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STUDENT RESEARCH
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THE FIFTEENTH ANNUAL ELKIN R. ISAAC STUDENT RESEARCH SYMPOSIUM

ALBION COLLEGE

APRIL 13-15, 2004

SCHEDULE OF EVENTS

Tuesday, April 13, 2004

- 7:00 p.m. **Panel Discussion: "Athletics and the Liberal Arts College—Past, Present, and Future"**
Welcome: Thomas G. Schwaderer, '56
Opening Remarks: President Peter T. Mitchell, '67
Panelists: Cedric W. Dempsey, '54, June Luke Dempsey, '54, Elkin R. Isaac, '48, Peter T. Mitchell, '67,
David L. Neilson, '66, Lisa R. Roschek (Athletic Dept.), Troy D. VanAken (Athletic Dept.)
Norris Center 101
Reception immediately following the program, Norris Center

Wednesday, April 14, 2004

- 7:30 p.m. **The Elkin R. Isaac Lecture: John W. Porter, '53**
"Educational Leadership for the 21st Century"
Welcome: President Peter T. Mitchell, '67
Opening Remarks: Thomas G. Schwaderer, '56
Speaker Introduction: C.J. DuBois, '05, President Mitchell
Bobbitt Visual Arts Center Auditorium
Reception immediately following the program, Bobbitt Visual Arts Center Lobby

Thursday, April 15, 2004

- 8:30-10:00 a.m. **Symposium Platform Presentations**
Refreshments will be served at each location listed below.
See also detailed schedule of presentations on pages 4-6.
- | | |
|--------------------------------------|--|
| Forum #1
<i>Norris Center 103</i> | Forum #3
<i>Putnam Hall 106</i> |
| Forum #2
<i>Norris Center 101</i> | Forum #4
<i>Bobbitt Visual Arts Center Auditorium</i> |
- 10:30 a.m.-Noon **Honors Convocation**
Goodrich Chapel
- 1:15-3:30 p.m. **Symposium Platform Presentations**
See locations listed for morning session.
Refreshments will be served at each location.
- 3:00-4:30 p.m. **Symposium Poster Presentations**
Gerstacker Commons, Kellogg Center
- 7:00 p.m. **Symposium Keynote Address: Gloria Steinem**
"An Evening with Gloria Steinem"
Welcome: President Peter T. Mitchell, '67
Conferral of Honorary Degree: President Mitchell and Trisha Franzen
Speaker Introduction: Erin E. Laidlaw, '04
Goodrich Chapel
Reception immediately following the program, Bobbitt Visual Arts Center Lobby

THE ELKIN R. ISAAC ENDOWMENT

The Elkin R. Isaac Endowed Lectureship was created in 1991 by Albion College alumni in honor of their former teacher, coach, and mentor, Elkin R. "Ike" Isaac, '48. Isaac taught at Albion from 1952 to 1975 and coached basketball, track, and cross country. He led his teams to one Michigan Intercollegiate Athletic Association basketball title, six consecutive league championships in track, and three cross country championships. He also served as the College's athletic director and created Albion's "Earn, Learn, and Play" program and the "Albion Adventure Program." In 1975, Isaac became athletic director at University of the Pacific and retired there in 1984. He now lives in Kalamazoo, Mich., with his wife, Edith.

Reflecting Elkin Isaac's lifelong interests in higher education and research, proceeds from the endowment are used to bring a noted scholar or public figure to campus each year to offer the Isaac Lecture and to visit with classes. In 1997, the Isaac Lectureship was expanded and is now associated with Albion College's annual Student Research Symposium, featuring presentations by students recommended by their faculty sponsors for outstanding independent study and research. The symposium now bears Isaac's name.

THE ISAAC ENDOWMENT COMMITTEE

Cedric W. Dempsey, '54

Ben E. Hancock, Jr.

T. John Leppi, '59

Thomas G. Schwaderer, '56

Leonard F. "Fritz" Shurmur, '54 (deceased)

John R. Taylor, '55

PANEL DISCUSSION

"Athletics and the Liberal Arts College—Past, Present, and Future"

A special panel presentation is planned this year in honor of symposium namesake, Elkin R. "Ike" Isaac, '48. The program focuses on a topic of longstanding interest to Isaac—the balance between academic life and athletic competition. Drawing on their professional experiences, the panelists will offer their perspectives on the state of NCAA Division III athletics today and directions for the future.

PROGRAM PARTICIPANTS

Cedric W. Dempsey, '54

Past President, National Collegiate Athletic Association

June Luke Dempsey, '54

Retired Educator, University of Arizona, and Youth Sports Advocate

Elkin R. "Ike" Isaac, '48

Retired Coach and Athletic Administrator, Albion College/University of the Pacific

Peter T. Mitchell, '67, Panel Moderator

President, Albion College

David L. Neilson, '66

Commissioner, Michigan Intercollegiate Athletic Association

Lisa R. Roschek

Head Women's Soccer Coach, Albion College

Troy D. VanAken

Executive Assistant to the President for Athletics/Vice President for Information Technology, Albion College

Thomas G. Schwaderer, M.D., '56

Osteopathic Surgeon

THE ELKIN R. ISAAC LECTURE

John W. Porter, '53

From the classroom to the nation's capital, John Porter has spent the last 50 years as an advocate for Michigan students of all ages while serving both the state and federal governments as an education expert. After pioneering Michigan's state scholarship program in 1964, he was named the state superintendent of public instruction in 1969. Ten years later, Porter left the Michigan Department of Education to take the presidency of Eastern Michigan University (EMU), the first and only African-American president in EMU history. After his successful 10-year tenure at EMU, he served as general superintendent for the Detroit Public Schools from 1989 to 1991. He then served as chief executive officer of Urban Education Alliance, Inc., from which he recently retired. Porter remains active in matters related to urban schools and in the school reform movement.



Porter began his long and distinguished educational career as a teacher at Albion High School after graduating from Albion College in 1953. Within five years, he had accepted a job with the Michigan Department of Education, becoming its first African-American employee in a professional capacity. Porter went on to earn his master's and doctoral degrees from Michigan State University, where he also taught from 1962 to 1966.

U.S. Presidents Johnson, Nixon, Ford, and Carter all appointed Porter to commissions and councils addressing higher education, employment, and mental health. He has served on the boards of numerous national organizations, including the Council of Chief State School Officers (past president), the College Entrance Examination Board (past chairman), the National Commission on the Future of State Colleges and Universities (past vice chairman), and the Charles Stewart Mott Foundation. Porter's professional accomplishments have been recognized by organizations as varied as the Michigan State Legislature, the Tuskegee Airmen, and the Michigan Education Hall of Fame.

At EMU, the College of Education building and a professorship are named in his honor. Porter holds 10 honorary doctorates, and has been named both an Albion College Distinguished Alumnus and a member of the College's Athletic Hall of Fame. Last fall, he received the Hall of Fame's Lifetime Achievement Award. After 15 years of active involvement on the College's Board of Trustees, he is now an honorary trustee. In 2002 Albion announced the creation of the John W. Porter Endowed Professorship in the Fritz Shurmur Education Institute.

He lives in Ann Arbor.

SYMPOSIUM KEYNOTE ADDRESS

Gloria Steinem

Gloria Steinem has combined a passion for women's rights with a talent for journalism to become one of the most important, eloquent, and controversial voices of the last century. Although news anchor Harry Reasoner wondered, in 1971, whether she "would run out of things to say" within six months of founding *Ms.* magazine, Steinem is well into her fifth decade of writing for and speaking to an international audience.



Granddaughter of the noted suffragist Pauline Steinem, Gloria Steinem had a turbulent childhood growing up during the Great Depression. Born in Toledo, Ohio, in 1934, she lived most of her early childhood on the road, as her father trekked across the country as a traveling antiques dealer. During her teenage years, Steinem was the sole caretaker of her household while her mother was nearly incapacitated by depression. Nonetheless, Steinem graduated with Phi Beta Kappa honors from Smith College and won a fellowship to study for two years in India, an experience that fostered her first stirrings of political activism.

As a journalist, Steinem gained attention in 1963 with "I Was a Playboy Bunny," a behind-the-scenes account of her experience at Hugh Hefner's Playboy Club. Despite rampant discrimination against women journalists at that time, Steinem crafted a successful career in the 1960s, working as a freelance journalist, writing for the television show *That Was the Week That Was*, and eventually becoming a founding editor of *New York* magazine.

Steinem's dream of a new magazine for women—one that eyed contemporary issues from a feminist perspective—was born in 1971, when the first issue of *Ms.* magazine appeared as a supplement to *New York* magazine. *Ms.* today has 125,000 subscribers, with Steinem continuing to serve as contributing editor.

Steinem has had an equally distinguished career in political activism. She participated in the founding of the National Women's Political Caucus, the Women's Action Alliance, the Coalition of Labor Union Women, Voters for Choice, and Women Against Pornography. She also established the *Ms.* Foundation for Women, devoted to helping the lives of women and girls in the areas of economic security, leadership, and health and safety.

She is the author of several books, including *Outrageous Acts and Everyday Rebellions*; *Revolution from Within: A Book of Self-Esteem*; *Marilyn: Norma Jean*; and *Moving Beyond Words*.

In recognition of her efforts on behalf of social equality for women, in 1993 Steinem was inducted into the National Women's Hall of Fame in Seneca Falls, New York.

STUDENT PRESENTATION SCHEDULE – Thursday, April 15, 2004**FORUM #1 – Norris 103**

8:30	Michael Kopec, Sean Logan (McCurdy)	The Functional Significance of Intersexes in the Intertidal Amphipod <i>Corophium volutator</i>
8:45	Craig Streu (French)	Progress toward the Synthesis of Novel Constrained Heteroaromatic Chiral Hypervalent Iodine Reagents
9:00	Kim Illg (Green)	Can Low-Temperature Plasmas Be Used to Modify Surface Properties? Making Hydrophobic Membranes Hydrophilic with H ₂ O ₂ Plasmas
9:15	Morgan Haugen (Kennedy)	Molecular Sexing of Nestling House Wrens (<i>Troglodytes aedon</i>) in 2003
9:30	Eric Grunow (Scheel)	Cloning <i>Netrin</i> Genes from <i>Artemia franciscana</i>
9:45	Shari Gross (Kennedy)	Do Unmated Male House Wrens (<i>Troglodytes aedon</i>) Sing the Same Songs in Consecutive Years?
1:15	Anjali Arora (Green)	Investigation of the Holding Time Limits of a Number of Semi-volatile Organic Compounds
1:30	William Green (Bollman)	Fermat's Last Theorem: Advances in the Nineteenth Century
1:45	Shawn Maurer (Bieler)	Electrochemical Tuning of Inorganic Semiconductor Conjugated Doped Polymer Interfaces
2:00	Marián Novak (Erbežnik)	Search for Xylose Regulator in <i>Thermoanaerobacter ethanolicus</i>
2:15	Amy Radgowski (Kennedy)	Molecular Sexing of Black-Capped Chickadees
2:30	Christine Riker (Mason)	Theoretical and Experimental Analysis of Critical Strain Energy Release Rates for Mode II Fracture in FRP-Wood Bonds
2:45	Derek Burkholder (Dick)	Paradise/Paradise Lost? Photographic Narratives of the American Environment

FORUM #2 – Norris 101

8:30	Kirstin Leiby (Otto)	The Problem of Social Desirability: Continuous Response Measures of Social Judgments
8:45	Angela Edberg (Otto)	Motives for Violence in Video Games and Subsequent Effects on Aggression
9:00	Steven Celmer (Anes)	Automatic Hemispheric Activation for Affect after Presentation of Major and Minor Chords: Evidence from an Affective Word-Evaluation Task
9:15	Amber Chenoweth (Wilson)	Experimental Neurosis? A Runway-Based Examination to Develop a Model in the Rat
9:30	Joshua Hodges (Wilson)	Choice, Efficiency, and Distraction with Respect to the Estrous Cycle in an Operant Conditioning Task
9:45	Lindsay Sander (Keyes)	Case Study of a Psychiatric Partial Hospitalization Program: A Comparison of Two Cohorts
1:15	Darcy Crain (Keyes)	Children's Stereotypes Based on Skin Color: An Innovative Approach
1:30	Kimberly Mutch (Christopher)	Perceptions of Organizational Explanations for a Transgression
1:45	Jennifer Barrett (Walter)	Disordered Body Concept and Its Relationship to Health Choices
2:00	Daniel Westerhof (Christopher)	Perceptions of People Who Help
2:15	Kristopher Gauthier (Christopher)	The Interrelationship between Need for Cognition and Religious Doubt on Life Satisfaction
2:30	Jessica Hauser (Walter)	Interactions between Parents' Marital Status, Family Conflict, and Sibling Relationships in Late Adolescence
2:45	Maggie Keller (Christopher)	Attributions of Blame in a Rape Incident as a Function of Victim Self-Presentational Style
3:00	Kendra Malcomson (Christopher)	The Protestant Work Ethic, Religiosity, and Homonegative Attitudes
3:15	Meghan Caswell (Walter)	The Relationship between Sociometric Status and Social Goals and Strategies among Best Friends and Nonfriends

