age units in the Bracklesham Group, Hampshire Basin, in southern England. The Earnley Sand is a sandy clay formation with a high percentage of glauconite and varying marine faunas preserved within. It overlies the Marsh Farm formation, a primarily clay formation with lenses of sand. Determination of the paleoecology of 10 meters of the Earnley Sand and Marsh Farm formations permits evaluation of the existence of coastal upwelling of the aeolian type proposed by Mann and Lazier (1991). Secondarily, the project attempts to link the presence of turritellines, hypothesized cold-water indicators (Allmon 1988), with the foraminiferal record, a more conventional cold-water indicator in certain situations. Lithostratigraphical observations at 15-centimeter increments and spatial variability sampling at 50-centimeter increments were made for this study. Analysis of the two formations from the stratigraphy, faunal analysis, mineralogy, and paleocurrent indicate a prograding marsh sequence in which an offshore marine shelf underwent an evolution to a barrier island, a lagoon, and into a salt marsh. The theorized bodies of water and turritelline beds indicate a possibility of coastal upwelling despite a lack of foraminiferal evidence.

## GERMAN, RUSSIAN & EAST ASIAN LANGUAGES & LITERATURES

Chinese

Sze W. Ang

Advisor: Shuhui Yang

The Cinematic Pilgrimage of Zhang Yimou

This thesis examines three major cinematic works representative of the early, middle, and most recent films directed by Zhang Yimou: Ju Dou, To Live, and The Road Home. Many of Zhang's

celebrated films have been called politically controversial. However, Zhang has intentionally shifted his focus away from politics to aesthetics in his more recent works. This shift itself is controversial; Zhang's aesthetical vision as an artist has often been overshadowed by his political voice, and I concentrate on his formal experimentations in my interpretation of his works. *Ju Dou* is filled with symbolic imagery; its focus is on the tensions within a family of forced kinship ties that is destroyed because it refuses to adhere to societal standards of conduct. *To Live* is mostly set after 1949, and is Zhang's most overtly political movie. However, I argue that the film's focus is still on individuals and how their values shift, change, or remain the same in the face of direct conflict with mainstream societal standards. *The Road Home* is Zhang's most radical formal experiment; I focus my analysis on recurring symbols and themes, and attempt to relate their forms and functions to the earlier movies.

#### German

Kirsten H. Erichsen Advisor: Craig J. Decker

Pop Literatur?

Following a stagnant period in German literature, authors such as Benjamin Lebert (b. 1982), Benjamin von Stuckrad-Barre (b. 1975), and Alex Henning von Lange (b. 1973) have succeeded in creating a new market for fiction in Germany. With flashy covers, glossy pictures, catchy titles, and an almost vernacular writing style, these authors stormed the scene within the last five years, attracting both praise—as the future of German fiction—and intense criticism—as nothing more than a trivial beach-read. This thesis examines the complex phenomenon of this popular fiction, concentrating on the ways in which it constructs and criticizes the concept of identity within German youth culture. Using postmodernist and popular culture theory, I explore pop fiction's meaning in and to consumer society, paying particular attention to the function of mass media in these novels.

#### **HISTORY**

Anne E. Lockard
Advisor: Elizabeth H. Tobin

Religion and the German Labor Movement: An Examination of Eight Late Nineteenth and Early Twentieth-Century Autobiographies

This study investigates the relationship between working-class organizational expression and individual religious beliefs in late nineteenth-century Germany through the autobiographies of eight

workers. Five Catholic and three Protestant workers confronted a labor movement with two competing and often antagonistic branches: a Christian, predominantly Catholic branch, and a Socialist branch. Possessed of two different ideologies, the Socialist and Christian movements polarized on the matter of religion. Although officially neutral on matters of religion, the secular materialist world-view of the former created an unofficial hostility towards religion and an often vehement anti-clericalism, while for the latter, religion was a fundamental component of all working-class matters. For all but one autobiographer, this situation made religious beliefs an integral factor in organizational choice. The decision for Christian or Socialist organization was found to be informed by confession and the degree of secularization resulting in Christian organizations drawing only Catholics and a situation in which all Socialist workers abandoned religion in favor of a secular materialist world view.

