



WestConn Research Day

May 10, 2007

Program

Seminar Presentations Luncheon <i>Warner Hall</i>	12:00 p.m. - 1:30 p.m.
Registration and Poster Setup <i>Science Building Atrium</i>	1:00 p.m. – 2:00 p.m.
Opening Session and Keynote Speaker <i>Science Building (SB 125)</i>	2:00 p.m. - 2:30 p.m.
Poster Session <i>Science Building Atrium</i>	2:30 p.m. - 4:00 p.m.
Concluding remarks and awarding of prizes <i>Science Building (SB 125)</i>	4:00 p.m. - 4:30 p.m.

Refreshments will be served during the conference in the Atrium of the Science Building

Student Participants

Undergraduate Students

Name	Abstract #	Session
Matthew Alesi	2	Poster
Karianne Allo	3	Poster
Stefanie Bascom, Schuyler Merritt, Sarah Douglas	4	Poster
Mariah Bednar	5	Poster
Angela Bergeron	6	Poster
Oriane Broustal	7	Poster
Diana Bryant	8	Poster
Amanda Caposella	9	Poster
Winnie Chau	10	Poster
William Chnowski	11	Poster
Michael Coleman	12	Poster
Lacey Conrad	13	Poster
Michelle Crispino	15	Poster
John Curran	16	Poster
Ashley Cwikla	17	Poster
Jennifer D'Andrea, Masai McIntosh, Sherri Purvis	18	Poster
Julie Davis, Erin Saunders, Bob Konstantaras	19	Poster
Shari Dell	20	Poster
Ben England	21	Poster
John Essex, Cody Arcuri, Scott Unger	22	Poster
Stacy Evans	23	Poster
Melissa Ferrara	24	Poster
Galina Filipova	25	Poster
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Danielle Jowdy	34	Poster
Jennifer Kusaila	35	Poster
Stephen LaRosa	36	Poster
Ariana Lecaj	37	Poster
Michelle McCabe	40	Poster
David Melillo	41	Poster
Schuyler Merritt, Sarah Douglas, Stefanie Bascom	42	Poster
Dionne Mitchell, Erin McConaghy, Jennifer Thompson	43	Poster
Dania Montanaro	44	Poster
Stephanie O'Donnell	45	Poster

Joy Pacete	46	Poster
Janice Paulsen	47	Poster
Jacqueline Proulx, Erik Schlange, Carlos DeJesus	48	Poster
Martha Puccio	49	Poster
Emily Retter	50	Poster
Forest Robertson	51	Poster
David Roman	52	Poster
Kathy Rudzki	53	Poster
Elianna J. Santiago	55	Poster
Erin Saunders, Julie Davis, Bob Konstantaras	56	Poster
Laura Telman	57	Poster
Stephanie Tucci	58	Poster
Jenna Vallee	59	Poster
Candi Waldron	60	Poster
Natalie Wolff	62	Poster
Julia Wullen	63	Poster
Justin Alperin	64	Seminar
Sarah Carey	65	Seminar
Mimi Davis	66	Seminar
Sarah Douglas, Stephanie Bascom, Schuyler Merritt	67	Seminar
Rhei C. Gordon	69	Seminar
Billy Vu, Rob Poprocki, Sean Swanson	70	Seminar

Student Participants

Graduate Students

Name	Abstract #	Session
Valerica Albu	1	Poster
Scott Craven	14	Poster
Cass Jabara	32	Poster
Chris Lener	38	Poster
Christa Mahalik	39	Poster
Yvonne Santiago	54	Poster
Jeanette Wigglesworth	61	Poster
Robin Ferrante	68	Seminar

Faculty Participants

Research Sponsors

Faculty	Department
Dr. Daniel Barrett	Psychology
Dr. Richard Bassett	Management Information Systems
Dr. John Coleman	Management
Dr. Dennis Dawson	Physics, Astronomy and Meteorology
Dr. Colleen Delaney	Nursing
Dr. Frank Dye	Biological and Environmental Sciences
Dr. Robin Flanagan	Psychology
Dr. Jennifer Frederick	Chemistry
Professor E. Pat Geraci	Nursing
Professor Rona Gurkewitz	Computer Science
Dr. Ruth A. Gyure	Biological and Environmental Sciences
Dr. Richard Halliburton	Biological and Environmental Sciences
Dr. Paul Hines	Chemistry
Dr. Rondall Khoo	Psychology
Dr. Christopher Kukk	Political Science
Dr. Susan Maskel	Biological and Environmental Sciences
Dr. Yuan Mei-Ratliff	Chemistry
Dr. Alycen Nigro	Chemistry
Dr. Patty O'Neill	Psychology
Dr. Burton Peretti	History
Dr. C. Thomas Philbrick	Biological and Environmental Sciences
Dr. Theodora Pinou	Biological and Environmental Sciences
Dr. Barbara Piscopo	Nursing
Dr. Charles Rocca	Mathematics
Dr. Howard Russock	Biological and Environmental Sciences
Dr. Margaret Sullivan	English
Dr. Wynn Wilcox	History and Non-Western Cultures
Dr. Edwin Wong	Biological and Environmental Sciences

Abstracts

Poster Presentations

listed in alphabetical order by first author

1 **COMPARISON OF BACTERIAL COMMUNITIES BETWEEN CONNECTICUT FORESTS AND GARDENS**

Valerica Albu (Dr. Edwin Wong, Dept. of Biological and Environmental Sciences)

Agricultural activities can alter the microbial flora of soil by disrupting the physical structure of the soil and by introducing chemicals and amendments not normally found there. The goal of this research was to compare the diversity of bacterial communities from cultivated garden soil and uncultivated forest soil. Soil samples were collected from different garden and forest plots. Total soil DNA was isolated, and bacterial 16s rRNA genes were amplified by PCR and analyzed by T-RFLP fingerprinting.

2 **GLOBALIZATION IN NORTH VIETNAM**

Matthew Alesi (Dr. Christopher Kukk, Dept. of Political Science)

Our project will be on the Globalization of North Vietnam from 1900-2007. We will be talking about the Long Bien Bridge, canals, dams, dykes, and other water infrastructure, and the way that water was controlled using this infrastructure, and the effect this had on the North Vietnamese. We will be showing how the various aggressors in Vietnam handled the water management, including the French, and especially the Vietnamese after they gained control of water management in 1954.