FORUM #3 – Putnam 106

8:30	Andrew Wakefield (Cocks)	Fanfare for Hitler: Gray Music in the Holocaust
8:45	Elizabeth Crabb (Sacks)	Sex in Black and White: Prostitution in Progressive Era New York City
9:00	Becky Smith (W. Rose)	The Constitutionality of School Vouchers in Light of <i>Zelman v. Simmons-Harris</i>
9:15	Rachel Todd (Berkey)	Responding to Bioterrorism: An Analysis of State and Local Responses to the Threat of Smallpox
9:30	Elizabeth Vogel (Cocks)	Hardenberg and Heine: Two Views of Napoleonic Influence on Prussian Society
9:45	Juan Ponce (Dick)	Boom, Bust, Recovery: Explorations of Albion Economic Trends, 1950-Present
1:15	Alyssa Montgomery (Berkey)	American Dreams: The Intersection of Race, Gender, Class, and Age in Albion's African American Community
1:30	Kimberly Mann (Mullin)	Reading Rims: Reclassifying and Interpreting Ceramic Jars from Xaltocan, Mexico
1:45	Nick Mourning (Meloth)	The Role of the African American School Teacher in the Albion Public School System
2:00	Jessie Longhurst (Dick)	Explorations of Youth Recreation in Albion during Boom, Bust, and Recovery
2:15	Angela Baeckeroot (Berkey)	A Case Study of Livonia, Michigan: Housing Segregation in the Metropolitan Detroit Area
2:30	Elizabeth Gwinn (Cocks)	Non-Jewish Victims of the Holocaust
2:45	Stephanie Pendrys (Horstman)	The All-American Girls Professional Baseball League
3:00	Melinda Sloma (Cline)	Huntingdon Life Sciences and Stop Huntingdon Animal Cruelty: A Normative Analysis

FORUM #4 – Bobbitt Visual Arts Center Auditorium

8:30	Alexis Snyder (Young)	Dramaturgy and Television: An Exercise in Applying the Principles of Dramaturgy to an Example of Television Drama
8:45	Erin Laidlaw (Lockyer)	White Southern Womanhood Reconsidered
9:00	Erica Dudas (Mourad)	The Hermeneutics of Suspicion: A Critical View Using Feminist and Black Theology
9:15	Alison Harris (Guenin-Lelle)	Feu Follet: Le Role de la Musique Dans la Renaissance Culturelle en Acadiana
9:30	Marci Nelson (Mullin)	"The Pineapple Story": Exploring the Use of Narrative in New Tribes Mission
9:45	Christopher Graves (Bishop)	How Emotion Is Expressed through Music by Twentieth-Century Composers
1:15	Ayla Malik (Franzen)	Crossing Borders: Middle Eastern and South Asian Women Writing and Publishing at Home and in the U.S.
1:30	Angela Edberg (Ball)	"With Verdure Clad" from Haydn's <i>The Creation</i>
1:45	Amy Weinmeister (Chytilo)	Albion: Transitions
2:00	Brent Clore (Ball)	Alexandre Glazounov's Concerto for Alto Saxophone and Orchestra
2:15	Camille Hamilton (McCauley)	"Falling": A Self-Portrait Installation
2:30	Steven Plunkett (Jordan)	"To Vex the World": 300 Years of Jonathan Swift and His Critics
2:45	Halie Watt (Ball)	"Porgi, Amor, Qualche Ristoro" from Mozart's <i>Le Nozze di Figaro</i>
3:00	Ann Preczewski (Diedrick)	Children's Literature, Adult Themes

(continued on next page)

POSTER PRESENTATIONS – Gerstacker Commons, Kellogg Center, 3:00-4:30 p.m.

Ashley Alker (Moret)	“La Selva” (“The Forest”)
Kristin Brubaker (Green)	Lead Analysis in Paint from Albion Public Schools
Virginia Cangelosi, Tamar Vescoso (Green)	Detecting Low Concentrations of Phosphorous in Natural Water Samples Using Alternative Analytical Methods
Sarah Carver (White)	Big-Time Problems in Small Town America: The Effects of the Interstate, Urban Sprawl, and Urban Renewal on Albion, Michigan, 1950-2000
Nicole Casey (McCurdy)	The Trematode <i>Himastha quissetensis</i> Commonly Infects Soft-Shell Clams (<i>Mya arenaria</i>) and Alters Their Burying Behavior
Amber Chenoweth, Joshua Hodges (Wilson)	Experimental Differentiation of CS+ and CS- by Rats in a Runway-Based Pavlovian Conditioning Task
Drew Havens (Moss)	Personality Themes, Physical Ability, and Athletic Success
Jason Kennedy (Starko)	“Cosos”: The Process and Product of Writing a Full-Length Musical
Kyle Koehs (Bishop)	Beg, Borrow, and Steal: Allusion and Fusion in Twentieth-Century Concert Music
Diana Lancaster (McCurdy)	Sex-Distorting Microsporidia in <i>Corophium volutator</i>
Michael Marvin (Rohlman)	Thermodynamic Characterization of the <i>Anabaena</i> pre-tRNA ^{leu} Group I Intron
Nick Moroz (Seely)	Performance Enhancement Study of an Electrostatic Faraday Cup Detector
Katy Niesen (Kennedy)	Individual Variation in Songs of House Wrens
Jennifer Paine (Moret)	“Love” and “War”
Benjamin Riegler (Dick)	The Kalamazoo River in Albion, Michigan: An Environmental Overview of the Past Half-Century
Lexie Watkins (Franzen)	Perception of and Homophobia toward Female Collegiate Coaches
Sara West (Wilson)	Conditioned Inhibition of Already-Elicited Autosshaped Conditioned Responses in the Rat

ABSTRACTS OF STUDENT PRESENTATIONS

ASHLEY ALKER, '06

"La Selva" ("The Forest")

Faculty Sponsor: Zulema Moret

Majors: Biology, Spanish
Hometown: Harbor Springs, Michigan

The purpose of "La Selva" was to take an important issue of a Spanish-speaking country and display it in a creative fashion.

We chose Microsoft PowerPoint to create a slide show of facts and pictures of the rainforest played to the song "Burnt by the Sun" by David Byrne. We also created a poem that was run during the show about the destruction of the rainforest. The presentation is conducted completely in Spanish. The rainforest of Costa Rica and its surrounding countries has been shown to be decreasing at an alarming rate over the last few years, and our plan was to deliver the message of the destruction of the rainforest and its effects on the world.



ANJALI ARORA, '04

Investigation of the Holding Time Limits of a Number of Semi-volatile Organic Compounds

Faculty Sponsor: David Green

Major: Chemistry
Hometown: Saginaw, Michigan

The Environmental Protection Agency has set the holding time limits for semi-volatile organic compounds at fourteen days.

This study is an examination of the changes in concentration of seven representative organic compounds in soil over a period of seventy days. The two major aspects of this study are to measure



changes within the holding time limit and beyond the holding time limit. If compounds change radically within the fourteen-day limit, then the samples may not be representative of the whole. If the compounds remain relatively stable well after the holding time limit, then laboratories may be forced to disregard data unnecessarily. It was hypothesized that most degradation, if measurable within the holding time limit, would occur within the first few days and then level off. Good separation of compounds was observed via gas chromatograph-mass spectrometry, and working calibration curves were created. Concentrations of some representative compounds changed over the course of a seventy-day holding time experiment, and overall, degradation was evident within the first fourteen days for a number of compounds. Some compounds are more stable than others, and a statistical analysis has been done to examine the consequences of the fourteen-day holding time limit.

Supported by: FURSCA

ANGELA BAECKEROOT, '04

A Case Study of Livonia, Michigan: Housing Segregation in the Metropolitan Detroit Area

Faculty Sponsor: Leonard Berkey

Majors: Anthropology and Sociology, German
Hometown: Ferndale, Michigan

The Detroit metropolitan area is one of the most racially segregated in the United States, with the majority of African Americans living in the central city and the majority of whites living in the suburbs.

Although many cities have experienced segregation in some form, Detroit's perpetual residential segregation is astounding and puzzling. Discussions of the 1967 riot in Detroit, racial attitudes, and real estate development reveal some of the motivations and circumstances that led to the migration of many people from the city to the subur-



ban ring. Through a series of interviews and surveys, I examine how the suburb of Livonia in particular has managed to develop and maintain its almost exclusively white population. Although individual people and families moved from Detroit for personal reasons, there are trends that can be used to explain Detroit's current segregated state. Factors such as the quality of the school systems, property values, fear of crime, and deterioration of neighborhoods prompted people in many cases to leave the city. These actions and motivations helped to create the current racial situation in the Detroit area.

Supported by: FURSCA

JENNIFER BARRETT, '04

Disordered Body Concept and Its Relationship to Health Choices

Faculty Sponsor: Jamie Walter

Majors: Psychology, Anthropology and Sociology
Hometown: Troy, Michigan

Research suggests that many college women are susceptible to body dissatisfaction and weight preoccupation.

Many times this leads females to become afflicted with an eating disorder. As often as not women with eating disorders participate in a dangerously obsessive and demanding workout regimen. The present study was designed to explore the relationship between disordered eating, excessive exercising, and risky health behaviors among college women. In particular, this study explored the link between disordered eating and other negative health practices. Risky health practices were defined as sexual safety and health behaviors.

Three questionnaires were mailed to 200 college women. Participants completed the Eating Disorders Inventory-2 (Garner, 1984), a demographics questionnaire (e.g., year in college), the Obligatory Exercise Scale (Thompson and Pasman, 1991), and a short



version of the Contraceptive and Prophylactic Behavior Questionnaire. It was hypothesized that females who exercise excessively will score lower on the Eating Disorder Inventory-2 than females who exercise moderately or not at all, females who score low on the sexual health behavior portion of the questionnaire will score lower on the Eating Disorder Inventory-2 than those who score high, and also that younger college females (i.e., freshmen and sophomores) will have higher body dissatisfaction and/or score lower on the Eating Disorder Inventory-2 than older college females (i.e., juniors and seniors). Results are discussed in terms of warning signs of dangerous health practices of college-aged women.

Supported by: FURSCA

KRISTIN BRUBAKER, '05

Lead Analysis in Paint from Albion Public Schools

Faculty Sponsor: David Green

Major: Biology
Hometown: Wabash, Indiana

For hundreds of years lead has been viewed as a substance that is dangerous at high levels. Recent studies provide evidence for the detrimental effects of lead during development of children and during pregnancy.



Children's ingestion of lead can lead to slowed growth, lower IQ, behavior problems, and damage to the development of the brain. The most common source of lead poisoning now is inhalation or ingestion of paint chips and dust. In order to study the hazards of lead at a local setting, the levels of lead in paint in Albion Public Schools were tested.

Ten samples were taken from various locations in six public schools. The samples were ground and dissolved with nitric acid and hydrogen peroxide using National Institute for Occupational Safety and Health Method 7082, hot plate acid digestion. The solution was then analyzed by the inductively coupled plasma spectrometer to determine the level of lead present in each sample. Only two schools were found to have levels higher than regulations allow.

These schools, Austin and Dalrymple, were closed before lead levels in paint were regulated. Further research should be done to determine the amount of danger the presence of this lead presents before the buildings are put back into use.

This research was conducted as part of the group project, "Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century."

Supported by: FURSCA, NCUR/Lancy

DEREK BURKHOLDER, '04

Paradise/Paradise Lost? Photographic Narratives of the American Environment

Faculty Sponsor: Wesley Dick

Major: Biology
Hometown: Mason, Michigan

This presentation is a synthesis of three intensive trips sponsored by the Institute for the Study of the Environment. The first trip was to the Pacific Northwest (2001), the second was to the American Southwest (2002), and the third was to the Chesapeake Bay watershed (2003). America can be said to have a split personality concerning the continent. Americans love the land and Americans destroy the land. Each of these ventures included scenes of environmental devastation and scenes of transcendental beauty, carefully documented through photographs. The photographs tell a contemporary environmental story of three regions of the United States, and this study aspires to illuminate the question: Paradise/Paradise Lost?



Supported by: Institute for the Study of the Environment

VIRGINIA CANGELOSI, '05

Major: Chemistry
Hometown: Grand Rapids, Michigan

TAMAR VESCOLO, '06

Major: Chemistry
Hometown: Garden City, Michigan

Detecting Low Concentrations of Phosphorous in Natural Water Samples Using Alternative Analytical Methods

Faculty Sponsor: David Green

Three analytical chemistry methods, (1) ion chromatography (IC), (2) inductively coupled plasma-atomic emission spectroscopy (ICP-AES), and (3) Environmental Protection Agency (EPA) Colorimetric Method 365.2, were tested to find their lower limits of detection for phosphorus (P) in water samples. Lab-prepared samples and standards were used to determine the lower limit of



Cangelosi



Vescoso

detection for each method. The IC measures samples in parts per million (ppm) phosphate (PO_4^{3-}), while the ICP-AES and EPA Method 365.2 measure total phosphorus in each sample. The chemical form of phosphorus can be important in natural water samples where not all phosphorus is present as phosphate. The objective of this study was to measure the specific range of phosphorus concentrations that each method can measure accurately and compare them. EPA Method 365.2 had the lowest limit of detection of 0.01ppm P. The ICP-AES had a lower limit of detection of 0.02ppm P, and the IC had a lower limit of detection of 0.75 ppm PO_4^{3-} .

Supported by: FURSCA-Kresge Fellowship (Cangelosi), FURSCA-Hyde Fellowship (Vescoso)

SARAH CARVER, '06

Big-Time Problems in Small Town America: The Effects of the Interstate, Urban Sprawl, and Urban Renewal on Albion, Michigan, 1950-2000

Faculty Sponsor: Douglas White

Major: Biology
Hometown: Albion, Michigan

Albion, Michigan boomed in the 1950s and 1960s. A 30% drop from a peak population of 13,000 and a declining industrial base have affected the town recently. As part of the NCUR/Lancy Initiative project,



“Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century,” I examined the contribution of the interstate, urban sprawl, and urban renewal to Albion’s decline.

In 1960, Interstate 94 opened north of town; the highway redirected traffic away from downtown. City hall documents and traffic-volume reports provided important background information. Main roads within Albion have lost traffic between 1960 and 2001, except for Eaton Street, an exit of I-94.