Sarah M. Rigney

Advisor: Steve Hochstadt

## Austrian Identity and the Rise of the Freedom Party

Crowds numbering 250,000 marched through the streets of Vienna just over one year ago to protest the induction of Joerg Haider's Freedom Party (*Freiheitliche Partei Oesterreich*) into the Austrian government. Haider, famous for his Holocaust revisionist statements and his radical right influence on the FPOe, has sparked a huge controversy in Europe, which has resulted in the suspension of Austria's EU rights. The goal of this thesis is to determine how the FPOe came to power, what Haider's role and influence in this process has been, and the implications of the FPOe's role in Austrian and European politics. Intrinsic to understanding these developments is an examination of Austria's history. Therefore, this thesis also explores the roots of Austria's political structure and national identity stemming from World War II, how Haider and the FPOe have challenged these concepts, and why western European governments have reacted so strongly.

Julie K. Shadford

Advisor: Hilmar L. Jensen. III

Courage from Within: Black Mississippi Women in the Mississippi Freedom Democratic Party

It has been said that the modern Civil Rights Movement was led by men but organized by women, and that Mississippi was the most segregated state in the South until the late twentieth century. How then is it possible that the Mississippi Freedom Democratic Party (MFDP), formed in 1964 in this bastion of racial hatred, was led primarily by local black women? This thesis examines the unique characteristics that gave these women the courage and ability to organize and lead the MFDP, the most important grass-roots political formation of the time. Beginning with an overview of black life and the early civil rights struggle in Mississippi, the study then characterizes black

female leadership experiences and the power structure of the Student Nonviolent Coordinating Committee (SNCC), an organization that assisted with MFDP's voter registration activities. An examination of young women's grass-roots organization and protests with SNCC follows. Finally, the study explores several ways in which older women contributed to the MFDP, focusing on their work as community mobilizers. Based on interviews with activists and other primary and secondary source material, this study uncovers the extraordinary contributions made by ordinary women during the MFDP's voting rights struggle.

#### INTERDISCIPLINARY STUDIES

Carrie E. Noel

Advisors: Steven E .G. Kemper and Marcy Plavin

## Cultural Movements: A Tracing of Change in Bali

This thesis examines the process of cultural change in Bali. Cultural change occurs through what Arjun Appadurai has termed "cultural flows." These flows create a process that continuously regenerates and changes culture in an inevitable manner. The slipperiness of the terms "modernity" and "tradition" emerge in discussing the process of cultural change. However, an interruption in this fluidity is evidenced by tensions in Bali, one example being a power struggle as the younger Balinese intelligentsia challenge Balinese society's adherence to "traditional culture."

The ideas of cultural change, tradition, and modernity are abstract. A visual interpretation of these abstract concepts can be to be helpful in understanding the complexity of cultural change. Therefore, this thesis also includes a half-hour dance performance of my own choreography expressing the processes explored within the thesis text.

## **MATHEMATICS**

Christopher A. Danforth

Advisors: Shepley L. Ross, II, and Mark D. Semon

Why the Weather is Unpredictable: An Experimental and Theoretical Study of the Lorenz Equations  $\,$ 

Mathematical modeling is an important tool in the science of weather forecasting. In the 1960s, meteorologist Edward Lorenz developed a model of convection in the atmosphere that revealed one

of the most intriguing behaviors in the history of science: chaos. Lorenz's model of atmospheric convection led to a system of ordinary differential equations that are now called the Lorenz equations. In the mathematical portion of this thesis, we derive the Lorenz equations from the thermal energy diffusion equation and the Navier-Stokes equations for conservation of momentum in a fluid. In the physics portion of this thesis, we describe the construction of a thermal convection loop, or thermosyphon, whose behavior can be modeled by the Lorenz equations. We have taken data from the thermosyphon experiment and shown why it not only verifies the predictions of the Lorenz equations, but that it also illustrates why weather is inherently unpredictable beyond a time period of four or five days.

David J. Grynkiewicz Advisor: Peter N. Wong

## On Partition Sumsets, Zero-Sums, and Rado Numbers

This thesis considers research conducted at the intersection of Combinatorics and Additive Number Theory. Specifically, the thesis examines a developing field of Generalized Ramsey Theory begun by the work of Schur, Rado, and Van der Waerden; Additive Number Theory in the spirit of work done by Kneser, Kemperman, and Davenport; and a combination of the two in the form of a zero-sum problem first proposed by Erdös, Bialostocki, and Lefmann. The main results include the 2-color Rado number for the generalized 3-term arithmetic progression equation  $x_1 + x_2 - 2x_3 = c$ , under all inequality orderings of the variables; a partition analog to the Cauchy-Davenport Theorem valid for all cyclic groups; and the determination of the least integer N, such that for every coloring of the integers [1,N] by two disjoint labeled copies of the cyclic group of residues modulo m, there must exist two m-element subsets, A,  $B \subseteq [1, N]$ , such that: (i) max(A) - min(A) - max(B) - min(B); (ii) max(A) < min(B); and (iii) the sum of the colors of A and B, respectively, are both congruent to zero modulo m.