3 **EFFECTS OF FAILURE FEEDBACK AND MOTIVATION ON TASK PERFORMANCE**

Karianne Allo (Dr. Daniel Barret, Dept. of Psychology)

The impacts of failure feedback and motivation on task performance have been shown to have a positive effect on an individual's task performance. There has been little research done to examine the effect of failure feedback on an individual's performance prior to completing a task. The aim of this research is to further examine the effects of failure feedback and motivational manipulation on an individual's performance on a mathematics quiz. It is hypothesized that individuals who receive failure feedback and a motivational manipulation will perform better on this task than individuals who do not receive failure feedback or a motivational manipulation.

4 **NORTH VIETNAMESE HYGIENIC WATER USAGE AS AN INDICATOR OF SOCIAL CHANGE**

Stefanie Bascom, Schuyler Merritt, Sarah Douglas (Dr. Chris Kukk, Dept. of Political Science)

Hygienic water usage patterns are used in this study as an indicator of the extent of change in individual lifestyle among North Vietnamese people. Modern usage patterns reflect increasingly universal patterns of self-reliance, individualism and conformity, as shown in the adoption of private bathrooms, household water filtration systems and growing use of western toilets and toilette rituals. The evolution from communal to individual bathing and toilet practices will parallel the progression of the Vietnamese perception of self as the country globalizes. The ethnographic observation portion of this project will be carried out in North Vietnam over the summer.

5 **ENGINEERING CYTOCHROME C PEROXIDASE INTO A DEHALOPEROXIDASE**

Mariah Bednar (Dr. Alycen Nigro, Dept. of Chemistry)

Amphitrite ornata Dehaloperoxidase (DHP), a heme-containing peroxidase, is a natural enzyme capable of the removal of halogens from organic compounds. Protein environment characterization and elucidation of the reaction mechanism of this enzyme may be useful in the development of enzymatic tools for application in bioremediation of environmental pollutants. Presently, we are engineering Cytochrome c Peroxidase (CCP), a well characterized heme-containing system, into a biological model for Dehaloperoxidase. These studies can provide a better understanding of the factors that control the vital relationship between the structure of an enzymatic active site and its function, therefore offering insight into the Dehaloperoxidase system.

6 **OPINIONS AND PERSUASION**

Angela Bergeron (Dr. Daniel Barrett, Dept. of Psychology)

The present study focused on the effects of opinions on the persuasion of college students. I wanted to find if there were differences in persuasion based on whether the participant was assigned to the supportive article/silent confederate, supportive article/verbal confederate, critical article/verbal confederate, or the critical article/silent confederate condition. It was hypothesized that participants in the verbal confederate/critical article condition will score significantly lower on a luck and superstition test than participants in the silent confederate/supportive article condition. Compliance was assessed by the participants' score on the true/false questionnaire measuring superstitious beliefs.

7 **FUR AND DOG HAIR**

Oriane Broustal (Dr. Edwin Wong, Dept. of Biological and Environmental Sciences)

The American Humane Society recently revealed that dog hair was showing up in faux-fur and real fur coats. Our project seeks to test this by using molecular techniques. DNA will be extracted from coat fur, and PCR will be used to amplify cytochrome oxidase subunit II sequences using dog-specific primers. Fur will be sampled from random coats available on the commercial market.

8 **PICTURES AND WORDS' REACTIONS ON MEMORY: AN EXPERIMENTAL COMPARISON**

Diana Bryant (Dr. Patty O'Neill, Dept. of Psychology)

This study examined whether memory is better for words or pictures. This research proposes that information presented in pictures be remembered better than information presented in words. Twenty students from Western Connecticut State University were randomly assigned to a condition of information presented by words or pictures. Each slide with information was shown for 3 seconds. At the end, participants were instructed to do a recognition test. Only correct answers given by participants were counted. Results did not indicate a significant difference between the two conditions according to this data ($F(1,18) = 1.554, p > .05$).

9 **EFFECTS OF PERCEIVED BODY IMAGE ON SELF-ESTEEM**

Amanda Caposella (Dr. Daniel Barrett, Dept. of Psychology)

With our society constantly evolving, the idea of beauty can become blurred. Everyday people are exposed to images of ideal model body types from the media and I couldn't help but wonder if these images had any effect on the way that we perceive our own body, and how we feel about ourselves. Testing the idea, forty college students viewed images of people with average and model body types and answered a questionnaire. It was hypothesized that participants would be more self-conscious and respond more negatively about their body when presented with the model body type images.

10 **ARE TEST-TAKERS SUPERSTITIOUS OR CAN THEY BE PERSUADED TO BE?**

Winnie Chau (Dr. Daniel Barrett, Dept. of Psychology)

This experiment investigated if test-takers are superstitious or whether they can be persuaded to become superstitious in a testing environment. Participants were randomly given third or tenth grade level math or English exams. Participants receiving tenth grade level exams were verbally advised that their exams would be difficult and that past successes were achieved when test-takers switched to a “lucky” seat. It was hypothesized that participants would switch to a “lucky” seat when they were given difficult exams. Experiment results did not support the hypothesis. There was no significant difference in superstitious beliefs in the four conditions tested.

11 **SIMPLE MATHEMATICAL MODEL OF OPTICAL-FIBER MANUFACTURING: NUMERICAL DETERMINATION OF AN IMPORTANT TECHNOLOGICAL PARAMETER**

William Chnowski (None Lydia Novozhilova, Dept. of Mathematics)

Fiber optics is the overlap of applied science and engineering concerned with analysis, design, and manufacturing of optical fibers widely used in numerous applications. Various mathematical tools are used in this vibrant field. We present a system of ODEs that models a process of optical-fiber manufacturing and use the model to find an important technological parameter.

12 **NUMBER THEORY AND DATA SECURITY: BREAKING ENCRYPTION WITH FACTORING METHODS**

Michael Coleman (Dr. Charles Rocca, Dept. of Mathematics)

Financial, personal, corporate, and governmental data is secured by several encryption schemes, the most common of which are based on the difficulty of factoring extremely large numbers. With this in mind, a brief introduction to the encryption methods is provided, and then several techniques from the field of number theory are used to factor large numbers. The efficiency of these methods is analyzed, and the impact on data security is discussed.