To assess sprawl, I examined changes in where Albion workers lived by using telephone directories. Over the last 50 years, the percentage of Albion College employees living within walking distance of campus declined from 95% to under 50%; those living more than 20 miles away increased from 0% to 20%. By looking at a local factory’s employees, sprawl was even seen within the town. Employees living within a half mile declined from 72% to 24%. Those living more than one mile away increased from 4% to 47%. Rental complexes were built everywhere throughout the town during urban renewal in the 1960s and

1970s. Since the 1970s, the percentage of rental-occupied homes in Albion has exceeded the national average.

Albion, Michigan is a prime example of the major changes that have occurred over the last half-century across America.

Supported by: FURSCA, NCUR/Lancy

NICOLE CASEY, '04

The Trematode *Himasthla quissetensis* Commonly Infects Soft-Shell Clams (*Mya arenaria*) and Alters Their Burying Behavior

Faculty Sponsor: Dean McCurdy

Majors: Biology, English
Hometown: Escanaba, Michigan

Using observations in the field and an experiment in the laboratory, I studied the distribution and impact of a trematode parasite (*Himasthla quissetensis*) on soft-shell clams (*Mya arenaria*) in Maine, USA. Most clams within a natural population were infected with metacercariae of trematodes, with prevalence reaching 100% for commercial-sized clams, and intensities of infection often exceeding 10 metacercariae per clam. In the laboratory, I observed that infected clams buried more shallowly in mud than uninfected and unexposed clams, consistent with the hypothesis that clams under stress trade-off refuge from depredation for increased access to food or oxygen. Since parasitism is common and appears costly for clams, I argue that it may impact recruitment within certain populations of hosts.



Supported by: FURSCA

MEGHAN CASWELL, '04

The Relationship between Sociometric Status and Social Goals and Strategies among Best Friends and Nonfriends

Faculty Sponsor: Jamie Walter

Major: Psychology
Hometown: West Bloomfield, Michigan

Children experience many positive and negative changes during the middle school transition. One of these changes is an increase in casual relationships and peer interactions. Peer interactions



vary tremendously between children and the quality of these interactions is often related to their social status in the peer group. Therefore, children who are rejected by their peers or are popular will respond in different ways to social situations. The purpose of this research was to examine the relationship between sociometric status (i.e., rejected, popular) and the strategies and goals they use in social conflict situations among their best friends and nonfriends. A nonfriend was defined as a classmate the student dislikes. Feelings of loneliness and social dissatisfaction were also assessed in order to examine their relationship with sociometric status.

A total of 142 students (62 males and 80 females) attending a sixth through eighth grade middle school participated in the study. It was hypothesized that all children will use prosocial strategies and relationship goals with their best friends, regardless of their social status. When in conflict with their nonfriends there will be differences among status groups; popular children will use prosocial strategies and relationship goals, rejected children will use hostile/coercive strategies and control and self-interest goals, and neglected children will use passive strategies and avoidance goals. Finally, it is hypothesized that rejected students will report higher levels of loneliness than any other sociometric group, specifically, popular students. Results will be discussed in terms of the quality of children’s friendships and potential intervention strategies.

Supported by: FURSCA

STEVEN CELMER, '04**Automatic Hemispheric Activation for Affect after Presentation of Major and Minor Chords: Evidence from an Affective Word-Evaluation Task**

Faculty Sponsor: Michael Anes

Major: Psychology
Hometown: Port Huron, Michigan

Much recent empirical work has been devoted to the processing of affective stimuli in visual and auditory domains. Neuroscientific evidence (Schmidt and Trainor, 2001) has been used to evaluate Davidson's (1992) claims of left hemispheric (LH) specialization for positive affect and right hemispheric specialization (RH) for negative affect. In Experiment 1, we presented participants ($n = 31$, 16 female) with major or minor chords, or with one of four types of static noise (baseline trials), in one ear or the other. We measured reaction times (RTs) for classifying a centrally-presented word as affectively positive (*enjoyment*) or negative (*destruction*). Trials consisted of a central fixation marker presented for 167 ms followed by presentation of a chord or the baseline for 500 ms. The asynchrony between onsets of auditory and word stimuli was 300 ms, and words were displayed for 167 ms.

Significant results were limited to evaluation of positive words. Consistent with Davidson's suggestion of a LH specialization for processing positive affect, when the right ear (or LH, because the contralateral projections from the ears are stronger in the opposite hemisphere) was presented with a major chord, RTs decreased and accuracy rose in word evaluation relative to the baseline condition. When minor chords were presented to the right hemisphere, RTs increased relative to the baseline. Additionally, support was found for Davidson's suggestion of an RH superiority in processing negative affect. In evaluating negative words, a nonsignificant trend toward faster RTs was observed when the left ear (RH) was presented with a minor chord, relative to the



baseline condition. Effects arose within 300 ms, the traditional threshold for establishing the presence of automatic activation effects (Neely, 1977).

Supported by: FURSCA

AMBER CHENOWETH, '04**Experimental Neurosis? A Runway-Based Examination to Develop a Model in the Rat**

Faculty Sponsor: W. Jeffrey Wilson

Major: Psychology
Hometown: Albion, Indiana

Rats were trained to exhibit nose poke behavior, initiating Pavlovian conditioning trials in which a 10-second 3600 Hz tone served as the CS+ and a 2400 Hz tone served as the CS- for the experimental group. The control group was given randomly assigned tones. After approximately twenty 15-minute sessions, clear differentiation between the tones was evident as the experimental group approached the feeder more quickly and spent more time at the feeder than the nose poke box. The control group did not exhibit this differentiation, but rather behaved as the experimental group in the CS+ trials, suggesting that the CS- served as an effective inhibitor. After this differentiation, the high tone was decreased by halves (3000, 2700, 2550, 2475, and 2438 Hz), making the task more difficult. It was hypothesized that a decrease in trials would result from a loss of predictability of when the CS+ would occur. However, this was not supported as a decrease in trials did not result to indicate experimental neurosis. Further results indicated that the CS- lost its effect as a conditioned inhibitor as the task became more difficult.

Supported by: FURSCA

AMBER CHENOWETH, '04Major: Psychology
Hometown: Albion, Indiana

JOSHUA HODGES, '04Majors: Psychology, French
Hometown: Kalamazoo, Michigan**Experimental Differentiation of CS+ and CS- by Rats in a Runway-Based Pavlovian Conditioning Task**

Faculty Sponsor: W. Jeffrey Wilson

Rats interrupted an infrared beam at one end of a 1-m runway, initiating Pavlovian conditioning trials in which a 10-s 3600 Hz tone preceded delivery of sweetened milk (0.01 ml) at the other end of the runway, and a 2400-Hz tone was unreinforced. Control rats experienced the same tones randomly associated with the reinforcer. During each daily 15-minute session the rat could initiate trials freely. After about 10 sessions differentiation was apparent: experimental rats spent more time near the feeder and moved down the runway more quickly during the CS+ than during the CS-. Control rats did not differentiate, instead behaving on all trials like the experimental rats on the CS+ trials. This suggests that rather than the CS+ serving to excite the responses, the CS- served instead as an effective inhibitor.

Supported by: FURSCA, Psychology Department

(See also Joshua Hodges, '04, p. 16.)

BRENT CLORE, '06

Alexandre Glazounov's Concerto for Alto Saxophone and Orchestra

Faculty Sponsor: James Ball

Majors: Philosophy, Political Science
Hometown: Jackson, Michigan

Alexandre Glazounov's Concerto for Alto Saxophone and Orchestra was originally composed in 1933 for Sigurd M. Rascher and quickly became one of the most famous saxophone



concertos. As a standard of the saxophone repertoire, it is typical for undergraduate and graduate students to study the piece extensively at least once in their career. I first performed this piece during my junior year of high school. That year, I received Division I rankings at both the district and state level.

Earlier this year, my saxophone instructor and I were deciding which piece to prepare for the Albion Concerto Competition. I suggested playing the Glazounov concerto because of the fond memories I had with it from my junior year. Soon after, I began preparing it a second time in early November of 2003. Preparing it this time was much different since I had the new challenge of memorizing all 14 minutes of the concerto. I began by listening to the composition and also memorizing the piece starting at the end and working toward the beginning. I used this memorization technique so that the ending of the piece would be sharp in my memory up until the performance. Along with memorizing the concerto, I also spent much of my practice time working on the challenging technique. I will be performing the Glazounov Concerto, accompanied by the Albion College Symphony Orchestra, on April 25.

ELIZABETH CRABB, '04

Sex in Black and White: Prostitution in Progressive Era New York City

Faculty Sponsor: Marcy Sacks

Major: History
Hometown: Grand Rapids, Michigan

Between 1880 and 1920, America's obsession with the "social evil" of prostitution reached a zenith. Particularly in New York City, progressive, middle class reformers



dominated the discussions of vice and sexual impropriety, focusing their concerns on the large numbers of lower class immigrants and blacks who were "invading" the city. My research, based on primary printed materials as well as archival documents, examines this overwhelming fear of prostitution and its implications on race and gender. More specifically, I have sought to expose the differences between the experiences of white and black prostitutes as well as the different reactions of the society based on the race of the prostitutes. I have examined the context of my research in terms of myths and realities for both white and black prostitutes.

In an attempt to recognize white prostitutes as redeemable by the Christian tradition, reformers quickly perpetuated the myth that all white prostitutes were victims of "white slavery" and were snatched off the streets as innocents, seduced and ruined by older white men and then forced to remain in the profession. Yet black prostitutes were seen by reformers as naturally promiscuous and therefore apt by their mere nature to be sexual aggressors who purposely seduced white men. Despite the prevalence of these myths, my research proves that not all white prostitutes were victims and that many chose to enter into prostitution out of economic survival while a significant number of black women were "white slaves," victims of forced prostitution.

Supported by: FURSCA

DARCY CRAIN, '04

Children's Stereotypes Based on Skin Color: An Innovative Approach

Faculty Sponsor: Barbara Keyes

Major: Psychology
Hometown: Plymouth, Michigan

Research has shown that children are aware of racial differences and develop a sense of racial identity by the age of 4. During the preschool and early elementary years (ages 4-7), young children



respond to classification tasks by assigning positive characteristics to white dolls and negative characteristics to black dolls, a finding suggestive of racial prejudice. Some past research has questioned the role played by social desirability in the responses of children. The present study attempted to overcome the social desirability bias by employing a new methodology for assessing children's racial beliefs that diminished the role of the researcher in presenting stimuli.

An interactive CD-ROM game designed in a Macromedia program presented ten brief vignettes. Four involved positive characteristics, four involved negative characteristics, one involved personal preference, and one involved self-identification. At the end of each vignette, participants were presented with three target children who differed only in skin color (light, medium, and dark) and were asked to pick the target described in the vignette. Data were gathered in two studies. Children in study 1 attended a racially diverse elementary school and children in study 2 attended a racially homogeneous school. Across both studies, children assigned the medium target significantly more positive characteristics than the light- and dark-skinned targets. Results suggest that the racial environment of the school affects children's racial beliefs. Moreover, the results indicate that the CD-ROM game is a subtle yet effective methodology for assessing children's racial beliefs while potentially minimizing the impact of social desirability.

Supported by: FURSCA, Psychology Department

ERICA DUDAS, '04**The Hermeneutics of Suspicion: A Critical View Using Feminist and Black Theology**

Faculty Sponsor: Ronney Mourad

Majors: Anthropology and Sociology, Religion

Hometown: Niles, Michigan

In my research, I chose to elaborate on the idea of a "Hermeneutics of Suspicion" and its contribution to the recent liberation theologies of the twentieth century. The "hermeneutics of suspicion"



was developed in the 1970s by Paul Ricoeur to designate a response and critique of religious belief shared and developed by the theories of Sigmund Freud, Karl Marx, and Friedrich Nietzsche. It relies on the argument that clear, objective interpretation of the Bible can never be achieved since religious belief stems from motives that are not based on the acquisition of truth. The hermeneutics of suspicion questions the author's motives for writing a text and examines how that text is influenced by the author's psychological desires, social status, or will-to-power. The author's false consciousness results in an unsolved entanglement of hierarchical motives disguised by the author's lack of self-awareness about them, thus making fair, objective interpretation of scripture not only impossible, but also responsible for enforcing a society immersed in the hierarchical structures of class, gender, and race.

This notion of "suspicion" that liberal Christian feminists and Christian black theologians hold against more dominant Christian theologies is a major source of conflict. In my thesis, I analyzed the works of feminist theologian Rosemary Radford Reuther and black theologian James Cone while looking for ways they contribute to and defend themselves against the critique that the hermeneutics of suspicion provides. Along with addressing the importance of the hermeneutics of suspicion in modern theology, I also take a critical stance on its actual relevance as a theological argument. I

address, in detail, how suspicion functions in theology and outline possible strategies for responding to it.

Supported by: FURSCA

ANGELA EDBERG, '04**"With Verdure Clad" from Haydn's The Creation**

Faculty Sponsor: James Ball

Majors: Music, Psychology
Hometown: Iron Mountain, Michigan

"With Verdure Clad" is a selection from F.J. Haydn's oratorio, *The Creation*. *The Creation* outlines the Genesis story, told by the Archangels Uriel, Gabriel, and Raphael. The oratorio is in three



parts: the first tells the story of the first four days of the Creation, part two focuses on days five and six of the Creation, and part three involves Adam and Eve praising God for his marvelous works. Told by the Archangel Gabriel, "With Verdure Clad" falls in part one, and speaks of the beauty of the land after the separation of land and sea. I will be performing this piece at my senior recital, as well as at the Concerto Concert on April 25, accompanied by the Albion College Symphony Orchestra.