#### MUSIC

Gregory C. Norton

Advisor: James P. Parakilas

#### Requiem

The Requiem Mass, the Mass for the dead of the Roman Catholic Church, showed its origins as early as the second century. But the notion of setting music to the Latin text, at first in the form of single chant melodies, did not really start to flourish until after the tenth century. The fifteenth century brought the notion of combining multiple vocal melodies as the most common choice of text

setting. This evolution has continued to the present day and led to full choral and orchestral settings of all or some of Requiem Mass text. Today Requiems are most often heard as concert works, and no longer function as an aspect of a religious ceremony.

My Requiem is scored for full orchestra and choir. The text is in Latin, and the work is approximately thirty-five to forty minutes in length. Compositionally, the work is tonal and in a romantic style, but also contains a variety of ideas ranging from sixteenth-century polyphony to minimalism. I chose to set the following standard texts of the Mass: Requiem, Kyrie, Dies Irae, Tuba Mirum, Liber Scriptus, Lacrimosa, Offertorium, Sanctus, Agnus Dei, and the Lux Aeterna.

Breelyn A. Wilky

Advisor: James P. Parakilas

Piano Works of Prokofiev and Shostakovich under Stalinist Political Pressures: The Challenge of Socialist Realism

Russian musicians Sergei Prokofiev and Dmitry Shostakovich, two of the most influential and controversial twentieth-century composers of piano music, spent the majority of their respective careers under Stalin's oppressive regime. While engaged in the ongoing struggle to compose public works that would meet the Communist Party's ambiguous specifications of socially acceptable music, both composers also quietly composed pieces that have been described as "private music." This music tends to explore more musically progressive ideas, some of which appear to be in direct defiance of the Party's standards. However, in order to assure the publishing and performance of this more objectionable music, these composers employed certain methods to shield their works from the worst of the Party's censorship. Two of these "private" works are Prokofiev's Sixth Piano Sonata, composed in 1939, and Shostakovich's Opus 87 Preludes and Fugues, composed in 1951. Both pieces are masterpieces that employ many modern techniques that were highly criticized by the Soviet government. A closer investigation of the meaning and motivation behind these particular works continues to shed light on the intricacies of the relationship between the Soviet rulers and Soviet citizens, and demonstrates how music can implicitly capture the essence of an era.

#### NEUROSCIENCE

Eliza H. Scott

Advisor: Cheryl M. McCormick

Lesions of the Anterior/Lateral Bed Nucleus of the Stria Terminalis and Anxiety in Female Rats

Although the amygdala has been shown to be involved in anxiety mediation, researchers are now discussing the role of the lateral/anterior BNST in mediating anxiety as well (Alheid de Olmos & Beltramino, 1995). Research indicates that the lesions of the LBNST may attenuate anxiety using conditioned paradigms, however, there have been few published studies that directly examine the effects of LBNST lesions on untrained behavioral reactions to anxiety-provoking stimuli. Moreover, past research shows gonadal hormones and their metabolites (such as estradiol) may play a role in responses to anxiety producing stimuli (Wilson et al., 1996). Several areas of the LBNST have been shown to contain estrogen receptors, therefore making the LBNST a good target for examining the gonadal control of the anxiety response. This study investigates whether the behavioral effects of lesions of the anterior/lateral BNST are altered by hormonal status in female rats. Results suggest that lesions to the LBNST produce anxiolytic effects on the behavioral test. Thus far, no effect of hormone status has been observed. These data indicate that the LBNST does play a role in mediating anxiety in an unconditioned paradigm, further, that the effects of lesions to the lateral BNST are not contingent upon circulating estrogen levels.