13 **SUPERSTITIOUS BEHAVIOR IN COMPETITIVE TASKS**

Lacey Conrad (Dr. Daniel Barrett, Dept. of Psychology)

In this study, it is hypothesized that people will use superstitious rituals in a competitive task more than in a non-competitive task. It is also believed that those who are exposed to a superstitious behavior will also perform superstitious behaviors. This study used a card game to test participants’ reaction to the exposure of superstitious behavior. For the competitive condition, one card was dealt to each participant and four more cards were placed on the table in front of them. Participants were allowed to swap their card for one of the cards in the middle; whoever had the highest card won. In the noncompetitive task, the participants played a game of memory. The number of people who performed superstitious behavior was recorded.

14 **THE MOUTH OF THE CROTON RIVER; DYNAMIC LANDSCAPE IN THE LOWER HUDSON RIVER VALLEY**

Scott Craven (Dr. Burton Peretti, Dept. of History)

The mouth of the Croton River is the best example of landscape change in the Hudson River Valley created by the demands of New York City. The Mouth is also the birthplace of both types of the environmentalism that have saved the Hudson River and created a template for environmental activism.

As such, this one location is the best place to witness history in the valley. This environmental history studies the landscape of the mouth.

15 **FAIR OR LENIENT: A STUDY OF CRIME AND PUNISHMENT IN RELATION TO MORALS**

Michelle Crispino (Dr. Daniel Barrett, Dept. of Psychology)

This study examined how individuals judge sentencing for offenders. Research concerning sentencing for crimes has analyzed decision making in regards to procedural fairness, trust in authority, and morals. This study combines these areas to see how participants judge crimes when only provided with descriptions of crimes, average sentencing, and fair or lenient sentence assignment. It was hypothesized that participants would be opposed to lenient sentencing in two cases, but more so with aggravated sexual assault than involuntary manslaughter due to drunk driving. It was also hypothesized that participants would agree with fair sentencing for both crimes.

16 **INVESTIGATION OF HEAVY METAL CONTAMINATION IN IMPORTED GREEN TEA**

John Curran (Dr. Yuan Mei-Ratliff, Dept. of Chemistry)

Green tea is a popular beverage in recent years due to its many believed health benefits. Since most green tea products on the US market are imported from developing countries, there have been concerns over their possible contamination by heavy metal ions. Such contamination may be introduced from the soil in which the tea plants grow or during the production process of tea. To differentiate these origins of contamination, studies have been carried out to quantify the lead and cadmium contents both in tea leaves as well as tea fusion for over a dozen commercial green tea samples.

17 **SCIENCE FOR VISUALLY IMPAIRED STUDENTS**

Ashley Cwikla (Dr. Dennis Dawson, Dept. of Physics, Astronomy and Meteorology)

Advances in technology have made it increasingly possible for people with disabilities to explore areas of study which used to be all but closed to them. Internet resources and Swell Form processing have been used to develop tactile astronomy laboratory exercises for visually impaired students. These exercises include investigations of a satellite orbit, the Moon's surface, spectra of chemical elements and stars, the rotation of the Sun, and the spiral structure of our galaxy. Strengths and limitations of the materials and methods are discussed.

18 **THE EFFECTS OF CALMING IMAGERY ON THE NUMBER OF POSITIVE WORDS RECALLED**

Jennifer D'Andrea, Masai McIntosh, Sherri Purvis (Dr. Robin Flanagan, Dept. of Psychology)

It has been shown that mood has an effect on word recall. To test this, students at WCSU participated in a study where half the students were induced with calmness through a calming imagery slide show while the other group of the students were not. Both groups were then asked to memorize and recall both positive and negative words. The group that watched the calming slide show did not recall significantly more positive words than the control group.

19 **PERFORMANCE ON MULTITASKING IN TIME CONSTRAINS**

Julie Davis, Erin Saunders, Bob Konstantaras (Dr. Robin Flanagan, Dept. of Psychology)

Many experiments have tested the performance of individuals on different tasks, but very few have tested multitasking, and even fewer have tested multitasking within time constraints. This experiment, using a convenience sample of 18 Western Connecticut State University students, tested the performance of doing two tasks within certain time constraints. The individuals were given a tangram puzzle and an article to read and then placed in one of two different time limits. The results of this experiment supported the hypothesis that performance is decreased in shorter time limit.

20 **THE CHOICE IS YOURS: HILLARY OR NOT?**

Shari Dell (Dr. Rondall Khoo, Dept. of Psychology)

This study examines whether traditionalists or non-traditionalists are more likely to vote for Hillary Clinton for President. It is hypothesized that a traditionalist is more likely to vote for Hillary Clinton. In addition, it is hypothesized that a registered voter is more likely to vote for Hillary Clinton. In this survey, 25 male and 25 female participants (ages from 18 to 33) completed the General Male-Female Relationships survey (Robinson, Shaver, & Wrightman, 1991). Through a chi square test, the hypothesis that registered voters are more likely to choose Hillary Clinton was not supported.

21 **PHYSIOLOGICAL REACTION TO NEGATIVE WORDS DEPENDING ON INDUCED MOOD**

Ben England (Dr. Robin Flanagan, Dept. of Psychology)

Research has consistently shown that certain physiological states are associated with certain moods. Each individual was assigned to one of three groups: violence, romance or control. This study then measured the physiological reaction of each person to certain stimuli, both colours and words. The person's Galvanic Skin Response and heart rate were recorded using BIOPAC software and compared between groups. Although data analysis is still pending, preliminary analysis shows more change on both aspects in respect to the control group.

22 **DEMONSTRATION OF A STUDENT BUILT AND PROGRAMMED PATROL ROBOT**

John Essex, Cody Arcuri, Scott Unger (Ms. Rona Gurkewitz, Dept. of Computer Science)

We will give a demonstration of a Patrol Robot we built to learn more about computer organization and low level, hardware oriented programming. We built the robot using Lego Mindstorms NXT kit and programmed it to patrol a hallway looking for open doors and obstacles. When they are found an audible alarm is sounded and a message displayed. The robot is equipped with ultrasonic and touch sensors.

23 **MOLECULAR POPULATION GENETIC ANALYSIS OF PODOSTEMUM CERATOPHYLLUM (PODOSTEMACEAE)**

Stacy Evans (Dr. Richard Halliburton, Dept. of Biological and Environmental Sciences)

Podostemaceae is the largest family of aquatic flowering plants. Within Podostemaceae, Podostemum ceratophyllum Michx. is the only species found in temperate North America. An ongoing study examines the effect of geographic distribution on genetic variation in P. ceratophyllum using ISSR markers. Data has been gathered from samples collected in Maine, New Hampshire, and Connecticut. The study will provide preliminary evidence confirming or rejecting the results of Philbrick and Crow (1992), who examined protein variation in P. ceratophyllum relative to the Pleistocene glacial boundary. Methods used in this study will likely be a model for studies of other species in Podostemaceae.