ANGELA EDBERG, '04**Motives for Violence in Video Games and Subsequent Effects on Aggression**

Faculty Sponsor: Amy Otto

Majors: Music, Psychology
Hometown: Iron Mountain, Michigan

Sixty-four undergraduate students at a small Midwestern college participated in a study designed to test the effects of different motives for violence in video games on aggressive behavior. Fifty participants read a profile of a character establishing that character as either 'good' (morally justified) or 'bad' (non-morally justified), and played a violent video game for fifteen minutes. After playing, they participated in a competitive

reaction time task (Anderson and Dill, 2000; Bartholow and Anderson, 2002) to measure aggressive behavior. A mood adjective checklist was also administered to measure affective aggression. A control group comprised of fourteen participants completed the CRT task without playing the game.

It was found that, among habitual video game players, participants in the morally justified condition became more aggressive than habitual players in the non-morally justified condition. Habitual game players in the morally justified condition also became more aggressive than non-video game players in the morally justified condition. Evidence was found to suggest that participants in the morally justified condition reported higher levels of positive affect, and participants in the non-morally justified condition reported higher levels of negative affect, and that males acted more aggressively than females.

Supported by: FURSCA

KRISTOPHER GAUTHIER, '04**The Interrelationship between Need for Cognition and Religious Doubt on Life Satisfaction**

Faculty Sponsor: Andrew Christopher

Major: Psychology
Hometown: Rochester, Michigan

Previous research into the relationship between religion and mental health has been inconclusive as to whether religion plays a benevolent or detrimental role. However, the



presence of religious doubt has generally been found to be a negative factor in an individual's mental health. Additionally, holding religious doubts has been linked to a tendency to engage in complex thinking.

To measure the relationship between need for cognition, religiosity, and religious doubt on life satisfaction, a questionnaire packet was constructed, comprised of scales for life satisfaction, religious doubt, need for cognition, and religiosity, as well as demographic variables. One hundred ninety-two participants (123 females, 65 males, ages 18

to 78) were drawn from metro-Detroit area churches (Catholic, Unitarian, non-denominational Christian, etc.), a Southeastern liberal arts college, and undergraduates and alumni of a small Midwestern liberal arts college.

Simultaneous-entry regression revealed, as hypothesized, a three-way interaction such that individuals high in need for cognition, high in religious doubt, and high in religiosity had the lowest levels of life satisfaction. In addition, females were found to be more religious than males, and males had higher levels of religious doubt than females. Religious doubts were also significantly negatively correlated to life satisfaction. These findings demonstrate the need for inclusion of religious discussion, specifically centered on religious doubts, in both clinical and counseling settings in order to provide a more thorough and comprehensive evaluation.

Supported by: FURSCA

CHRISTOPHER GRAVES, '05

How Emotion Is Expressed through Music by Twentieth-Century Composers

Faculty Sponsor: Andrew Bishop

Major: Music
Hometown: Troy, Michigan

Several factors affect how emotion is expressed in music. This can be for various reasons, including the influence of other artists, the culture around the composer at the time, or personal



experiences that the composer/performer has gone through. This past summer I focused my research on the music of Miles Davis, as well as some music by Charles Ives and Frank Zappa for variation. All three artists composed and performed in the twentieth century, and all at different points. I focused on the different decades these composers worked in and the influences that they had, to discover how they expressed emotion through their music.

I was able to discover, in many different ways, how Davis's emotions come through in his music. I found instances of his oppression and hardships in his solos. I was also able to link the African-American theory of double voicing to his music, which involved Davis's solos and how they were played toward two audiences in a sense of dualism.

This project has proven to be a novel approach to musical research, and has provided insight as to the goals of musicians with respect to the emotions they are communicating to their listeners. By analyzing the notes they play and the musical patterns they use, I can propose theories as to how they were affected by experiences, and how their emotions made their way into the music.

Supported by: FURSCA

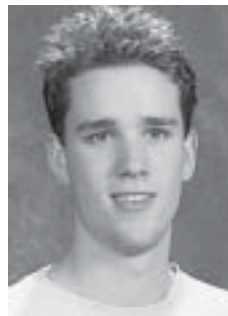
WILLIAM GREEN, '05

Fermat's Last Theorem: Advances in the Nineteenth Century

Faculty Sponsor: Mark Bollman

Majors: Mathematics, Physics
Hometown: Downers Grove, Illinois

Fermat's Last Theorem puzzled many great mathematicians from its first proposal in the margins of Pierre de Fermat's copy of *Arithmetica* in 1637 until it was finally proved by Andrew Wiles in 1994. Attempts to solve Fermat's Last Theorem have led to such notable work as the theory of ideals in abstract algebra and numerous advances in the theories of modular functions and elliptic curves. Particular attention will be paid to the work of Ernst Kummer, Gabriel Lamé, and other notable nineteenth-century mathematicians. The cyclotomic integers and the idea of unique factorization, as well as some aspects of Galois theory, will be explored in their connection to the work toward proving Fermat's Last Theorem.



SHARI GROSS, '04

Do Unmated Male House Wrens (*Troglodytes aedon*) Sing the Same Songs in Consecutive Years?

Faculty Sponsor: E. Dale Kennedy

Major: Biology
Hometown: Troy, Michigan

Male House Wrens use songs to attract mates and establish and maintain territories. Each song consists of two parts, an introduction and a terminal section, and songs vary depending on the number and combination of different notes. Some bird species have been found to sing only songs that they learned while young but others are able to pick up new notes and songs as adults. It is not known whether House Wrens can add new notes as adults or how many different songs each wren is capable of singing.

Because many bird species typically sing through their entire song repertoire during their earliest song bout in the morning, I used recordings made during early morning bouts of unmated male House Wrens that sang in Whitehouse Nature Center for two or three consecutive years. I analyzed 6,650 songs of 11 individual males to determine whether they sang the same songs year after year. Each male sang a variety of song types (range 10-74 types) but showed little or no overlap in song types (0-6) between years. Most males increased the number of song types as a function of number of songs. One male recorded at multiple times during the same day sang different song types at different times of day. These results suggest that House Wrens create a large song repertoire by combining different notes.

Supported by: FURSCA-Bethune Fellowship



ERIC GRUNOW, '05**Cloning *Netrin* Genes from *Artemia franciscana***

Faculty Sponsor: Molly Scheel

Majors: Biology, Anthropology and Sociology

Hometown: Saginaw, Michigan

The function of a number of genes is required in order for nerves to make proper connections with various targets within the developing nervous system of an embryo. *Netrin* genes function as a guidance system that leads nerves to the midline in a variety of organisms. *Netrin*-mediated axon guidance is well conserved in many different species of animals, from humans to fruit flies. Such conservation, while interesting, does not explain the differences observed among the nerve systems of various animals.

In order to examine this problem, we are studying nervous system development in the brine shrimp *Artemia franciscana*. *Artemia*, popularly known as sea monkeys, surprisingly lack nerve growth near their midlines and thus may be an exception to the *netrin*-midline guidance rule. This could be explained by a lack of *netrin* gene expression at the midline of *Artemia*. In order to test this hypothesis, we have cloned a *netrin* gene from *Artemia* and are beginning analysis of the expression pattern of this gene. We are also attempting to clone additional *netrin* genes from *Artemia* and other crustaceans. Such an approach will help us to understand how neural diversity is generated.

Supported by: FURSCA-Robson Fellowship

ELIZABETH GWINN, '04**Non-Jewish Victims of the Holocaust**

Faculty Sponsor: Geoffrey Cocks

Major: Biology

Hometown: St. Clair Shores, Michigan

This thesis examines seven groups of non-Jewish Holocaust victims: the handicapped, the Poles, the Gypsies, the blacks, the homosexuals, the Jehovah's Witnesses, and Soviet prisoners of war.

Literature on these groups, although available, generally does not combine this information. This thesis strives to unite information demonstrating these seven groups as victims of the Nazis and, although the Jews were the primary victims of the Nazi Final Solution, to inform the reader of Holocaust victims that are not as well known. It is the hope that with this thesis, when remembering Holocaust victims in the future, the reader will include these groups of non-Jewish victims in their remembrance. The story of Władysław Budweil is included as an example of a non-Jewish victim of the Nazis who spent five years in the concentration camp system.



CAMILLE HAMILTON, '05**"Falling": A Self-Portrait Installation**

Faculty Sponsor: Anne McCauley

Major: Art

Hometown: Springport, Michigan

This installation grew out of an idea to create a life-size "pantin" as a self-portrait. The limbs of a pantin are attached by pins that allow a wide range of movement. The pantin was such a popular toy in



France in the 1600s that every family had a hand-held one. They were so popular that book presses discontinued the making of books to print them on paper. I used the idea of twisted limbs to create a piece infused with the feelings of falling apart when one is consumed with depression. Using the pantin as a structure, I designed a three-part narrative of a female figure in various stages of falling down a flight of stairs. One figure is caught off guard, another falling, and the third is getting up again. Each paper figure is a color woodcut printed front and back, and each is wearing a delicate hand-printed paper dress. This piece intends to express both physical and emotional vulnerability, giving it universal human qualities.

Supported by: FURSCA

ALISON HARRIS, '04**Feu Follet: Le Role de la Musique Dans la Renaissance Culturelle en Acadiana**

Faculty Sponsor: Dianne Guenin-Lelle

Majors: French, Speech Communication

Hometown: Bloomfield Hills, Michigan

There is a cultural renaissance currently occurring in the region of southwest Louisiana called Acadiana. This renaissance began in 1968 and is continuing today. My thesis is that music, specifically



Cajun music, is one of the main components in the current cultural renaissance of Acadiana. Music incorporates elements of the oral tradition of Cajun French language, preserving the culture for future generations. Music festivals also play a large role in the culture of Acadiana itself. Festivals focus on music and also include such components as dancing, food, and sharing of culture for both younger generations and outsiders to Acadiana. My theoretical base relates to how intergenerational communication theory explains the role music plays in the transmission and survival of a culture, and specifically how in Acadiana it is the rich musical traditions that fulfill this role.

Supported by: FURSCA

MORGAN HAUGEN, '04

Molecular Sexing of Nestling House Wrens (*Troglodytes aedon*) in 2003

Faculty Sponsor: E. Dale Kennedy

Major: Biology
Hometown: Concord, Michigan

Theories predict that natural selection should lead to an overall 1:1 sex ratio of male to female offspring. Recent studies have demonstrated that female birds may be able to adjust sex ratios of their broods based on body condition, resource availability, breeding period, and female status. My goal was to sex nestling House Wrens using DNA extracted from feathers and stool samples. Feathers take several days to form and DNA cannot be collected before days 9-10. Stool samples can be taken sooner than feather samples, so there is a smaller risk of altering the sex ratio due to early death of nestlings. My null hypothesis was that the overall sex ratio would not differ significantly from 1 male:1 female. I used the QIAGEN DNeasy™ kit with DTT and the QIAGEN DNA Stool™ kit for the extraction of DNA from feather and stool samples, respectively. After extraction, I amplified CHD-1 genes from the sex chromosomes by polymerase chain reaction and ran these products on agarose electrophoresis gels in order to determine sex. In 2003, the overall sex ratio of nestling House Wrens did not significantly differ from a 1 male:1 female ratio for either first or second broods ($\chi^2 = 0.018$, $df = 1$, $P > 0.5$). Stool samples yielded insufficient DNA for sexing.

Supported by: FURSCA



JESSICA HAUSER, '04

Interactions between Parents' Marital Status, Family Conflict, and Sibling Relationships in Late Adolescence

Faculty Sponsor: Jamie Walter

Major: Psychology
Hometown: Monroe, Michigan

Children's relationships with their parents play a part in the quality of sibling relationships such that children who experienced high levels of warmth with their family were also likely to have warm, close relationships with their siblings. The current study examined parents' marital status and levels of warmth and conflict within the family and their effects on the sibling relationships of high school students.

Adolescents' relationships within the family and particularly with siblings were assessed using four questionnaires: a demographics questionnaire; a family closeness questionnaire; the Sibling Relationship Inventory (Stocker and McHale, 1992), which measures affection, hostility, and rivalry between siblings; and the Sibling Relationship Questionnaire (Buhrmester and Furman, 1990), which measures nurturance, dominance, affection, and competition. Participants were recruited from two high schools in a mid-sized Midwestern city. The 100 participants (35 males and 65 females) were sophomores and seniors and ranged in age from 15 to 18 years old.

It was hypothesized that siblings from divorced families would be closer and have lower levels of conflict than siblings in non-divorced families. It was also hypothesized that the spacing between siblings would affect sibling relationships such that siblings who are close in age will experience more conflict, more warmth, and less advice and guidance in their sibling relationships than siblings who are far apart in age. The results will be discussed in terms of systems theories.

Supported by: FURSCA



DREW HAVENS, '04

Personality Themes, Physical Ability, and Athletic Success

Faculty Sponsor: Robert Moss

Major: Athletic Training
Hometown: Greenville, Michigan

Predicting individual athletic success is of interest at many levels. At competitive levels of team sports, coaches recruit athletes based on physical testing scores and sport-specific skills, but very few take into account differences in personality. "In sport, the main purpose for studying the personality of an athlete has been to predict specific sport choice, certain positions within a sport, and future success in the performance of athletes" (Prenger, 1999), the latter of which will be the focus in this study.

The purpose of this study is to look at Division III (DIII) college soccer players to see if personality types relate to physical skills and athletic success. Previous research has demonstrated that "successful athletes were characterized by such traits as emotional stability, high need for achievement, assertion, and dominance" (Singer, 2001). The hypotheses state that different personality themes determined by the Big 5 Personality Categories, extroversion, agreeableness, conscientiousness, emotional stability, and openness to experience, will be predictive of physical ability and athletic success.