#### PHILOSOPHY

Art A. Budyonny

Advisor: Mark B. Okrent

Toward Death in Everydayness: A Critique of Heidegger's Being and Time

Most scholars of Martin Heidegger's *Being and Time* focus their critique of the text on either Division I or Division II of the book. Either approach, unfortunately, ignores the book's true dimension and overall importance. This thesis attempts to go beyond the traditional reading of Heidegger's seminal work by synthesizing both divisions within one interpretative approach. Most importantly, the thesis traces Heidegger's argument on the meaning of being of Dasein, and then explores the relationship between the two divisions of the text. I argue that the two parts of *Being and Time* give two incompatible answers to the question of the meaning of being of Dasein. To put my argument in Heidegger's own terms, by uncovering the implications of Dasein as a being-toward-death with regard

to Dasein as a being-in-the-world in everydayness, I contend that, while Division II unifies the ideas and answers the questions raised in Division I, it fundamentally conflicts with Division I because it unveils the extreme possibility of Dasein's being. My argument, therefore, demonstrates that it is problematic for Dasein, as postulated in Disivion I, to dwell in everydayness as a being-toward-death, a key concept established in Division II.

Rebecca K. Dodd Advisor: David Kolb

Understanding the Reflection: An Examination of Procedural Appreciation of the Aesthetics and Ethical Obligation of Contemporary Political Music

This thesis examines the artistic quality and influence of political art. First, I study the definition of a work of art and a work of political art. I establish a process of handling political art and apply it to contemporary political music. I then test it against the work of artists such as Nine Inch Nails, Tori Amos, Aggressive Force, and Eminem. Finally, I examine critiques of this process and offer the most appropriate placement of political art in everyday life.

David O. Sharratt

Advisor: David R. Cummiskey

## Practical Principles and Theoretical Knowledge in Kantian Ethics

Kant considers empirical knowledge to be useful, but essentially fallible and conjectural. Thus, the use of a scientific or a theoretical method can never be justified in asserting normative claims. A priori concepts or "metaphysical first principles of right," however, do not depend on empirical conjectures. Kant develops a rich theoretical interpretation of his moral theory, however, he claims to derive the Categorical Imperative, and the full moral theory that follows, independently, and from "pure, practical reason" alone. This thesis examines the relationship between Kant's theoretical writing and his normative writing, and the work that the practical/theoretical division does in the Kantian argument. Granting strength to the Categorical Imperative, I question if Kant actually remained true to this division, and if it is plausible for Kantian thought to do so. I center this analysis around two issues: the two-standpoint account of agency, and the nature of a priori concepts for Kant. I focus primarily upon the Groundwork, The Metaphysics of Morals, and the work of contemporary Kantians. Concluding that Kant does not and cannot separate the theoretical and the practical, I then develop the promising applications of theoretically reflective Kantian ethics to contemporary environmental issues.

## Andrew R. Stanton

Advisor: Susan A. Stark

## Against Compatibilism: Deserving Praise and Blame

Can we hold ourselves and others morally responsible for actions? This question has central importance in our lives and in philosophy. There is a doctrine known as causal determinism that many have seen as a challenge to our conception of ourselves as free agents, and subsequently, as morally responsible agents. Philosophers who believe determinism and morally responsible action can co-exist are *compatibilists*. Philosophers who argue that morally responsible action is ruled out by the truth of determinism are *incompatibilists*. These two groups of philosophers examine the question of justification for moral ascriptions as it pertains to the larger debate of free agency and human action. This thesis examines just this question: If determinism is true, can we justifiably praise and blame agents for actions, in a deeply moral sense? I believe that we cannot, because there is an incompatibilist requirement for morally responsible action. In other words, if human agents are to be justifiably praised and blamed, they require a metaphysical ability that is ruled out by the truth of determinism. If so, our status as moral agents and the philosophical justification for deep praise and blame rest on unstable ground.

#### **PHYSICS**

Kristian M. Bodek Advisor: Hong Lin

The Construction and Study of a Unidirectional Photorefractive Ring Resonator with a Stabilized Cavity Length

A unidirectional photorefractive ring resonator has been shown to exhibit an unsteady pattern in the transverse plane. The two goals of this thesis are to: (1) minimize all external sources contributing to an unstable cavity length, and (2) study the inherent properties of a unidirectional photorefractive ring resonator whose cavity length is stabilized. The effects of external disturbances on the resonator cavity were minimized by incorporating an electronic locking circuit to stabilize the path length of the cavity. The mechanisms responsible for a changing transverse pattern and the effect of an optical feedback arm on that pattern were studied. It was determined through interferometry analysis that the frequency shifting process that occurs inside the crystal is a primary factor responsible for the rate of motion of the transverse beam pattern. By adding an optical feedback it was possible to promote or suppress aspects of that pattern. Further research continues to determine the effect on the transverse pattern of Fourier filtering the feedback beam.