24 **THE EFFECT OF ENVIRONMENTAL CUES ON SUBCONSCIOUS AGGRESSION**

Melissa Ferrara (Dr. Daniel Barrett, Dept. of Psychology)

Weapons have long been correlated with producing aggression. Berkowitz and LePage (1967) showed that participants who were in the presence of weapons gave the greatest amount of "shocks" to fellow participants. Multiple works have reproduced these effects. The present study investigates the weapons effect using another facet, focusing on the effects of the presence of a male involved in the military police, in uniform, as well as the presentation of a demonstration on how to handcuff a prisoner of war on the elicitation of aggression in participants.

25 **ANALYZING THE MICRO FLORA FOUND IN THE HUMAN ORAL CAVITY**

Galina Filipova (Dr. Edwin Wong, Dept. of Biological and Environmental Sciences)

The oral cavity is one of the most densely populated sites of the human body, where a large environmental diversity promotes the establishment of distinct microbial communities. Our study utilized DNA fingerprinting to examine differences in the bacterial communities in two separate environments of the oral cavity: 1) saliva secretions, and 2) supragingival plaque of tooth surfaces. Samples from five volunteers were collected over a 24 hour period without oral hygiene and with increased intake of sugary foods and soft drinks. The experiment also studied the effects that mechanical and chemical interventions have on separate bacterial communities in their respective

26 **THE IMPLEMENTATION PROCESS OF BAR-CODING FOR MEDICATION ADMINISTRATION TO ENHANCE SAFETY**

Sylvester Foote (Dr. John Coleman, Dept. of Management)

This project describes the systematic process of how to create a life saving method of medication administration which adheres to the "Five Rights" of medication dosing while maintaining compliance with the Joint Commission Regulations for 2007. The cost factor to Norwalk Hospital is highlighted with analysis of how to reduce the cost of its replication to the entire hospital. Advantages and disadvantages of the system and the implementation process are identified.

27 **THE EFFECT OF THE COLOR YELLOW ON COGNITIVE PERFORMANCE**

Donna Frydrych (Dr. Patty O'Neill, Dept. of Psychology)

From legal pads, Post-It-Notes, and highlighters, yellow is a color that stands out, screaming for our attention. If something was learned on yellow paper, would it enhance our memory? To test this, 28 college students completed a word memory test where half were tested on yellow paper and half on white paper. It was hypothesized that participants would recall more words on yellow paper than on white. An independent sample t test of $t(26) = .368, p > .05$, revealed no significant differences between the groups and did not support the hypothesis.

28 **A STUDY OF BACTERIAL COMMUNITIES ASSOCIATED WITH PODOSTEMACEA BIOFILMS**

Kristy Garren (Dr. Ruth A. Gyure, Dept. of Biological and Environmental Sciences)

The focus of this study is characterization of bacterial communities associated with members of the plant family Podostemaceae. Cyanobacteria (blue green bacteria) play a major role in the secretion of adhesive compounds that allow these plants to attach to rocks in waterfalls, and thus survive rapid flowing water and rapidly changing environmental conditions. For this study, several isolates were cultured from biofilm tissue and information about the community was obtained utilizing PCR (polymerase chain reaction) to show presence or absence of important groups of bacteria. Cloning and sequencing of 16s rDNA genes were also used to identify individual species in the biofilm.

29 **ADDRESSING TAXONOMIC AND PHYLOGENETIC UNCERTAINTY IN THE GENUS CASTLENAVIA (PODOSTEMACEAE)**

David Gera (Dr. C. Thomas Philbrick, Dept. of Biological and Environmental Sciences)

Communication about earth's biodiversity relies heavily on biological classifications. This study tested hypotheses regarding the nature of species and their evolutionarily relationships in *Castlenavia*, a bizarre group of flowering plants. These lichen-like plants grow attached to rocks in tropical river-rapids. Analyses of morphological characters indicate there are fewer species than previously believed, yet field studies in central Brazil led to the discovery of one species new to science. Phylogenetic analyses reveal the genus *Castlenavia* is indeed a natural group. Implications regarding species biology, species endemism, and conservation will be discussed.

30 **EFFECTS OF PRIMING ON BEHAVIOR**

Kaitlin Gorman (Dr. Daniel Barrett, Dept. of Psychology)

It is thought by some that behavior can be primed by exposure to related cues (such as words, ideas, and actions). This idea has been tested by exposing college students to word search puzzles that contain words related to a healthy lifestyle or words unrelated to a healthy lifestyle. In some cases these students were timed, in others they weren't. The students are then surveyed on food choice and health habits. The outcome of this experiment is expected to have results that prove that the students exposed to the health related words and are timed will be primed into choosing the healthier food.

31 **CONSERVATION OF PLANTS IN TROPICAL RIVERS: THE INFLUENCE OF LIGHT INTENSITY ON SEEDLING RECRUITMENT**

Rosemary J. Harrison (Dr. C. Thomas Philbrick, Dept. of Biological and Environmental Sciences)

Riverweeds (Podostemaceae) are flowering plants that occur attached to rocks in tropical river-rapids, a habitat heavily impacted by human activities. Species extinction is a growing concern. This study focuses on the impact that siltation has on seedling recruitment. Specifically, the hypothesis that reduced light leads to reduced seed germination, and by implication seedling establishment, was tested. The results indicate a non-linear relationship between light intensity and germination. Highest germination occurs at moderate light levels; high light intensity leads to reduced germination. The implications regarding the interpretation of species biology and conservation will be discussed.

32 **TEMPERATURE SELECTION AND MICROBIAL ROBUSTNESS: AN ANALYSIS OF UTAH, NEVADA AND CONNECTICUT SOIL MICROBIAL COMMUNITIES**

Cass Jabara (Dr. Edwin Wong, Dept. of Biological and Environmental Sciences)

Soil microbial communities indigenous to the Utah and Nevada desert and the Connecticut temperate deciduous forest were examined to determine species diversity and temperature robustness. Cultured samples were exposed to a 95 degrees Celsius through -80 degrees Celsius temperature gradient with surviving colonies typed via T-RFLP DNA fingerprint analysis. Results were compared to T-RFLP analysis conducted on total microbial diversity before cultivation selection.