This study consisted of 84 NCAA DIII soccer players, 40 male and 44 female ranging in age from 17-22. Consent was



gained from the coaches and the athletes who were then asked to complete a psychological survey that was administered during a regular season practice. At the conclusion of the competitive season, the athletes were asked to participate in post-season testing that consisted of a vertical jump and a forty-yard dash. Coaches were asked to complete an assessment of their athletes for their respective teams. Expected results are that different personalities will represent differing abilities in physical performance and athletic success.

JOSHUA HODGES, '04

Choice, Efficiency, and Distraction with Respect to the Estrous Cycle in an Operant Conditioning Task

Faculty Sponsor: W. Jeffrey Wilson

Majors: Psychology, French
Hometown: Kalamazoo, Michigan

Due to various explanations including hormonal levels, variability in the estrous cycle has been understood to vary along with certain aspects of cognitive and visuospatial tasks in humans as well



as other animals. Variability in concentration and attention has also, to a lesser extent, been observed to correlate with changes in estrus. In light of such observations, rats should react differently in response to distractive stimuli in relation to their estrus state. This will be discussed at length in terms of proficiency and consistency in performing an operant conditioning task.

Supported by: FURSCA, Psychology Department

JOSHUA HODGES, '04

(See Amber Chenoweth, '04, Joshua Hodges, '04)

KIMBERLY ILLG, '04

Can Low-Temperature Plasmas Be Used to Modify Surface Properties? Making Hydrophobic Membranes Hydrophilic with H₂O₂ Plasmas

Faculty Sponsor: David Green

Major: Chemistry
Hometown: Naperville, Illinois

A complete hydrophilic modification of polysulfone membranes was achieved by hydrogen peroxide plasma treatment. Membranes were treated at 50 mTorr for times ranging from 45 seconds to 3 minutes and rf powers ranging from 5 watts to 25 watts. Contact angles were measured to determine hydrophilicity over time. Chemical changes to the polysulfone membranes were examined using X-ray photoelectron spectroscopy. The glass transition point was mainly unaffected by the treatments. A moderate change was detected in the tensile strength of the membranes after treatment. The treated membranes were less susceptible to protein fouling by bovine serum albumin proteins.



Supported by: National Science Foundation Research Experiences for Undergraduates. This research was conducted at Colorado State University under the guidance of Kristen Kull and Ellen Fisher (Department of Chemistry).

MAGGIE KELLER, '04

Attributions of Blame in a Rape Incident as a Function of Victim Self-Presentational Style

Faculty Sponsor: Andrew Christopher

Majors: Psychology, Speech Communication
Hometown: Vicksburg, Michigan

Research on rape has focused on external factors of the victim and how much blame is received for the rape. Previous research has examined such ideas as the effects of the victim's personality, behavior, sexual history, and presence of alcohol on attributions of blame; however, very little research has examined her appearance at the time of testimony.



Leary and Kowlaski (1990) defined self-presentation as "... the process by which individuals attempt to control the impressions others form of them (p. 34)." Jones and Pittman (1982) articulated five self-presentational styles: intimidation, self-promotion, ingratiation, exemplification, and supplication. This study examined the effects of a rape victim's self-presentational style on attribution of responsibility and perceptions of the victim and perpetrator. Also, the role of sexism and rape myth acceptance was reviewed in accordance with blame attribution.

A total of 272 undergraduates viewed one of five video testimonies by a rape victim, in which her self-presentational style was manipulated. Participants rated the amount of blame and responsibility given to the rapist and victim in a 25-item measure. Participants also completed a Rape Myth Acceptance scale (Burt, 1980), the Ambivalent Sexism Inventory (Glick and Fiske, 1996), the Belief in a Just World scale (Lerner, 1965), and the Marlowe-Crowne Social Desirability scale.

Multivariate analyses indicated that the victim's self-presentational style had an effect on participants' responses in that the supplicating victim had a more stereotypical reaction than the other self-presentational styles, and the intimidating victim was the

least likable compared to the victims in the other conditions. Results also indicated significant sex differences in that males blamed the victim and held her responsible more than did females.

Supported by: FURSCA

JASON KENNEDY, '04

“Cosos”: The Process and Product of Writing a Full-Length Musical

Faculty Sponsor: Robert Starko

Major: Art
Hometown: Brownington, Vermont

Writing has always been my vehicle for insight, and after writing a musical for two years I've realized the very important difference between exposition and playwriting. As a playwright, I'm bound by the



limits of actors, stage design, and financial considerations. However, my story gains a sense of immediacy to the audience. The theatrical work is, by its very nature, dramatic, and should be received as such.

Since my Elkin Isaac Symposium presentation last year, I've steadily worked to update my musical, “Cosos,” into a producible show. I have considered the consistency and believability of the story, the importance of the work, the audience for whom it is written, the measure of lyrics, and the performance power of certain choices at the cost of others. What is now written is a much tighter and cleaner script than a year ago.

Sometimes you must let the work speak for itself. As a result, I've learned that the story I've written details two central motifs of my life: a person invariably repeats his same mistakes; and, the importance of wealth in a society blinds its citizens into an all-consuming greed, leading them away from moral character.

The final touches are in progress, and I intend to finish the musical by the end of this summer.

Supported by: FURSCA

KYLE KOEHS, '04

Beg, Borrow, and Steal: Allusion and Fusion in Twentieth-Century Concert Music

Faculty Sponsor: Andrew Bishop

Major: Music
Hometown: Lake Orion, Michigan

During the twentieth century, composers have seemingly become more aware of their ability to “borrow” source material from a variety of different locations. In the nineteenth



century, it was not uncommon for a composer to include a pastoral movement in a symphony, yet as we moved into the modern age copyright and a negative stigma have led composers to shy away from the more traditional means of creating music. Current research, however, has found that throughout the twentieth century composers have integrated styles from outside of the traditional concert world into their music. A well-known example of this is Gershwin's *Rhapsody in Blue*, which is famous for incorporating jazz into the orchestral setting. My research highlights the twentieth century as a time of change through studying the integration of these external sources into the music of the concert hall.

Supported by: FURSCA

MICHAEL KOPEC, '05

Major: Biology
Hometown: Grand Blanc, Michigan

SEAN LOGAN, '04

Major: Biology
Hometown: Warren, Michigan

The Functional Significance of Intersexes in the Intertidal Amphipod *Corophium volutator*

Faculty Sponsor: Dean McCurdy

We investigated the functional significance of intersexuality in the amphipod *Corophium volutator*, a key species in muddy intertidal communities. *Corophium* intersexes possess morphological and anatomical characters of both males and females. We identified two types of intersexes: those with non-setose oostegites and two penial papillae (Type I), and those with setose oostegites and one or two penial papillae (Type II). We found little evidence that intersexes function as females, but some females housed experimentally with intersexes became ovigerous, indicating that intersexes can function as males. Females that mated with Type II intersexes produced smaller broods than those that mated with Type I intersexes or males, suggesting that this form of intersexuality may be costly to amphipods (most Type II intersexes possessed only a single testis). Male function of intersexes may be important in *Corophium* populations because males are frequently the limiting sex due to extremely female-biased sex ratios.



Kopec



Logan

Supported by: FURSCA-Gardner Fellowship (Kopec), FURSCA-Kresge Fellowship (Logan)

ERIN LAIDLAW, '04**White Southern Womanhood Reconsidered**

Faculty Sponsor: Judith Lockyer

Major: American Studies
Hometown: Saline, Michigan

My exploration of white Southern womanhood began last summer with Caddy Compson, the woman/daughter/sister at the core of William Faulkner's *The Sound and the Fury*. What intrigues me is



that Faulkner writes the novel through the narratives of the three Compson brothers, and each brother is uniquely fixated on his sister Caddy—particularly with her virginity and her absence once she leaves the family. Caddy herself, however, is never issued her own narrative; she is constructed purely through her brothers' perceptions of and responses to her. Consequently, the reader knows Caddy not as she knows herself to be, but rather as her brothers perceive her to be.

The definition of white Southern womanhood that Faulkner assumes in his personification of Caddy rests on the traditionally upheld expectations for innocence, morality, and purity. Because Faulkner mutes, silences, and erases Caddy's voice, I wanted to continue my work by examining the definition of white Southern womanhood in another place, to investigate how the pervasive idea of white Southern womanhood is constructed by white Southern women writers themselves. What happens to the construction, and by extension the perceived ideal, of white Southern womanhood when it is examined through the work of Southern women writers?

I have read between the lines and lives of writers such as Flannery O'Connor, Carson McCullers, Katherine Anne Porter, and Eudora Welty—the generation of women who inherited the traditional definition—as well as the contemporary writer Dorothy Allison, in an effort to unearth more challenging, complex, and self-proclaimed assertions of white Southern womanhood. Some of these women support the traditional definition and some challenge

and revise it, but none of them assume it to be truth as Faulkner does. The revisions of standards of sexual innocence, morality, and femininity continue to unfold in the South with interesting implications for all white women today.

Supported by: FURSCA

DIANA LANCASTER, '06**Sex-Distorting Microsporidia in *Corophium volutator***

Faculty Sponsor: Dean McCurdy

Major: Biology
Hometown: Ann Arbor, Michigan

Parasites can bias the sex ratios of host populations by causing differential mortality of one sex or by influencing the sex determination of their hosts. In fact, certain parasites that infect



crustaceans are known to increase their transmission rates by converting male offspring of hosts (which cannot transmit parasites) into females (which can transmit parasites further). In the intertidal mudshrimp *Corophium volutator*; all populations examined to date have been found to have strongly female-biased sex ratios. Using molecular techniques, undescribed microsporidian parasites have been found in female but not in male gonads, indicating that transmission of these parasites occurs only through female hosts and suggesting that parasites may directly distort mudshrimp sex ratios. Adult and juvenile mudshrimp are infected at nearly equal rates, making differential mortality caused by parasites an unlikely explanation for the sex-ratio bias. Sex distortion by microsporidia has numerous consequences for mudshrimp populations, as well as migratory shorebirds, fish, and infaunal invertebrates that forage almost entirely on mudshrimp.

Supported by: FURSCA

KIRSTIN LEIBY, '04**The Problem of Social Desirability: Continuous Response Measures of Social Judgments**

Faculty Sponsor: Amy Otto

Majors: Psychology, Anthropology and Sociology
Hometown: Plymouth, Michigan

The accurate measurement of racial attitudes has introduced many challenges to researchers over the past few decades. Social desirability effects make it difficult to accurately measure social attitudes.



Past research suggests that participants may be motivated to respond without prejudice (Devine, Plant, Amodio, Harmon-Jones, and Vance, 2002; Plant and Devine, 1998). Furthermore, when asked to evaluate a target person, responses may even indicate a bias in favor of the minority (Foley and Pigott, 2002). This social desirability bias contrasts with evidence of prejudiced attitudes in other contexts.

The present study examined whether the motivation to respond with or without prejudice can be primed within an experimental context. In addition, this study examined how social desirability effects in continuous measures may differ from those in more traditional questionnaire measures. Participants were asked to evaluate an applicant to a Ph.D. program in clinical psychology. The applicant's race and skill level were varied, along with a motivational prime presented to the participants early in the experimental protocol. Using the Continuous Response Digital Interface (CRDI, Gregory, 1989), participants made fluid responses toward the applicant while listening to her admissions interview. It was expected that there would be main effects for both the motivational primes and applicant race. It was also expected that there would be interactions between applicant race and the motivational primes, as well as between race and skill level.

Supported by: FURSCA-Metalonis Fellowship, Psi Chi Undergraduate Research Grant

SEAN LOGAN, '04

(See Michael Kopec, '05, Sean Logan, '04)

JESSIE LONGHURST, '06

Explorations of Youth Recreation in Albion during Boom, Bust, and Recovery

Faculty Sponsor: Wesley Dick

Major: Psychology
Hometown: Albion, Michigan

This study is part of a NCUR/Lancy Initiative project, "Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century."

This study examined changes in youth recreation opportunities in Albion during the past half century, specifically focusing on programs, leadership positions, economic influences, and demographic trends. Historical information was gathered from Albion Recreation Department files and the local newspaper, which are archived at the Local History Room of the Albion Public Library. In addition, 20 taped interviews were conducted with individuals who held recreation leadership positions from 1950 to the present and with persons who grew up in Albion and participated in recreation activities. Interview subjects were asked to describe recreational life in Albion and to reflect on major differences they saw between the lives of children growing up in the 1950s and 1960s and the experiences of children growing up in Albion today. Also, interviewees were asked to articulate projections of the future of recreational life in Albion and to discuss ways Albion could be made a better place for children to be raised. Historical and interview data were used to create a timeline of the past and a vision of the future for Albion youth recreation. This study documents a rich Albion recreation history, one that helped the city achieve All-America City status in 1973. This study also illuminates the challenges to recreation from economic downturns and the crucial role of recreation in Albion's recovery.

Supported by: NCUR/Lancy



KENDRA MALCOMNSON, '04

The Protestant Work Ethic, Religiosity, and Homonegative Attitudes

Faculty Sponsor: Andrew Christopher

Major: Psychology
Hometown: Big Rapids, Michigan

During 2001, more than 1,400 hate crimes were committed in the United States on the basis of sexual orientation. To achieve equality for all, we need to uncover why so many Americans are strongly against homosexuality. The purpose of this study was to examine the influence of the Protestant work ethic (PWE) on negative attitudes toward homosexuals (homonegativity). The influence of religious beliefs and the notion of homosexuality as a choice were also examined in combination with PWE in regard to homonegativity.