#### Christopher A. Danforth

Advisors: Mark D. Semon and Shepley L. Ross, II

## Why the Weather is Unpredictable: An Experimental and Theoretical Study of the Lorenz Equations

Mathematical modeling is an important tool in the science of weather forecasting. In the 1960s, meteorologist Edward Lorenz developed a model of convection in the atmosphere that revealed one of the most intriguing behaviors in the history of science: chaos. Lorenz's model of atmospheric convection led to a system of ordinary differential equations that are now called the Lorenz equations. In the mathematical portion of this thesis, we derive the Lorenz equations from the thermal energy diffusion equation and the Navier-Stokes equations for conservation of momentum in a fluid. In the physics portion of this thesis, we describe the construction of a thermal convection loop, or thermosyphon, whose behavior can be modeled by the Lorenz equations. We have taken data from the thermosyphon experiment and shown why it not only verifies the predictions of the Lorenz equations, but that it also illustrates why weather is inherently unpredictable beyond a time period of four or five days.

## Joshua D. Eddinger Advisor: Gene A. Clough

#### Force Feedback Application in Robotics

This thesis studies the interface between a robotic hand and a human one through the use of force feedback. Initially, I designed and built a simple robotic hand and control unit. Both devices were designed with force sensors to generate the feedback or input needed to control them with a computer. As an intermediate step to my final project goal, I used the robotic hand to map the repulsion force of different objects as they were being squeezed. This data was used to create a virtual representation of the object in the computer. After the data were collected, they were supplied to the control unit to reproduce the repulsion force of an object for a user. The final research goal was to have the robotic hand connected to the control unit, so they can function together, mapping and reproducing the repulsion force in real time.

#### POLITICAL SCIENCE

Bridie McGreavy Advisor: Leslie I. Hill

Gender, Environmental Degradation, and Social Collective Action: An Analysis of Chipko, Akwesasne, and Nguila Cases

This thesis examines women's responses to environmental degradation. To address this question, I focus on three case studies: my fieldwork in Nguila, Cameroon; the Chipko movement in Uttarkhand, India; and the Mother's Milk Project on the Akwesasne reservation in northern New York state. I analyze women's responses to environmental degradation through a framework that combines ecofeminst, feminist environmentalist, and social ecologist perspectives. I examine women's collective action, as well as material structures in women's lives such as the sexual division of labor, political participation, land rights, and colonialism. I also look at religion/spirituality as an ideological structure influencing women's responses. These varied perspectives reveal the construction of gender and how environmental degradation has impacted this construction. I argue that women respond to the environmental degradation based on their practical gender interests. I elaborate on the similarities and differences among the cases to show that women respond to environmental degradation based on a complex system of structures that guides the construction of gender and interests in the protection of the environment.

#### **PSYCHOLOGY**

Anne E. Bower
Advisor: Grant J. Rich

Hiking in the Zone: The Relationship of Hiking to the Flow Model

Hiking is a common recreational pastime. People around the world flock to the mountains for weekend excursions or day hikes. What motivates people to hike? Csikszentmihalyi (1996) developed a concept called flow, which refers to an optimal state in which a person is intrinsically motivated and feels a changed perception of time, loss of self-consciousness, and an exclusion of distractions, among other elements. This study assesses whether or not hiking produces the flow elements. An additional criterion, connection to place, is hypothesized as unique to the flow experience for hikers. Quantitative and qualitative data were collected. A group of thirty hikers were interrupted at a random point while hiking and asked to fill out Csikszentmihalyi's (2000) Experience Sampling Method questionnaire, which assesses the flow elements. Thirty additional participants, the

comparison group, were interrupted and asked to fill out the questionnaire as they went about their daily routine. Interviews were conducted with three hikers, and three autobiographies by hikers were examined for the flow elements and a connection to place. Qualitative results illuminate quantitative results. Hiking was found to produce most, but not all, of the flow elements as posed by Csikszentmihalyi (1996).

Anneliese M. Brown Advisor: Georgia N. Nigro

## A Question of Inclusion: Situating Battered Lesbians Within the Battered Women's Movement

Due to the efforts of the battered women's movement, wide-spread recognition surrounds the issue of domestic violence. However, this awareness has been confined to the heterosexual sphere. Many are not aware that domestic violence occurs in lesbian relationships at the same rate as in heterosexual relationships. This lack of recognition stems from the initial reluctance of the gay community and the battered women's movement to discuss the issue of lesbian intimate violence. After years of silence, the battered women's movement has expressed a desire to be inclusive of battered lesbians. In this thesis I explore the extent to which the theory and practice of the battered women's movement is inclusive of lesbians. I interviewed employees of both battered women's agencies that provide lesbian-specific services and those that describe their services as being available to *all* women. My analysis also consists of documents gathered from both types of agencies. I conclude with a discussion of the implications of my analysis for the movement's service provision, not only to lesbians, but to all women.