33 **NEUROTICISM AND PERFORMANCE**

Lauren Jessell (Dr. Patty O'Neill, Dept. of Psychology)

The mental noise characterizing individuals high in neuroticism creates marked instability which often interferes with performance. This experiment attempts to prove that participants high in neuroticism have more unstable reaction times than their peers. Thirty undergraduate WCSU students completed Goldberg's 20-item questionnaire measuring neuroticism and then responded to a 120-trial visual search task on the computer. Preliminary results suggest that the participant's reaction time standard deviations correlate positively to their neuroticism scores. It is expected that with additional participants, a significant correlation will be found.

34 **EFFECT OF LIGHTING ON MOOD**

Danielle Jowdy (Dr. Robin Flanagan, Dept. of Psychology)

Many people believe that the lighting of their environment has an impact on their mood. Undergraduate college students were exposed to one of the three types of light: daylight, lamp light, and florescent light. They then responded to a mood assessment, indicating which words, from a given list, represented what their mood was, and by writing a brief statement to verify their selections. No difference in mood was found between the three types of lighting. Potential reasons for the lack of significant results are discussed, as well as ideas for future research.

35 **MAKING THE CASE FOR PALLIATIVE CARE IN END-STAGE HEART FAILURE: A REVIEW OF LITERATURE**

Jennifer Kusaila (Dr. Colleen Delaney, Dept. of Nursing)

Heart failure results from the heart's inability to pump effectively. Five million Americans suffer from heart failure. Currently less than 10% of patients with end-stage heart failure (ESHF) receive palliative services. A literature review was conducted to identify common perceptions about heart failure from the patients', caregivers' and healthcare providers' experiences. Literature selection was based on qualitative research utilizing an interview format that analyzed the respondents' needs and lived experiences in which several common themes emerged. The identified themes noted are inadequate symptom management, knowledge deficit and reluctance to accept ESHF and under-utilization of palliative care specialists. A palliative approach to ESHF can reduce physiological and psycho-social distress and improve quality of life.

36 **HAPTIC LEARNING AND WORD RECALL**

Stephen LaRosa (Dr. Robin Flanagan, Dept. of Psychology)

This study investigated the influence of touch on learning. The term learning was defined as the number of words recalled. Subjects were obtained using a convenience sampling of thirty undergraduate students from Western Connecticut State University. There were three groups. Each subject was asked to read and memorize projected words and to recall them. One group touched no object, one touched firm objects, the third touched soft objects. The words projected were related to the soft and firm conditions. The number and type of words recalled were analyzed using ANOVA. The firm condition recalled significantly more non-projected words than the other groups.

37 **MUSIC AND ALTRUISM**

Ariana Lecaj (Dr. Daniel Barrett, Dept. of Psychology)

This research examined the effect of music on altruism. The participants were randomly assigned to one of four groups: loud music with the researcher wearing an arm sling, loud music no arm sling, no music with arm sling, and no music no arm sling. The participants had to read an article and answer a short questionnaire, and later each subject was asked to help the author carry a box to the car. I hypothesize those students in groups 1 and 2 will refuse to help because of the irritation of the music.

38 **CAN SEA TURTLE EPIBIONTS SUGGEST POST-NESTING PATTERNS OF LOGGERHEAD SEA TURTLES (CARETTA CARETTA) IN CASEY KEY, FLORIDA?**

Chris Lener (Dr. Theodora Pinou, Dept. of Biological and Environmental Sciences)

This study focuses on Atlantic Ocean loggerhead sea turtles nesting in Casey Key, Florida. It will contribute to our understanding of sea turtle migration patterns and marine diversity. The project will review the biogeographic histories of marine invertebrates and explain the mechanisms of their distribution. In addition, a satellite telemetry unit integrating animal science with geography has been developed to teach children how to collect, analyze, evaluate real-time data, and contribute to the conservation of endangered species from a classroom setting.

39 **THE ROTTEN STATE OF DENMARK: HAMLET AND THE SEVEN DEADLY SINS**

Christa Mahalik (Dr. Margaret Sullivan, Dept. of English)

The comparison of sin to illness was very common in the Middle Ages. Sins were considered diseases of the soul in the sense that the soul was not functioning as it was meant to function just as a diseased organ does not function as it should. Hamlet struggles constantly between human conflict and human choice. Shakespeare portrays Hamlet as reflecting all human beings' struggle with choice, and with choosing between virtue and sin. The play mirrors people's own battle with the seven deadly sins. Through the exploration of each of the seven deadly sins and specifically Shakespeare's Hamlet, one will be able to understand what constitutes each particular sin in relation to the mental, physical, and spiritual well being of man.

40 **RT-PCR EXPERIMENTS TO EXPLORE TRP-LIKE GENES IN NON-MAMMALS**

Michelle McCabe (Dr. Jennifer Frederick, Dept. of Chemistry)

The transient receptor potential (TRP) protein superfamily includes ion channels involved in mediating sensory responses to a range of stimuli including inflammatory agents, temperature, and tastants. While mammalian sensory mechanisms involving TRP ion channels are being broadly characterized, relatively few research questions have been posed for non-mammals. RNA isolated from snake tissue was screened for TRP ion channel orthologs. Results of RT-PCR studies for mammalian TRP channels were compared with those of non-mammals. Since temperature regulation differs between mammals and reptiles and amphibians, discovery of TRP orthologs in particular species may improve understanding of their roles in thermal sensation.

41 **COMPARISON OF REACTION TIME TO AUDITORY AND VISUAL STIMULI IN HUMAN SUBJECTS**

David Melillo (Dr. Susan Maskel, Dept. of Biological and Environmental Sciences)

Reaction time in response to auditory and visual stimuli was tested in twenty students, faculty and staff members at Western Connecticut State University using BIOPAC MP 35 hardware and software. Subjects were required to depress a button on a hand-held device connected to a computer each time a click was heard through earphones and each time a green triangle appeared on a computer screen. Reaction time, the duration of each response and differences due to handedness and age were studied. Results were statistically analyzed using an analysis of variance test (ANOVA).

42 **MINORITIES AND GLOBALIZATION: THE RISING TIDES OF POWER**

Schuyler Merritt, Sarah Douglas, Stefanie Bascom (Dr. Chris Kukk, Dept. of Political Science)

Hydroelectric power generation is one of the fastest growing industries in Vietnam and is vital to the power requirements of Vietnam's economy and population. As the new hydro power dams get built, foreign investment, brought by globalization, has become the lifeline for the Vietnamese government. However, the many ethnic mountain minorities, who have lived for generations along the mountain rivers, are being displaced by the reservoirs which rise behind the hydroelectric dams and power stations. The story of these minority groups is difficult to follow and risks being left aside in the struggle to rise to the top of the global economic ladder.