Previous research suggested that those who subscribe to the PWE have more negative attitudes toward societal out-groups (e.g., African-Americans). Thus, it was hypothesized that those with high PWE scores would display more homonegative attitudes. A significant positive correlation between PWE and homonegativity supported this hypothesis. PWE did not interact with religious beliefs or the notion that homosexuality is a choice, but religious beliefs and the idea of homosexuality as a choice interacted. Those with high religious beliefs who strongly believed that homosexuality was a choice were more likely to have negative attitudes toward homosexuals. It seems that if society was convinced that homosexuality was not a choice that people made, this sexual orientation might become more widely accepted. If homosexuality was more widely accepted in religion, society might also be more accepting toward those with a different sexual orientation.

Supported by: FURSCA



AYLA MALIK, '04

Crossing Borders: Middle Eastern and South Asian Women Writing and Publishing at Home and in the U.S.

Faculty Sponsor: Trisha Franzen

Majors: English, Women's Studies
Hometown: Islamabad, Pakistan

In my four years at Albion, I have realized the lack of understanding in the United States of women in the Middle East and South Asia. There are numerous books and articles written, and videos and documentaries made about women from those parts of the world, but the information has often proven to be inaccurate and exaggerated. Furthermore, most of these books are written by people outside of those cultures. As a result, I ventured into seeking Middle Eastern and South Asian women writers who wrote about women from their cultures. Once I discovered the names of these writers, I researched their publishing histories, both in the home countries of the writers as well as in the United States. Through this research and exposure to many books, videos, and articles I realized some of the problems that Middle Eastern and South Asian women writers face while publishing in the United States. The problems include, but are not limited to, language barriers, cross-cultural prejudice, and controversy behind the definition of feminism in the East and West. This presentation is about the politics behind the publication of Middle East/South Asian women writers in the United States.

Supported by: FURSCA



KIMBERLY MANN, '04**Reading Rims: Reclassifying and Interpreting Ceramic Jars from Xaltocan, Mexico**

Faculty Sponsor: Molly Mullin

Majors: Anthropology and Sociology,
Spanish

Hometown: Grand Rapids, Michigan

Anthropologist Elizabeth Brumfiel has been excavating in Xaltocan, Mexico since the early 1990s.

Xaltocan was first occupied before the rise of the Aztec civilization, and it has existed since then, though

its importance as a city decreased over time. For archaeologists, ceramic artifacts are among the most prevalent and most useful in an excavation. In Xaltocan ceramics were used for a variety of purposes, including cooking, storage, ritual objects, and mortuary rites. The classification of ceramic objects is often the first step in the analysis of excavation data, and the results help archaeologists understand how the people who made the pottery lived.

I participated in the 2003 excavation in Xaltocan, where I also was able to work on an individual project reclassifying and analyzing ceramic jars to determine their original function. I measured the diameter of the rim, diameter of the neck, and thickness of 216 jars using graph paper with 1cm concentric semicircles and calipers. When I made a histogram of the rim diameters I found four ranges of diameters that stood out. I believe that there are four main sizes of jars that were widely used in Xaltocan. 12-14cm and 18-20cm diameter jars were large and small



varieties of cooking jars, and 24-26cm and ≥ 35 cm diameter jars were large and small varieties used for storage. My reclassification of ceramic jars from Xaltocan was successful in helping to determine their intended function and should continue to prove useful for future excavations and research endeavors.

Supported by: FURSCA

MICHAEL MARVIN, '04**Thermodynamic Characterization of the *Anabaena* pre-tRNA^{leu} Group I Intron**

Faculty Sponsor: Christopher Rohlman

Major: Chemistry

Hometown: Coldwater, Michigan

Our goal is to determine the relationship between the structural and catalytic properties of the *Anabaena* group I intron. This intron, located in the pre-tRNA^{leu} gene of the *Anabaena*

microbe, is characterized by its minimal secondary structure and three-nucleotide internal guide sequence (IGS). The main strategy used to examine the *Anabaena* structure was UV melting curves. Approximating the denaturation to a phase transition, we apply the van't Hoff equation for the enthalpy of temperature-dependent melting behavior to find enthalpy, entropy, and free energy for the thermal transition. Within the current empirical framework, a more stable transition is required for thermodynamic data to be calculated from the melting curves. The optimization of monovalent ion concentration, specifically the sodium cacodylate buffer used in the melts, is being determined. The resulting data will provide insight into the structural forces that govern the tertiary folding motifs of the *Anabaena* group I self-splicing pre-tRNA^{leu} intron.

Supported by: FURSCA-Robson Fellowship

SHAWN MAURER, '04**Electrochemical Tuning of Inorganic Semiconductor | Conjugated Doped Polymer Interfaces**

Faculty Sponsor: Craig Bieler

Major: Chemistry

Hometown: Grosse Pointe, Michigan

I examined the transport properties of two inorganic semiconductor | doped conjugated polymer systems.

We hoped to determine which if any existing theory best explains current

transport across semiconductor | metal interfaces. Doped conjugated polymers were used in place of metals in the diodes because (1) they are assumed to behave like metals in that they are believed to support only a small depletion region, and (2) they may be electrochemically doped, so it is possible to vary the parameters in one system. We looked at the height of the barrier between semiconductor and the doped conjugated polymer (ϕ_b), the transmission coefficient across the interface (κ), and the quality factor (n_{emp}). The systems we examined were *n*-InP with polypyrrole hybrid material and *n*-InP with poly[(2-cyclooctatetraenylethyl)trimethylammonium trifluoromethanesulfonate]. We succeeded in overcoming difficulties in casting and contacting the polymers and moved closer to characterizing the interfaces.

Supported by: National Science Foundation Research Experiences for Undergraduates. This research was conducted at the University of Oregon under the guidance of Mark Lonergan (Department of Chemistry, Materials Science Institute).



ALYSSA MONTGOMERY, '04

American Dreams: The Intersection of Race, Gender, Class, and Age in Albion's African American Community

Faculty Sponsor: Leonard Berkey

Majors: Anthropology and Sociology, Philosophy
Hometown: Southfield, Michigan

This study focuses on the African American community of Albion, Michigan. I analyze their testimonies and experiences by examining how the intersection of race, class, gender, and age influences



their perceptions of and relationship to the American Dream. Eighteen in-depth one-on-one interviews were conducted. The analysis is sociological in nature, and I connect individual experience to a broader social context using the theoretical framework of interactionism. Some of the specific themes that I focus on are teen pregnancy, political involvement, and the influence of the black church. Racial exclusion and the relationship between Albion College and the town of Albion are also addressed. I also describe in detail methodological dilemmas encountered throughout the course of the study. My research was part of the group project, "Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century."

Supported by: FURSCA, NCUR/Lancy

NICK MOROZ, '06

Performance Enhancement Study of an Electrostatic Faraday Cup Detector

Faculty Sponsor: David Seely

Majors: Physics, Mathematics
Hometown: Northville, Michigan

Faraday cup (FC) detectors are devices that are used in the measurement of charged-particle-beam currents. When a charged particle (e.g., an electron or ion) strikes one of the interior metal



surfaces of a FC detector, electrons are ejected from that surface. If these electrons are lost from the detector, the current that is detected by an ammeter connected to the detector will differ from the actual beam current. The reliable operation of a FC detector thus depends on the ability of the device to recapture these electrons. Traditionally, the solution to this problem has been to apply relatively large electric fields within the device to guide these electrons back to the interior metal surfaces. Previously, it has been necessary to apply large voltages (on the order of 400 V) to the interior elements to accomplish this. Such fields, however, generally are undesirable in experiments involving collisions between ions and atoms in which the ion energy is small (on the order of a few tens of keV or less).

Traditional FC designs have internal components that are cylindrically symmetric. An alternative FC design that uses non-symmetric interior components has been simulated, designed, and tested. This alternative design incorporates a beveled interior element that creates an electric field within the device that is perpendicular to the direction of the incident charged particle beam. The design has the significant advantage that it will operate with much weaker interior fields. The results of simulations and measurements for 25-, 35-, 45-, and 50- keV protons on a FC with a copper target are reported.

Supported by: FURSCA-Hyde Fellowship

NICK MOURNING, '05

The Role of the African American School Teacher in the Albion Public School System

Faculty Sponsor: Michael Meloth

Major: English
Hometown: Jackson, Michigan

This study examined African American teachers' experiences in the Albion Public School system during the "boom" times spanning the late 1950s through the mid-1970s.



Because of the influx of African American workers and their families during this time period, administrators from Albion schools recruited a number of black teachers from the South as well and black teachers from the greater Albion area. The experience of these teachers, particularly those recruited from the South, is an important, yet undocumented, facet of Albion's history.

Interviews were conducted with ten teachers, including five from the South. Other community leaders and school administrators of the time were also interviewed to provide additional context for the study. Questions posed to the interviewees included: why did the teachers decide to teach in Albion, what were their initial impressions of the school system and city, what are changes they have experienced or seen over the course of their teaching, what they believe are problems in the school system/education in general, and what are possible solutions and issues in strengthening the Albion Public Schools and the city of Albion.

Initial results suggest that, although African American teachers were actively recruited to work in Albion schools, black teachers were hired only to teach black children. Elementary teachers and their students were assigned to segregated schools, and while African American and white students went to the same local high school, it was not until the late 1950s/early 1960s

that the high school employed its first black teacher. This research was part of the group project, “Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century.”

Supported by: FURSCA, NCUR/Lancy

KIMBERLY MUTCH, '04

Perceptions of Organizational Explanations for a Transgression

Faculty Sponsor: Andrew Christopher

Major: Psychology
Hometown: Oxford, Michigan

Much of the literature on explanations focuses on individuals' accounts of their wrongdoings. The present experiment investigates the use of explanations (i.e., excuses, justifications, and concessions) by organizations for a consumer-related transgression. Approximately 240 participants, including introductory psychology students, economics/management students, and Albion College alumni, read newspaper articles describing a case of food poisoning at a fictitious fast food restaurant. I manipulated the size of the company (five locations in southern Illinois or 500 nationwide locations), the severity of the poisoning incident (eight people either seeking medical treatment or killed), and the type of statement (excuse, justification, concession, or no statement) offered by the restaurant chain to determine how these factors influenced participants' perceptions of the corporation's level of responsibility in producing the incident and the potential impact the incident will have on the corporation's image in the future.

It was hypothesized that excuses would be more effective than justifications in reducing ratings of responsibility, explanations generated by a large company would be



less acceptable to participants than explanations generated by a small company, explanations for a severe transgression would be less acceptable to participants than explanations for a milder transgression, and female participants would be less accepting of explanations in general than would male participants. Data were analyzed using a 2 x 2 x 4 ANOVA.

Supported by: FURSCA, Gerstacker Institute

MARCI NELSON, '04

“The Pineapple Story”: Exploring the Use of Narrative in New Tribes Mission

Faculty Sponsor: Molly Mullin

Majors: Religious Studies, Anthropology and Sociology
Hometown: Leslie, Michigan

Stories can do far more than merely amuse the listener. In the case of New Tribes Mission (NTM), narratives accomplish several tasks apart from telling stories. As missionaries within NTM, specifically those members located in Papua New Guinea, navigate their way through a mission endeavor I argue that narrative, although employed differently at each stage, dominates the interaction. Narrative first serves as a tool of reference for the culture-and-language-learning missionary. After missionary and audience acquaint themselves, narrative draws the non-Christian listener into the Bible's chronologically recounted act of redemption. And finally, missionary narratives communicate a particular cross-cultural view to the congregants sitting at home in the padded pews of supporting churches.

Oral cultures of New Guinea present suitable landscapes for a narrative education/conversion of this kind. But what happens, as Susan Harding studies in fundamental Christian conversion, to the hearer and the speaker as dialogue begins? What happens to traditional narratives? Are they, as anthropologist Andrew Lattas suggests, displaced by the gospel? What do the narratives do? Aimed at explaining this narrative function, my research involved participant observation



of an NTM training course and missionary conference, personal interviews with NTM missionaries, background reading on relevant subjects, and a six-week trip to NTM's Interface program in Papua New Guinea where I interacted with missionaries and New Guineans. Tellers of story create and strategize, but the story itself also accomplishes something as it creeps into listeners' hearts, engaging interest, and telling of life's possibilities.

Supported by: FURSCA

KATY NIESEN, '05

Individual Variation in Songs of House Wrens

Faculty Sponsor: E. Dale Kennedy

Major: Biology
Hometown: Lapeer, Michigan

In organisms that learn their vocalizations, such as songbirds, there is often variation in specific types or arrangements of notes. House Wrens sing complex songs made up of two parts: a relatively low-amplitude introduction and a relatively high-amplitude terminal section. The terminal section generally consists of repeated syllables, or trills. Here I examined variation among songs of an individual male House Wren recorded over five sequential days in July 2003 in Whitehouse Nature Center. Each day, the bird was recorded for its first hour of song, and on the fifth day, the bird was recorded at two additional times during the day. I used a combination of Avisoft SASLab Pro and Microsoft Excel to examine variations in lengths of different parts of the songs, including introduction, terminal, total length, and the interval between songs. The male appeared to not vary the lengths of time significantly, though he did vary the notes within his songs.



MARIÁN NOVAK, '05

Search for Xylose Regulator in *Thermoanaerobacter ethanolicus*

Faculty Sponsor: Luti Erbežnik

Major: Biology
Hometown: Banska Stiavnica, Slovakia

Previous research on xylose utilization in *Thermoanaerobacter ethanolicus* suggests that expression of the xylose utilization genes is controlled on the transcriptional level. This project focuses on elucidating the control mechanism of *xyI* gene expression. It is hypothesized that a protein binding to an operator sequence for the *xyIFGH* and *xyIAB* operons controls the xylose gene expression. The *xyIAB* operator is known, but the *xyIFGH* operator has not been identified yet.