Meghan K. Hickey

Advisors: Kathryn G. Low and Robert S. Moyer

#### Pain, Affect, and Pain Schema Activation

Pain has been examined as a subject of research by both physiologists and psychologists, resulting in many models explaining the process. The present studies examine in closer detail how pain is cognitively structured and organized, looking especially at schema activation. Two experiments were conducted. The first was a laboratory test of pain schema activation in undergraduates under four conditions: negative mood and an acute pain stimulus, negative mood only, acute pain stimulus only, and no manipulation. The results from this study should show that a pain schema can be activated by the acute pain stimulus and that a negative mood will increase this activation. The second experiment examined the same phenomenon in the naturalistic setting of a flu shot clinic. The results from this experiment should show that an acute naturalistic pain stimulus does activate a pain schema. The results from these two experiments could help in the understanding and treatment of pain. The suggested next step in this exploration into the cognitive processes of pain would be to extend the study to chronic pain and its respective cognitive processes.

#### RELIGION

Stacey L. Berkowitz

Advisor: Marcus C. Bruce

Wrestling with G-d: Defining Jewish Identity in Modern Day Hungary and Poland

Fifty-six years after the liberation from Auschwitz and eleven years after the fall of Communism, there remains a strong Jewish community in Eastern Europe. Because of the enthusiasm and motivation of the third generation of Jews after the Holocaust, there is a rebirth of Jewish life and culture. After years of oppression and silence under Communism the Jews of Eastern Europe are able to ask the question of what it means to be a Jew. Having interviewed Jews in Hungary and Poland, I use their voices to describe how this rebirth has taken place. This thesis investigates the rise and fall of the former epicenter of Jewish intellectual and cultural life, the concepts of Jewish identity, and specifically how members of the third generation of Jews after the Holocaust have defined their Jewish identity in Hungary and Poland and sparked a rebirth. These two countries are important because the Jewish communities have suffered and grown in different ways, both of which illustrate the magnitude of the renaissance. The definition of Israel is he who wrestles with G-d. The Jews of Eastern Europe are most definitely the children of Israel, for they have wrestled with G-d and prevailed.

Anne E. Warner

Advisor: Thomas F. Tracy

The Birth of Tibetan Buddhism in America: How Chogyam Trungpa Rinpoche's Struggle for Identity Gave Rise to a New Form of Buddhist Practice

One of the first Tibetan teachers to bring Tibetan Buddhism to the West, Chogyam Trungpa, attracted a tremendous amount of initial attention from Westerners—Americans in particular—interested in learning more about the "exoticised" Eastern religion. This initial attention ultimately developed into a community of devoted American students, as Trungpa used comparisons to everyday life in order to present the doctrines of Tibetan Buddhism in a way that contemporary Americans could understand. Conversely, the American students taught Trungpa about American culture and helped him adjust to life in the United States during the 1970s. However, the learning curves of Trungpa and his students were not congruent, as Trungpa appeared to acclimate to American culture at a much faster rate than he could transmit the essential teachings of Tibetan Buddhism. Consequently, as Trungpa became "Americanized," so did his teachings. The result was the transmission, and subsequent adoption, of a diluted form of the original, orthodox form of the religion, known today as American Buddhism. This thesis examines Chogyam Trungpa's identity transformation within a Tibetan Buddhist context, and illustrates the ways in which it affected, and essentially created, the form of Buddhism practiced in America today.

#### THEATER

John J. Ambrosino
Advisor: Ellen E. Seeling

Isn't It Romantic: A Production Book

The focus of this thesis is the successful production of Wendy Wasserstein's comedy *Isn't It Romantic*. The production, which opens on March 15<sup>th</sup> in Schaeffer Theatre, is accompanied by a paper that chronicles the steps taken to present a viable production concept supported by textual evidence.

#### **WOMEN'S STUDIES**

Anneliese M. Brown Advisor: Georgia N. Nigro

A Question of Inclusion: Situating Battered Lesbians Within the Battered Women's Movement

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