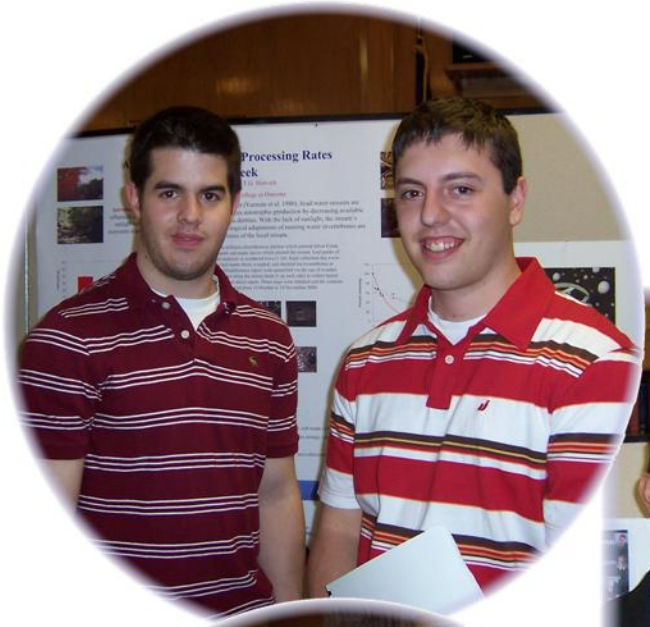
SUNY COLLEGE AT ONEONTA

2006 Student Research Day



Wednesday, 26 April 2006
2 p.m. - 5 p.m.
Morris Conference Center
SUNY College at Oneonta

SUNY College at Oneonta

2006 Student Research Day

PRESENTATIONS

Presenter: Valerie Aquila (Cooperstown Graduate Program)
Faculty Sponsor: Gretchen Sorin
The Reggio Emilia Approach as Applied to Early Childhood Programming at the Portland Children's Museum

Presenters: Mike Ballard, Russell Hayward (Secondary Education: Earth Sciences)
Faculty sponsor: Paul J. Bischoff
Water Quality Index of Otsego and Goodyear Lakes at Pre-Determined Depths

Presenters: Aimee Barnabee, Timothy McArdle (Secondary Education: Earth Sciences)
Faculty sponsor: Paul J. Bischoff
The Effects of Aluminum and Iron on Lettuce Plants and Heavy Metal Analysis

Presenters: Michael Bartels, Andrew Greene, Graham Ostrander (Physics & Astronomy)
Faculty Sponsor: Hugh A. Gallagher, Jr.
Coherent Ionospheric Doppler Receiver Observations of Total Electron Content in the Upper Atmosphere

Presenter: Robert Barton (Physics & Astronomy)
Faculty Sponsor: Paul French
A Simulation Method for Testing Lens Distortion Correction in Video-Based Motion Analysis

Presenter: Lindsey Bauer (Biology)
Faculty Sponsor: Donna W. Vogler
Floral Gender Variation in Invasive Knotweeds

Presenters: Laura Burger, Jennifer Sudano (Mathematics, Computer Science & Statistics)
Faculty Sponsor: Marius Munteanu
Spiral Decomposition

Presenters: Mary Cedrone, Rebecca Cook, Lori Covey (Psychology)
Faculty Sponsor: Geoffrey O'Shea
Incidental Serial Learning by Observation: The Effects of Chunking on Awareness

Presenter: Kimberly Cheng (Biology)
Faculty Sponsor: Donna W. Vogler
Co-author: Mei Wong, D.O., Pediatrics, Charles B. Wang Community Health Center
Increase in Guidelines Compliance by Pediatricians as a Factor in Controlling Childhood Obesity

Presenter: Kelly Murphy Czermerys (Secondary Education: Biology)
Faculty Sponsor: Paul J. Bischoff
Creating a Website as a Learning Tool in Science Education

Presenter: Shaundra M. Davis (Secondary Education: Earth Sciences)
Faculty Sponsor: Paul J. Bischoff
A Chemical Analysis of Black Shales and the Abundance of Biodiversity in Black Shale Sediments

Presenters: Thomas Davis, Kenneth Wagner (Chemistry & Biochemistry)
Faculty Sponsor: John Schaumloffel
Concentration of Chemicals in Commonly Used Smokeless Tobacco

Presenters: Matt Deitch, Linda Kruger, Tim McClarren (Economics and Business)
Faculty Sponsor: Christine Harrington
Is Sector Rotation Always Profitable Over the Business Cycle?