43 **EFFECT OF THE WARM - COLD VARIABLE ON FORMING FIRST IMPRESSIONS OF PERSONALITY**

Dionne Mitchell, Erin McConaghy, Jennifer Thompson (Dr. Robin Flanagan, Dept. of Psychology)

This experiment investigates the stability of first impressions when manipulated by the warm – cold variable. Using a convenience sample of thirty Western Connecticut State University students, we measured how participants viewed the confederate after reading a description of their background with manipulation to the adjective words warm or cold. It was found participants varied across the spectrum but overall rated the confederate as a warm individual after having read the warm description and a cold individual after reading the negative description.

44 **EFFECTIVENESS OF USING REWARD TO MAXIMIZE SHORT-TERM MEMORY**

Dania Montanaro (Dr. Patty O'Neill, Dept. of Psychology)

Reward systems are used in a variety of situations in order to increase performance and optimize desired outcomes. This study assessed whether rewards can maximize cognitive ability and short-term memory. Participants from a convenience sample of 20 were randomly assigned either to the 'reward' or 'no reward' group. They completed a memory recall task. It was hypothesized that the reward group would perform better. Findings showed no significant difference between groups ($t(18) = 1.255, p > .05$), but the mean for the reward group was slightly higher. A significant difference may be found if the study was re-run after assessing various flaws.

45 **THE EFFECTS OF WORD ASSOCIATION TASKS AND RECALL**

Stephanie O'Donnell (Dr. Robin Flanagan, Dept. of Psychology)

This experiment is designed to test word relatedness and its influence on memory. Participants were tested by reading a list of five related and five unrelated words. The hypothesis was that participants would recall more words that were related than those that were unrelated. Results show that related words are recalled significantly better than unrelated words.

46 **AN EXAMINATION OF SEA TURTLE NESTING**

Joy Pacete (Dr. Theodora Pinou, Dept. of Biological and Environmental Sciences)

A species of sea turtle, *Lepidochelys olivacea*, was studied to determine whether sea turtle nesting correlates with the different phases of the moon. A data analysis was taken from the recorded years of 1983 to 2003. According to the analysis, there was a negative correlation between the average percent illumination of the moon to the number of sea turtles nesting.

47 **GENDER DIFFERENCES IN LONG-TERM FRIENDSHIPS**

Janice Paulsen (Dr. Rondall Khoo, Dept. of Psychology)

Previous research indicates that women engage in a higher number of long-term friendships than their male counterparts. It has also been suggested that same-sex friendships are more common than opposite-sex friendships. In order to test these hypotheses, an equal number of adult males and females (over age 30) will complete a brief friendship survey indicating their individual experiences with long-term friendships. The results obtained will be related back to similar research.

48 **EXPLORING THE ROLE OF DIVIDED ATTENTION IN ACCURATE MEMORY RETRIEVAL**

Jacqueline Proulx, Erik Schlange, Carlos DeJesus (Dr. Robin Flanagan, Dept. of Psychology)

A great deal of research has been devoted to the effects of divided attention on memory. It was hypothesized that divided attention will have an adverse effect on memory retrieval. Data was collected from 20 undergraduate students at Western Connecticut State University. Participants viewed two video clips either simultaneously (divided attention) or consecutively (full attention) and then answered questions. The results indicated a significant difference between divided and full attention groups. ($t(18) = -2.40, P < .05$) Divided attention group ($M = 5.50, SD = 0.850$) recalled fewer details than the full attention group ($M = 6.60, SD = 1.174$).

49 **BIOASSAY OF WATER IN TWO HOLDING PONDS OF THE WESTSIDE NATURE PRESERVE**

Martha Puccio (Dr. Frank Dye, Dept. of Biological and Environmental Sciences)

Bioassays of water are a simple and reliable way to check for water pollution. Construction and use of a new road at the Westside Nature Preserve has the potential to affect the natural water supply. Two holding ponds were constructed to filter the water before it leaves campus. Bioassays of water in these holding ponds will determine the effectiveness of this filtering system. Growing onion, *Allium cepa* L, bulbs in water samples may give evidence of toxins. Onions have been shown to demonstrate water pollution by distortion of their roots, inhibition of cell reproduction and chromosome damage.

50 **INVESTIGATION OF PESTICIDE CONTAMINATION IN IMPORTED GREEN TEA**

Emily Retter (Dr. Yuan Mei-Ratliff, Dept. of Chemistry)

Green tea is a popular beverage due to its many believed health benefits. Imported foodstuffs like green tea may contain high levels of pesticides. This study employs a GC-MS instrument to analyze an array of imported green tea samples for possible pesticide contamination. Various sample preparation approaches were tested to probe the leaching pattern of pesticides into the tea brew and to establish a reliable method for trace quantification. It also lays the groundwork for future research where levels of chemical contaminants between organically grown and non-organically grown agricultural products may be measured and compared.

51 **PROGRESS IN DEVELOPING A NEW ROUTE FOR THE SYNTHESIS OF A HETEROCYCLIC RING SYSTEM WITH POTENTIAL ANTIHISTAMINIC PROPERTIES**

Forest Robertson (Dr. Paul Hines, Dept. of Chemistry)

The aim of this project was to successfully synthesize the first precursor, ethyl 1,4-dibenzyl-2-piperazinecarboxylate(IV), in a planned, multistep synthesis of a novel antihistaminic molecule, 1,4-diazo-8-thio[4.4.0]decane which has the potential of helping to further elucidate the nature of the active binding site of the histamine receptor.

We successfully synthesized ethyl 1,4-dibenzyl-2-piperazinecarboxylate(IV) in high yields and produced a more descriptive synthetic procedure. The techniques that we used to characterize this molecule included: NMR, IR, and elemental analysis. In addition, we attempted to complete the second step of this multistep synthesis, the debenylation of ethyl 1,4-dibenzyl-2-piperazinecarboxylate(IV) to form the second precursor, ethyl 2-piperazinecarboxylate.

52 **IMMIGRATION & MEMORY: ORAL HISTORY PROJECT**

David Roman (Dr. Burton Peretti, Dept. of History)

Oral history is an invaluable resource for the preservation of modern history through viable historical records. Students conducted this project by collecting various immigrant experiences in the greater Danbury area spanning the last century. These oral histories were then compiled onto the Immigration & Memory Database. Further studies of these collections will allow students to analyze the history of immigration, the nature of community formation and consider the implications of immigration in the Danbury area.