To test the above hypothesis, the missing operator sequence from the *xyIFGH* operon first needs to be isolated. In order to find genetic evidence of the putative repressor protein, *xyIR*, degenerate primers were designed from the amino acid sequence alignment of multiple bacterial repressors. These primers were used to PCR-amplify the *xyIR* fragment from the *T. ethanolicus* genomic DNA. Several PCR products were sequenced, and DNA sequence analysis revealed that they belonged to genes unrelated to xylose metabolism. An alternative route will be undertaken to isolate the gene by purifying the regulator protein via affinity chromatography. Following the identification of the purified protein by the gel mobility shift assay, a partial amino acid sequence will be gathered. The sequence will then be back-translated and used to locate the genetic blueprint of the protein in the genome.

Supported by: FURSCA-Hyde Fellowship

JENNIFER PAINE, '06

"Love" and "War"

Faculty Sponsor: Zulema Moret

Major: English
Hometown: Bay City, Michigan

These poems, "Love" and "War," are global projects in visual poetry from Albion College's Spanish Composition course. They use streaming images, music, and phrases to express personal ideas about love—what it is, what it looks like, where we find it—and the effect of war—on cities, on people, on innocence—using Microsoft's Windows Media Player and Magic Moviemaker 2 software.



"Love" is played to the music of Aaron Copland, a light, soft, sweet combination that seeks to express happiness and pleasure. In "War," images of bombed cities are played against the music of Gregorian chant, a dichotomous mixture that seeks to underscore the serious, deathly effect of bombing raids. Neither poem suggests that these displays of love and war are the be-all, end-all, "right" message. They are meant only to make viewers think, and especially *feel*.

The significance of the visual poetry method is its ability to invoke sentiments like pleasure and sadness and themes like love and war using images and music, rather than lines of poetry on white sheets of paper alone. Though written in Spanish, the poems are readily accessible to the non-Spanish-speaking community using this movie-like method to appeal to eyes and ears. Emotional responses to love and war are hoped for, regardless of my audience's ability to decipher the language!

STEPHANIE PENDRYS, '04

The All-American Girls Professional Baseball League

Faculty Sponsor: Allen Horstman

Major: History
Hometown: Houghton Lake, Michigan

By 1943, the United States was entirely focused on World War II. Thousands of men were fighting overseas, and women had fulfilled their patriotic duty by taking over the occupations left vacant by men. It was the time of "Rosie the Riveter"; women worked in offices and stood on assembly lines building parts for war-planes and ships. With the likes of Ted Williams and Joe DiMaggio having traded in their gloves for army fatigues, women also took to the baseball diamond.



The All-American Girls Professional Baseball League (AAGPBL) was established in 1943, and throughout the Midwest, women played professional baseball in front of thousands of cheering spectators. But the league and the ballplayers were all but forgotten for almost forty years until the release of the film *A League of Their Own* in 1992. The groundbreaking film increased awareness of the league's existence, but it does not tell the whole AAGPBL story. The film only details the inaugural 1943 AAGPBL season, when in fact the league was in existence until 1954. There are many questions the film does not answer, namely, the reasons why the AAGPBL disbanded and how the lives of the players were influenced by their participation in the league. These issues are the nucleus of my paper, and my primary focus is on the players themselves. I believe that the AAGPBL instilled in its players a lifelong desire both to stay active in sports and to advocate sports for girls and women.

Supported by: FURSCA

STEVEN PLUNKETT, '04**“To Vex the World”: 300 Years of Jonathan Swift and His Critics**

Faculty Sponsor: Sally Jordan

Major: English
Hometown: Farmington Hills, Michigan

It seems that from the first moment he was published, critics have been writing about Jonathan Swift. From his contemporary friends and adversaries, to the Romantics and Victorians, to the modern critical perspectives of Freudians, feminists, and deconstructionists, critics of nearly every period and school have found something in Swift to capture their attention, and have found something unique to say about him.

Over the course of the last 300-odd years, Swift's writings have been used to paint him as everything from patriot to monster, lunatic to genius, and moralist to misanthrope. Often, the disparate critical reception Swift has received owes a good deal to the larger culture out of which it arises; the earnest and squeamish Victorians had trouble dealing with Swift's irony and harsh methods, and the heavy Freudian influence of the psychoanalytic critics of the mid-twentieth century is quite apparent in their criticism. However, it is also true that there may be something about Swift's writing itself that allows the critics to draw their disparate conclusions more easily than would be possible with other comparable literary figures. In this thesis, I survey the extensive body of criticism written about Swift, and show how it can provide insight into the nature and limitations of each of the critical schools discussing him.

Supported by: FURSCA

JUAN PONCE, '05**Boom, Bust, Recovery: Explorations of Albion Economic Trends, 1950-Present**

Faculty Sponsor: Wesley Dick

Majors: Economics and Management,
Political Science
Hometown: Mexico City, Mexico

Albion, Michigan experienced an economic boom during the 1950s and 1960s. The 1970s initiated the hard economic times that still face the city. Factory closings introduced Albion to modern globalism and the deindustrialization of America. Because past perspective is needed to illuminate the present and future, this study explored economic trends in Albion, 1950 to the present. The research was conducted as part of the group project, “Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century.”

Albion's main industries were analyzed, including Corning Glass Works and the Albion Malleable Iron Company (Harvard Industries). Their community contributions, changes, mergers, and closings were documented through the extensive archival resources of the Local History Room of the Albion Public Library. This historical data was supplemented by conversations with community leaders. Albion was also compared to similar cities facing economic decline to identify common problems and strategies. Regional, county, and state market research studies provided examples of solutions and programs. This study also examined the potential of College-community cooperation and grants from the Michigan Economic Development Corporation for Albion's recovery.

Supported by: FURSCA, NCUR/Lancy

ANN PRECZEWSKI, '04**Children's Literature, Adult Themes**

Faculty Sponsor: James Diedrick

Major: English
Hometown: Lake Orion, Michigan

By definition, “children's literature” is literature intended for children. I have found, however, that as a work of children's literature becomes or comes close to becoming a classic, its audience broadens. Often a work of children's literature attains “classic” status because it explores themes that appeal and apply to adults as well as children. In my thesis, I analyze three works of literature to explore the complex phenomenon of “children's literature” and the ways in which classic works in this genre communicate to a dual audience.

Christina Rossetti's poem “Goblin Market” is often read by adults as a tale about the passage from childhood to adulthood through the process of sexual maturation, but children often read it as a simple fairy tale. When adults read Mark Twain's *The Adventures of Huckleberry Finn* they recognize it addresses racism and issues with American identity, while children will often read it as a tale of friendship and adventure. And while Salman Rushdie's *Haroun and the Sea of Stories* is a fanciful adventure story, adult readers will recognize that it also confronts questions of free speech, censorship, and cultural pluralism.

Together, these works of literature represent a genre that gracefully explores adult themes in a children's work, making them appeal to both adults and children. Their duality in terms of themes and audience, along with their ability to stand the test of time, shows why works like these become literary classics.

Supported by: FURSCA

AMY RADGOWSKI, '04

Molecular Sexing of Black-Capped Chickadees

Faculty Sponsor: E. Dale Kennedy

Majors: Biology, Religious Studies
Hometown: Grosse Pointe Park, Michigan

Black-Capped Chickadees (*Poecile atricapilla*) are small birds found year-round in Michigan. They are monomorphic, meaning that males and females cannot be told apart by observation alone.



Students at Albion College have been examining movements of chickadees among feeders in Whitehouse Nature Center (WNC) since 1997. During several years, students have observed dominance interactions among individual chickadees at the feeders. In Massachusetts, researchers have found that male chickadees are always dominant to females. To examine that hypothesis in WNC, we need to be able to sex chickadees. In summer 2002, I attempted to use feathers as a source of DNA to sex adult chickadees. I used QIAGEN DNeasy™ kit (with added DTT) to extract DNA from feathers. After extraction, I amplified the CHD-1 gene by PCR and then ran the amplified gene on agarose gels to determine sex. I was unable to obtain sufficient quantities of DNA from adult feathers to successfully sex the birds. In February 2004, I began to use small quantities of blood as a source of DNA. I have been able to sex chickadees using blood and the techniques above (not adding DTT). These results will allow us to test the relationship between sex and dominance in chickadees in WNC.

Supported by: FURSCA

BENJAMIN RIEGLER, '04

The Kalamazoo River in Albion, Michigan: An Environmental Overview of the Past Half-Century

Faculty Sponsor: Wesley Dick

Major: History
Hometown: Crystal Lake, Illinois

The two branches of the Kalamazoo River meet at the Forks in Albion, forming a single river that flows into Lake Michigan. This river formed the backbone and muscle of Albion's early development, powering numerous mills that diverted and manipulated its flow. The development of heavy industry that followed the early mills did not rely on the river, but these industries had just as great an effect on the Kalamazoo. In addition to industry, the city of Albion added to the pollution of the river. By the mid-1950s, Albion was in the throes of its industrial and economic heyday, but the river was suffering.



The goal of this research was to trace the history of the Kalamazoo River in Albion in the last 50 years, exploring especially issues of environmental significance. Using archival material and interviews with those who have been involved in efforts to protect and conserve the river, a picture of the river's bust, recovery, and potential future boom was developed. As heavy industry in Albion has declined and sewage treatment has improved in the last three decades, it has presented hope that the river will be free of depredations in the future. Now the focus turns to utilizing the Kalamazoo River as centerpiece and aid in Albion's civic and economic recovery, epitomized by the idea of converting part of the river to an artificial

whitewater course. This research was part of the group project, "Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half-Century."

Supported by: NCUR/Lancy

CHRISTINE RIKER, '04

Theoretical and Experimental Analysis of Critical Strain Energy Release Rates for Mode II Fracture in FRP-Wood Bonds

Faculty Sponsor: Darren Mason

Major: Mathematics
Hometown: Allendale, Michigan

Glue-laminated (glulam) beams are composed of layers of smaller wood beams bonded vertically and/or end-jointed horizontally together to create larger beams. One promising technique to create high-strength glulam beams is to bond fiber-reinforced-polymer (FRP) as the bottom piece of the beam, providing tension reinforcement. Although the bond between the wood and FRP is initially very strong, the normal weathering and fatigue cycles typically cause delamination to occur between the two materials. While small cracks in the wood-FRP bond do not alter the load-carrying capacity of the beam, large cracks do. Consequently, one very important parameter to understand is how much strain energy the beam can withstand before a small crack between the FRP and the wood will grow into a large crack that would cause beam failure. This quantity is known as the *critical strain energy release rate* (G_c), and its quantification was the goal of this research.



To collect the data needed to mathematically determine G_c , glulam specimens were fabricated and tested using three-point bending experiments. Using a combination of mathematical analysis of fracture mechanics and contemporary statistical analysis of collected data, we were able to deduce a G_c that falls within an acceptable degree of

confidence. The outcome of this research will help us establish acceptable crack sizes in in-service reinforced glulam bridge girders.

Supported by: National Science Foundation Research Experiences for Undergraduates. This research was conducted at the University of Maine under the guidance of Eric Landis (Department of Civil and Environmental Engineering).

LINDSAY SANDER, '04

Case Study of a Psychiatric Partial Hospitalization Program: A Comparison of Two Cohorts

Faculty Sponsor: Barbara Keyes

Major: Psychology
Hometown: Allen Park, Michigan

Researchers have documented the effectiveness of psychiatric partial hospitalization programs (PPHP) as a treatment modality for individuals with serious mental disorders. The present study was



designed to assess the effectiveness of an individual PPHP by comparing patients admitted during the first months of its operations and patients admitted seven years later. McClintic (1997) conducted a three-month follow-up of 38 patients admitted to a newly opened PPHP and found a significant reduction in symptoms between admission and discharge (maintained at three months post-discharge). The present study examined differences between two groups: a sub-sample of McClintic's 1996 cohort and a 2003 cohort. Each participant completed four measures: a symptom checklist, life stress inventory, patient satisfaction survey, and treatment history.

Preliminary results suggest that participants in the 2003 cohort displayed a significant reduction in symptoms between admission and discharge, a reduction that was maintained three months post-discharge replicating McClintic's finding. However, the

decrease in symptoms in the 2003 cohort was more pronounced than in the 1996 cohort, suggesting that the PPHP improved in treatment effectiveness during the seven-year period. No significant differences were found in symptom severity at admission between participants in the two cohorts, although participants in the 2003 cohort reported fewer symptoms at three-month follow-up. Seven years after participating in the PPHP program, participants reported levels of stress similar to the 2003 cohort three months post-discharge. There was no difference in patient satisfaction with the PPHP. Despite the similarity in symptom levels in the two cohorts, these groups reported differences in current treatment and medication usage.

Supported by: FURSCA

MELINDA SLOMA, '04

Huntingdon Life Sciences and Stop Huntingdon Animal Cruelty: A Normative Analysis

Faculty Sponsor: Gene Cline

Major: Philosophy
Hometown: Battle Creek, Michigan

Animal testing and research is on the forefront of public controversy in the United Kingdom, which has long recognized legislatively the role of animals in research. The first Act involving animals in the United Kingdom was the Cruelty to Animals Act of 1876, which was later revised in 1986 and named the Animal Scientific Procedures Act. Despite the existence of legislation, animal liberation groups like the Animal Liberation Front and Stop Huntingdon Animal Cruelty have implemented extreme measures to protest the use of animals in research.



Huntingdon Life Sciences (HLS), at the center of the UK's animal rights debate, is the largest biotechnology company in Europe. HLS is a leading provider of toxicology testing services and has assessment services in pharmaceuticals and agrochemicals. Stop Huntingdon Animal Cruelty is an

animal rights group that has the explicit purpose of shutting down HLS.