Presenter: Stefanie DeMonaco (Biology)
Faculty Sponsor: Nigel Mann
Call Note Evolution in Tropical Wrens

Presenter: Ed Drantch (Communication Arts)
Faculty Sponsor: Christine Quail
Steal this Song

Presenters: Amy Egbert, Mary Velan, Rachel Baxter, Morgan Brooks, Samantha Marcinka, Chris Siragusa (Psychology/Human Ecology/Athletics)
Faculty Sponsors: Lawrence Guzy, William Proulx, Tracey Ranieri
Do Changes in Cognition, Performance, and Mood Occur as a Function of Dehydration and Subsequent Re-hydration? An Exploratory Study

Presenter: David Friedberg (Biology)
Faculty Sponsor: Donna W. Vogler
The Phenomenon of Self Pollination in Tropical Plants

Presenters: Alison Garland, Deidre Euson, Crystal Lovette, Rebecca Pratt, Joseph Ryder, David Sutton (Mathematics, Computer Science & Statistics)
Faculty Sponsor: Jen-Ting Wang
Where to Go Grocery Shopping in Oneonta, New York

Presenters: Thomas Gottherer, Joseph Macura, Aysha Maisonet, Jessica Sickles, Angela Zzie (Psychology)
Faculty Sponsors: Peter A. DiNardo, Steven J. Gilbert
Stroop Sentences as a Diagnostic Test of Fear of Spiders

Presenter: Erin Grogan (Biology)
Faculty Sponsor: Nancy Bachman
Cancer Histology Image Database

Presenter: Geoffrey J. Harlow (Biology)
Faculty Sponsor: Fred Zalatan
Knockout of Fatty Acid Transport Gene in the Bacterium Caulobacter crescentus

Presenters: Joshua Hewlett (Mathematics and Engineering), Jamie Barber (Biology), Thomas Pullen (Earth Sciences)
Faculty Sponsor: Paul French
The Measurement of Adiabatic Heating in Air Column Resonance

Presenter: Toni Johnson (Biology)
Faculty Sponsor: Nancy Bachman
Comparison of Ion Exchange and Affinity Chromatography

Presenter: Thomas Kelly (Physics & Astronomy)
Faculty Sponsor: Hugh A. Gallagher, Jr.
Monitoring Coronal Mass Ejections Using the SOHO Space Telescope

Presenter: Tom Lampert (Biology)
Faculty Sponsor: Nancy Bachman
Localizing Human CGI-112 with Different Fluorescent Markers

Presenter: Anna Legname (Psychology)
Faculty Sponsor: Peter A. DiNardo
Eating Disorders at SUNY Oneonta: Correlates of Body Image and Weight Concerns

Presenter: Joe Miller (Earth Sciences)
Faculty Sponsor: P. Jay Fleisher
Glacial Thinning and Retreat, Bering Glacier, Alaska

Presenter: Donald Myers (Biology)
Faculty Sponsor: Adam K. Ryburn
Molecular Systematic Investigations of Echinacea (*Asteraceae: Heliantheae*) Based on Nuclear Ribosomal ITS and ETS Gene Sequences

Presenter: Gary Osarczuk (Secondary Education: Earth Sciences)
Faculty Sponsor: Paul J. Bischoff
The Corrosive Effects of Rock Salt on Common Building Materials

Presenter: Sean Perry (Communication Arts)
Faculty Sponsor: Jon Arakaki
The Jackass Generation: An Analysis of MTV's Jackass and the Aestheticizing of Violence

Presenters: Lisa Scaraville, Anna Monroy (Secondary Education: Biology)
Faculty Sponsor: Paul J. Bischoff
Ecological Survey of Emmons Bog

Presenters: Danielle Schmider, Abigail Costello (Secondary Education: Biology)
Faculty Sponsor: Paul J. Bischoff
Survey of Biodiversity among Gymnamoebae Morphotypes of Muddy Sediment Tree Bark and Rock Surfaces in the Susquehanna River

Presenter: Manny Soto (Psychology)
Faculty Sponsor: Geoffrey O'Shea
The Effects of Advanced Information on Reaction Time

Presenter: Mark Tracy (Earth Sciences)
Faculty Sponsor: P. Jay Fleisher
Englacial and Subglacial Conduit Flow, Past and Present, Bering Glacier, Alaska

Presenters: Alex Vito, Shannon Mulz, Kristin Healy, Joseph Macura, Stacy Meyer,
Gary Wannamaker (Psychology)
Faculty Sponsor: Lawrence Guzy
A Lateral Misperception Effect (LME) Along a Simulated Roadway: An Exploratory Study with a Pedestrian at the Hunt Union

Presenters: Shanna Wynn, David Abrams (Communication Arts)
Faculty Sponsor: Christine Quail
Video Games and Society