53 **THIN AND AVERAGE WEIGHT PEOPLE**

Kathy Rudzki (Dr. Daniel Barrett, Dept. of Psychology)

The present study focused on the effects of looking at pictures of thin people compared to average weight people. It is hypothesized that participants who looked at photos of thin people along with a short description of their diet and exercise regime will feel that they need to improve their own body image, compared to looking at pictures of average weight people and reading about their daily habits. The participants read an article about thin and average weight people. They all filled out a questionnaire regarding how they felt about their own appearance.

54 **FREQUENCY OF D1S80 ALLELES IN EUROPEAN VS. NON-EUROPEAN POPULATIONS**

Yvonne Santiago (Dr. Edwin Wong, Dept. of Biological and Environmental Sciences)

The D1S80 locus, located on human chromosome 1, has been valuable in forensic genetics. Identified as a VNTR (Variable Number of Tandem Repeats), it is used to identify the allelic and genotypic frequencies in different populations. The D1S80 locus contains repeating units of a 16 base-pair stretch of DNA. A small screening showed homozygosity among Europeans and heterozygosity in non-Europeans. This project aims at establishing the validity of this observation by conducting a larger-scale analysis of such population groups.

55 **IS A PICTURE WORTH MORE THAN A THOUSAND WORDS? LEVELS OF PROCESSING, PICTURES, AND MEMORY**

Elianna J. Santiago (Dr. Patty O'Neill, Dept. of Psychology)

There is evidence that information is remembered better when processed in a deep rather than shallow manner (Craik & Lockhart, 1972). More recently, 62 Psychology undergraduates were randomly assigned to one of six treatment conditions. The treatments included an item list (pictures or words) and one of three question lists (phonemic, categorical, or semantic). Participants were required to answer questions using the item list for guidance and, following a one-minute break, recall as many items as possible. Memory was significantly better for pictorial items than for words. Additionally, categorical and semantic questioning yielded significantly better recall than phonemic questions.

56 **PERSONALITY AND THE INFLUENCE IT HAS ON THE WILLINGNESS TO ACCEPT FLYERS**

Erin Saunders, Julie Davis, Bob Konstantaras (Dr. Robin Flanagan, Dept. of psychology)

Personality influences a lot. A convenience sample of 50 individuals in the Waterbury mall were approached with a flyer advertising a fictional hamburger restaurant. The confederate handing out flyers was told to approach 25 random people with a smile and another 25 but without smiling or speaking. Experimenters ran this test to find out if individuals were more willing to accept the flyer from a friendly person or unfriendly person. The results didn't support the hypothesis. Twenty-three of 25 people accepted the flyer from the emotionless person compared to 17 of 25 accepting the flyer from a friendly person.

57 **ISOLATION AND IDENTIFICATION OF BACTERIA FROM MERCURY-CONTAMINATED SOILS**

Laura Telman (Dr. Ruth A. Gyure, Dept. of Biological and Environmental Sciences)

In this study the 'most numerous culturable heterotroph' (MNCH) was isolated and identified from each of several zones of mercury concentration at the site of a phytoremediation project. This technique was developed by Ralph Tanner, who discovered several novel bacterial species in hydrocarbon-contaminated soils. At least one isolate proved interesting in that it produced unusual organic crystals, helping to identify it as *Pseudomonas chloroaphis*, a fluorescent pseudomonad with capabilities that allow its survival in contaminated environments. Another isolate produced a foamy detergent-like substance (rhamnolipid) of great interest in biotechnology research. A total of 12 species were identified and relative abundance of selected groups was enumerated.

58 **BIODIVERSITY IN TROPICAL RIVER-RAPIDS: DISCOVERY AND CHARACTERIZATION OF A NEW SPECIES OF WATER PLANT.**

Stephanie Tucci (Dr. C. Thomas Philbrick, Dept. of Biological and Environmental Sciences)

Documentation of tropical biodiversity remains a major challenge for modern science, especially in extreme habitats like river-rapids and waterfalls. Riverweeds (Podostemaceae) are flowering plants that only occur in such habitats. High species endemism, combined with intense human impacts on these habitats, contribute to increasing conservation concerns. Field studies in the state of Tocantins, Brazil (2006) led to the collection of a plant that preliminary analyses indicated was unknown. This study addressed the hypothesis that this plant represents a species new to science. The morphology, geographic distribution and relationships among other species of riverweeds will be discussed.

59 **SOCIAL INFLUENCE AND PERSUASION ON PARANORMAL BELIEFS**

Jenna Vallee (Dr. Daniel Barrett, Dept. of Psychology)

In the last decade scholars have found that beliefs in the paranormal were not significantly lower in college students. This research has produced a lot of controversy and concern regarding the student's education level and reasoning skills. This experiment analyzed the relationship between media and social influence and college students' beliefs concerning the paranormal through a Likert scale. In contrast to previous findings, no differences in beliefs were supported by the use of media or social influence.

60 **BRAND LOYALTY**

Candi Waldron (Dr. Daniel Barrett, Dept. of Psychology)

My experiment will determine the effects of loyalty on brand name products. Each participant will be given one of four scenarios where they will have a certain amount of money to buy food or appliances for their dorm. They will then circle their choice of either generic or name brand product. I hypothesize that if given a greater amount of money, the participants will purchase more of the brand name products for groceries rather than appliances. If given the smaller amount of money, the participants would purchase more generic name products for groceries and will purchase more brand

61 **ELECTRONIC PORTFOLIO: PROFESSIONAL DEVELOPMENT**

Jeanette Wigglesworth (Professor E. Pat Geraci, Dept. of Nursing)

An electronic portfolio displays a candidate's philosophy, professional achievements, goals, advanced credentials, and learning progression measured against a common set of standards. The research findings are that the development of an ongoing ePortfolio promotes continued learning demonstrated through active engagement of its purpose, content, and process. The purpose, organization of relevant documents, pictures, links to websites, and reflections are cohorts to measurable outcomes. The versatility and accessibility of ePortfolios permits it to be customized for a variety of audiences and utilities and its evidence of progressive learning and professional growth measured.