The legal case of *Huntingdon Life Sciences Group PLC v. Stop Huntingdon Animal Cruelty* was analyzed as a case study of the animal rights debate. Five case files were examined and a thirty-three-page chronology of events generated. The events of this case were put into an ethical framework focusing on the utilitarian ethic of extensionism. Ultimately, the goal of this research was to seek an ethical middle ground in the animal rights debate by examining the *Huntingdon Life Sciences Group PLC v. Stop Huntingdon Animal Cruelty* case.

Supported by: FURSCA

BECKY SMITH, '04

The Constitutionality of School Vouchers in Light of *Zelman v. Simmons-Harris*

Faculty Sponsor: William Rose

Major: Political Science
Hometown: Vicksburg, Michigan

Throughout Establishment Clause history, there have been countless interpretations of what the constitutional framers actually meant by the phrase "Congress shall make no law respecting an establishment of religion." My research encompasses the shift of the clause's meaning with regard to school voucher programs. The shift, from strict separation to accommodation, has evolved from various U.S. Supreme Court decisions that answer the question of whether religious schools included in subsidy programs violate the Establishment Clause through a process called incorporation.

Most critically examined in my Establishment Clause jurisprudence research was *Zelman v. Simmons-Harris*. *Zelman* progressed from a Cleveland, Ohio voucher program and was ruled constitutional by the U.S. Supreme Court in June 2002. Not only did this decision change the interpretation of the Establishment Clause, but it also led to a more contentious battle at the state level. Michigan is one of thirty-seven states that



have some form of amendment that disallows funding to religious schools. My research illustrates how Michigan has been, and will continue to be, impacted by *Zelman's* outcome.

Supported by: FURSCA

ALEXIS SNYDER, '04

Dramaturgy and Television: An Exercise in Applying the Principles of Dramaturgy to an Example of Television Drama

Faculty Sponsor: Margaret Young

Major: Theatre
Hometown: Coldwater, Michigan

The study of dramaturgy is the study of the art of dramatic composition and representation. Traditionally, this definition has been focused on the dramatic arts. With the advent of new visual arts such as movies and television, this same definition can find new meaning. The purpose of my presentation is to show how the principles and tools of dramaturgy can be usefully applied to popular American television. Since the breadth of television is so large, I have chosen a specific series with which to apply dramaturgical concepts. I have chosen the series specifically because a key individual involved has extensive theatrical training and the series itself has many theatrical characteristics. Using the tools of dramaturgy as a starting point, I will focus on a specific aspect of the series and its theatrical implications.



CRAIG STREU, '04

Progress toward the Synthesis of Novel Constrained Heteroaromatic Chiral Hypervalent Iodine Reagents

Faculty Sponsor: Andrew French

Major: Chemistry
Hometown: Caro, Michigan

More than 150 years after Louis Pasteur separated the enantiomers of tartaric acid by hand, researchers are still working feverishly to completely harness chirality. Today, it is understood that molecules that are compositionally identical can, by virtue of their spatial arrangement, fill biologically distinct roles. Conceptually, the impact that chirality has for biological molecules can be likened to trying to place a right-handed glove on the left hand. Using such an example equates each hand to an enantiomer, or identical, but spatially distinct molecule. This "handedness" is apparent in a variety of biological processes, such as a substrate binding to an enzyme as a right hand would only fit in a right-handed glove.

Since the Thalidomide tragedy in the 1950s and 1960s, scientists have widely understood the importance of creating pharmaceuticals of a single "handedness." To date, the most widely used and successful method of creating individual enantiomers is synthesizing the desired product using reagents that produce asymmetric products. The work of Knowles, Noyori, and Sharpless, Nobel Prize winners in 2001 on catalytic asymmetric functionalizations of organic molecules, indicates the importance of this approach. My interest lies in chiral hypervalent iodine reagents. Despite their capability to perform iodolactonizations, oxidation and functionalization of multiple bonds, α -keto functionalizations, and Suzuki-type coupling of vinyl and aryl iodonium salts, relatively little research has addressed their potential as chiral moieties.



This project is the latest edition of collaborative work between Albion College and Cardiff University in an attempt to address these very questions.

Supported by: American Chemical Society
Petroleum Research Fund-B, FURSCA,
National Science Foundation

RACHEL TODD, '04

Responding to Bioterrorism: An Analysis of State and Local Responses to the Threat of Smallpox

Faculty Sponsor: Leonard Berkey

Major: Chemistry
Hometown: Montague, Michigan

The potential for a bioterrorist attack has caused the United States to take many precautions in the political, social, and public health fields. Smallpox, a virus that has been eliminated from the world since 1977, is one of the most feared biological weapons. Because of the possible danger of a smallpox attack from nations that the United States considers potentially hostile, it is crucial to ensure that our response systems are adequately prepared to respond to such an attack, particularly in light of the biological characteristics of smallpox.

The United States has devised elaborate response plans in the event of a smallpox terrorist attack at the federal, state, and local levels. Research was conducted on plans developed by the state of Michigan and by Muskegon and Oakland Counties in Michigan. By interviewing both public health and medical professionals, it has been determined that there is a potential lack of communication between government health agencies and practicing physicians. In addition, while most of those interviewed consider themselves to be adequately trained, funding and personnel to implement the necessary procedures to prepare for and respond to a smallpox attack may be insufficient.



This research looked at the biological characteristics and risks associated with smallpox as well as the ability of the United States public health system to respond effectively to threats of biological terrorism and protect the health of Americans to the greatest extent possible.

Supported by: FURSCA

TAMAR VESCOSO, '06

(See Virginia Cangelosi, '05, Tamar Vescoso, '06)

ELIZABETH VOGEL, '04

Hardenberg and Heine: Two Views of Napoleonic Influence on Prussian Society

Faculty Sponsor: Geoffrey Cocks

Major: History

Hometown: Grosse Pointe Farms, Michigan

Prussia during the late eighteenth and early nineteenth centuries was a place of transition and upheaval. The fervor of the French Revolution and the spread of Napoleonic forces brought permanent changes to Europe. My research focuses on how the Napoleonic era affected Prussian society. As a result, it has served to further the understanding of the causes and outcomes of change on the political and social level in nineteenth-century Prussia. In order to better comprehend the full breadth and scope of Napoleonic influence on the Prussian state, I researched the lives of two prominent individuals of the era: Prince Karl von Hardenberg and Heinrich Heine.



Prince Karl von Hardenberg (1750-1822) was a Prussian statesman, bureaucrat, and Prussian chancellor from 1810-1822. He had a large role in shaping the politics of the era. Hardenberg feared a bloody revolution, and his motto, "democratic principles in a monarchic government,"

noted his wish to implement reforms and shape the bureaucracy, yet maintain the monarchy in Prussia—unlike France.

A prominent poet and journalist, Heinrich Heine (1797-1856) represents the liberal cause in early nineteenth-century Prussia. His vision for the future did not include a monarchy or an enlightened absolutist system. Heine's childhood was shaped by the emperor Napoleon and those things that he represented at the time: equality and democracy. Heine wanted his home to be united and governed by democratic principles, but was exiled for his radical political views.

Together, Hardenberg and Heine's lives span the prime era of Napoleonic influence. Through Hardenberg's reforms and Heine's writings, one better understands the far-reaching and long-lasting influence of the Napoleonic era.

Supported by: FURSCA

ANDREW WAKEFIELD, '04

Fanfare for Hitler: Gray Music in the Holocaust

Faculty Sponsor: Geoffrey Cocks

Major: History

Hometown: Ann Arbor, Michigan

In his text *The Drowned and the Saved*, Auschwitz survivor Primo Levi wrote that for a victim to survive a concentration camp, he had to enter a "Gray Zone" of collaboration with his oppressors,



whether by serving in a specific role or utilizing an ability the Nazis exploited. This study traces music through the Nazi Reich and places it into Levi's Gray Zone. By understanding music's dual role in such Nazi showpieces as the Jewish Kulturbund and Terezin transport camp, one sees how music served a dual role for the Holocaust's victims and perpetrators. It provided solace and normalcy for those Jews who participated, but also was used as a façade for Nazi persecution. After looking at the cultural life of these institutions, this study analyzes the

role of music in extermination camps such as Auschwitz. Camp orchestras made up of inmate musicians played not only to entertain the Nazis, but also to further dehumanize their fellow inmates, whether by playing while new transports arrived or as the masses marched off to work. Yet, through playing, musicians were afforded such privileges as better food and shelter, and thus were more likely to survive, but by no means was survival guaranteed for them. This study analyzes these divergent uses of music in the hope of reconciling its seeming moral contrasts.

Supported by: FURSCA

LEXIE WATKINS, '04

Perception of and Homophobia toward Female Collegiate Coaches

Faculty Sponsor: Trisha Franzen

Major: Physical Education

Hometown: Coloma, Michigan

In recent history, women's colleges and sports teams were assumed to be places where lesbians lurked. Women in sport and physical education especially fit the profile of women to watch out for:



they were in groups without men, they were not engaged in activities thought to enhance their abilities to be good wives and mothers, and they were being physically active in sport, a male activity. Because lesbians were assumed to be masculine creatures who rejected their female identity and roles as wives and mothers, athletic women became highly suspect.

Today, this perception of women in sport as lesbians still exists. Whether it is as coaches, administrators, or athletes, most women in the sport arena will experience homophobia at one time or another. Therefore, this project is designed to gain a better understanding of the perception of female collegiate coaches, as well as the homophobia that exists in many athletic

departments. The methodology used was an anonymous thirty-six item questionnaire that included demographic information as well as investigated the perceptions and stigmas attached with coaching collegiate-level sports as a female.

Supported by: FURSCA

HALIE WATT, '07

“Porgi, Amor, Qualche Ristoro” from Mozart’s *Le Nozze di Figaro*

Faculty Sponsor: James Ball

Major: Music

Hometown: Lake Orion, Michigan

My project is a performance of “Porgi, amor, qualche ristoro” from *Le Nozze di Figaro* by Mozart. This opera is full of twists and turns in the game of love. It centers on the romantic entanglements of Figaro, a valet, Susanna, a maid, the count, and his countess. The count neglects his wife, having feelings for Susanna. The countess is distraught by this news. Figaro is scheduled to marry Susanna and is outraged. He and the others design a plot for revenge. In the end, all is well and everyone remains with his or her respective lover. (Opera News 1-2)



“Porgi, amor, qualche ristoro” is the countess’s lament. She sings of the loss of her husband. The translation of this piece is “O love, give me some remedy for my sorrow, for my sighs; either give me back my darling or at least let me die.” Typical of the countess’s inability to express her true feelings, in this aria, just when it seems as though she will let go, she eases back to hide her secrets. I really enjoy trying to reveal the countess’s character through my performance. I will be performing this aria at the annual Concerto Concert, accompanied by the Albion College Symphony Orchestra on Sunday, April 25.

AMY WEINMEISTER, '05

Albion: Transitions

Faculty Sponsor: Lynne Chytilo

Major: Art and Art History

Hometown: Edmond, Oklahoma

In the summer of 2003, I was part of an interdisciplinary group of students researching the history of Albion, Michigan, over the last 50 years in a project titled “Boom, Bust, Recovery: Explorations of Albion, Michigan—The Last Half Century.” These years, marked by tumultuous economic, social, and political changes, left their mark on Albion in many ways.



As an artist, my emphasis was on the visual repercussions of these years. I took hundreds of photographs over the course of the summer, which I processed, enlarged, and bound into a book. This book was created in an edition of three, and was accompanied by eight framed photographs, eventually to be displayed in a public space in Albion.

My presentation will include a description of my artistic research process, samples of my photographs, and a presentation of the book itself.

Supported by: FURSCA, NCUR/Lancy

SARA WEST, '06

Conditioned Inhibition of Already-Elicited Autoshaped Conditioned Responses in the Rat

Faculty Sponsor: W. Jeffrey Wilson

Major: Psychology

Hometown: Trenton, Michigan

Rats were auto-shaped to approach a dipper that provided a sweetened milk reinforcer after the 10-second presentation of a flashing LED mounted on a



lever. Another control LED mounted on a different lever was explicitly unpaired with food. Although rats did not develop autoshaped leverpressing, they did routinely approach the dipper during the CS+ (the stimulus that always predicted food) and not during the CS- (the stimulus that did not predict food). These conditioned approach responses occurred throughout the CS-US interval, but were more frequent near the end than at the beginning. An auditory conditioned inhibitor introduced during the last five seconds of the CS+ reduced the frequency of the conditioned responses. Our results are compared to those of others (e.g., Jelen, Soltysik, and Zagrodzka, 2003; Rescorla, 2003) who have recently examined conditioned inhibition in rats, and are discussed in the context of studies of protection from extinction.

Supported by: FURSCA

DANIEL WESTERHOF, '04

Perceptions of People Who Help

Faculty Sponsor: Andrew Christopher

Major: Psychology

Hometown: Grandville, Michigan

Although a great deal of literature exists seeking to explain the situations in which helping may or may not occur, literature assessing reactions about those people who do help remains



scarce. This study addresses that question by comparing people’s perceptions of helping behavior based on three characteristics of the helper: the helper’s affluence level (either high or low, based on the helper’s belongings), the helper’s gender, and the type of help provided (casual, substantial, emotional, or emergency). Sixteen scenarios incorporate these three characteristics. During an online survey, participants read one randomly assigned scenario and then answered questions regarding the personality and motivation of the helper. Demographic characteristics were also collected to be analyzed for possible moderating influences on the perceptions of the helper. Results will be discussed in terms of increasing the likelihood of helping behavior.

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