62 **EFFECTS OF SALINITY ON THE SURVIVAL RATE OF SAILFIN MOLLY FRY**

Natalie Wolff (Dr. Howard Russock, Dept. of Biological and Environmental Sciences)

The sailfin molly (*Poecilia latipinna*) is exposed to a wide range of salinities in its natural habitat. Most past research tested survival rates of adults in salinities below 35 ppt. This experiment tested the survival rate of fry in four salinities (0 ppt, 15 ppt, 35 ppt and 50 ppt) using three separate trials. Chi-square tests of individual trials indicated no significant differences between the groups, but combined data indicated a significant difference ($p < 0.025$). By comparing the combined survival rates at 0 ppt/15 ppt to 35 ppt/50 ppt salinities it was concluded that fry survived better at 35 ppt/50 ppt ($p < 0.005$).

63 **THE EFFECTS OF THE MEDIA ON BODY IMAGE AND EATING BEHAVIORS**

Julia Wullen (Dr. Rondall Khoo, Dept. of Psychology)

This experiment was designed to investigate the effects of mediated commercials on body image and eating habits. It was hypothesized that females would be affected by commercials depicting beautiful men and women, and therefore would not take a cookie upon exiting the experiment. Twenty-two (11 females, 11 males) undergraduate students participated by answering a short survey after seeing 5 commercials. Ten participants viewed commercials depicting beautiful people and 12 participants viewed commercials depicting average people.

Abstracts

Seminar Presentations

listed in alphabetical order by first author

64 **THE MATHEMATICS OF DISEASES: QUALITATIVE AND QUANTITATIVE ANALYSIS OF STOCHASTIC S.I.R. MODEL**

Justin Alperin (Dr. Lydia Novozhilova, Dept. of Mathematics)

Deterministic models of epidemic spread have been used for decades and developed into a mature branch of applied mathematics. In more recent studies shortcomings of deterministic approach were investigated and more realistic models including stochastic effects were suggested. We present the qualitative analysis of a classic SIR (Susceptible-Infective-Recovered) model and a numerical analysis of a stochastic version of the model. CAS Maple is used to obtain graphical and numerical results.

65 **THE HUMAN RESOURCES IMPACT OF MERGERS AND ACQUISITIONS WITH RESPECT TO INFORMATION ASSURANCE**

Sarah Carey (Dr. Richard Bassett, Dept. of Management Information Systems)

Throughout history, corporations have been growing and changing to fit the needs of the times. From the beginning of Big Business until now corporations have undergone many different strategies to create stronger efficiency and profits. Today we see the idea of acquisitions growing at a rapid rate. The idea of acquiring different companies to make a stronger corporation is a dangerous and difficult method, but has strengthened many different corporations throughout society. When planning an acquisition there are many different important aspects that need to be extensively studied in order to guarantee the success of the corporation. One of the areas that needs to be examined is the consolidation of the Human Resources Department.

66 **GENE EXPRESSION STUDIES OF TRP ION CHANNELS IMPLICATED IN CANCER**

Mimi Davis (Dr. Jennifer Frederick, Dept. of Chemistry)

The diverse transient receptor potential (TRP) protein superfamily includes ion channels activated by pheromones, temperature, and painful stimuli. Studies addressing activation mechanisms and regulation of specific channels suggest altered regulation of TRPA1, TRPV6, and TRPM8 in prostate cancer and other tumor models. TRPA1 and TRPM8 found in CNS and peripheral tissues are involved in cold temperature sensation. Total RNA isolated from tumor cells will be analyzed by RT-PCR and Northern blot experiments to measure relative expression levels of TRP ion channels. Results from this work will improve our understanding of the role played by TRP ion channels in certain cancers.

67 **NORTH VIETNAM: ALLEVIATING POVERTY THROUGH SANITATION ACCESS AND HYGIENE EDUCATION**

Sarah Douglas, Stephanie Bascom, Schuyler Merritt (Dr. Chris Kukk, Dept. of Political Science)

The United Nations recognizes that access to safe water and increased sanitation and hygiene are crucial to alleviating poverty. Through the UN Millennium Development Goals, the world's countries and leading development institutions have agreed to "reduce by half the proportion of people without sustainable access to safe drinking water and sanitation." This comparative analysis studies water access and sanitation education programs in North Vietnam and evaluates which programs are most effective at providing basic services to the poorest citizens. In regards to sanitation education programs, cultural practices that may hinder hygiene pattern change are discussed.

68 NURSES' PERCEIVED VALUE OF VOLUNTARY CERTIFICATION IN THE OBSTETRIC, MATERNAL-NEWBORN, AND NEONATAL INTENSIVE CARE SPECIALTIES

Robin Ferrante (Dr. Barbara Piscopo, Dept. of Nursing)

Nurses have a professional responsibility to provide the best care to patients and to do so in an environment that is becoming more technologically advanced, specialized, and complex. Specialty certification goes beyond registered nurse (RN) licensure in the attempt to demonstrate that RNs have achieved additional knowledge, skill, and experience in an identified area. This descriptive research study specifically sought to determine the perceived value of voluntary certification for obstetric, maternity, and neonatal registered nurses, if there is a difference in the perceived value of voluntary certification between obstetric, maternal-newborn, and neonatal registered nurses who are certified and those who are not certified, the reasons why nurses pursue voluntary certification, and the reasons why nurses do not pursue voluntary certification.

69 A FEW DEEP BREATHS: FOCUSED MEDITATION AND ENHANCED MEMORY

Rhei C. Gordon (Dr. Patty O'Neill, Dept. of Psychology)

This study investigated whether or not a short breathing-focused meditation would aid in recollection of faces and words. It was predicted that if participants meditated while seeing faces and words, they would be able to recall more of them if they meditated during retrieval. Preliminary results indicate that the opposite effect is taking place. Those who did not meditate during encoding recalled the greatest number of words, while those who meditated during encoding and retrieval recalled the fewest number of words. These results contradict previous research on State Dependent Memory.

70 THE RED RIVER PROJECT

Billy Vu, Rob Poprocki, Sean Swanson (Dr. Wynn Wilcox, Dept. of History and Non-Western Cultures)

Vietnam is often seen to have undergone a fundamental shift since the economic policies of the late 1980's from an unproductive socialist economy to a capitalist economy with a socialist orientation. Using various social science sources and direct research data collected in the Red River Delta, this project challenges this view. First, it will give an overview of the potential economic benefits of Vietnam gaining membership into the World Trade Organization (WTO). Second, it argues that Vietnam's economic gains have come at the expense of social costs in the form of corruption, human rights, and environmental costs, especially clean drinking water.

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