Presenters: Jennifer Zeman, Kristin Rabbia, Alex Vito, Shannon Mulz, JoEllen Tarbox (Psychology)
Faculty Sponsor: Lawrence Guzy
The Lateral Misperception Effect (LME) Where Obstacles are Misplaced as a Function of Lateral Placement and Slope of a Long Line: A Laboratory Study

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STUDENT PARTICIPANTS

Faculty Sponsors

PRESENTATION ABSTRACTS

Valerie Aquila
Cooperstown Graduate Program

Faculty Sponsor: Gretchen Sorin

The Reggio Emilia Approach as Applied to Early Childhood Programming at the Portland Children's Museum

This presentation focuses on one aspect of the research I am doing for my Master's thesis, which is entitled "The Reggio Emilia Approach as Applied to Early Childhood Programming in Museums." The Reggio Approach to early childhood education focuses on the child as an individual. Loris Malaguzzi, a founder and director of the program until 1985, stressed that "a school needs to be a place for all children – not based on the idea that they're all the same, but that they're all different."[1] Teachers transferred this idea to the classrooms by making the preschool a place where the child is free to explore objects of interest in a thoughtful environment. The main aspects of the Reggio Approach are its focus on allowing children to explore their environment through both conventional and unconventional methods; a strong emphasis on partnerships between parents, teachers, the community, and the children; group-learning; and documentation, which leads to constant reevaluation and improvement of teaching methods.[2] In recent years, Reggio Emilia has opened its doors to educators from around the world who come to learn about the schools and how best to implement these educational practices in their own institutions. The Reggio Emilia Approach to Early Childhood education can be difficult to apply in a museum setting, but when applied appropriately and effectively, it can provide children with a valuable learning experience based on personal exploration of the world around them, collaboration with adults, and communication. The Portland Children's Museum is a good example of how museums can use the Reggio Emilia Approach to have a positive impact on the children involved in the museum's programming. Research from the Portland Children's Museum was collected from interviews with staff members and from attending a two-day workshop on the museum's Reggio-inspired programming. The museum uses the Reggio Emilia Approach in its Reggio-inspired charter school. The students in the school showed an enthusiasm for learning – a conclusion that was reinforced by the documentation provided by the museum. The students were also successfully involved in an exhibit develop project, which shows how this approach can be integrated into the museum's programming outside of the classroom. The Portland Children's Museum's ability to successfully integrate the Reggio Emilia Approach into its programming serves as proof that this approach is adaptable to the museum world.

1. Pia Hinckle. "A School Must Rest on the Idea that All Children are Different." (*Newsweek* 2 Dec 1991), 53.
2. Carolyn P. Edwards, Lella Gandini, George Forman, eds. *The Hundred Languages of Children: the Reggio Emilia Approach – Advanced Reflections.* (Greenwich, Conn.: Ablex Publishing Corporation, 1998), 7-8.

Mike Ballard
Russell Hayward
Secondary Education: Earth Sciences

Faculty sponsor: Paul J. Bischoff

Water Quality Index of Otsego and Goodyear Lakes at Pre-Determined Depths

The purpose of this research is to compare the Water Quality Index of Goodyear and Otsego Lake. The water quality index is to be composed on each lake three times to ensure accuracy of determining which lake has better water quality. The research was conducted by using a general Water Quality Index protocol. There are nine tests in a water quality index. The tests include, Dissolved Oxygen, Fecal Coli form, pH, Biochemical Oxygen Demand, Temperature, Total Phosphate, Nitrate, and Turbidity. Of these test we performed the following: Dissolved Oxygen, Fecal Coli form, pH, Temperature, Nitrate, Total Phosphate, and Turbidity. Dissolved oxygen and temperature are recorded with an electronic meter. The pH is also measured with a separate electronic meter. The Fecal Coli form test is performed with a test kit. The water collected from the sight is forced through a filter in an apparatus specifically designed to perform this test. Then the filter is removed and placed in a Petri dish with nutrient agar. Then the sample is covered and incubated for twenty-four hours. The colonies of Ecoli are then counted

which are representative of the fecal coli form present. The Nitrate test is performed by using a mass spectrometer. The turbidity is determined with a Secchi Disk and the depth at which the disk is just visible is the measured turbidity. Data will be presented on research day.

Aimee Barnabee
Timothy McArdle
Secondary Education:
Earth Sciences

Faculty sponsor: Paul J. Bischoff

The Effects of Aluminum and Iron on Lettuce Plants and Heavy Metal Analysis

This paper discusses the effects of aluminum chloride ($AlCl_3$) and lead chloride ($PbCl_2$) on the growth of lettuce seeds. The second part of this experiment is to find out where the metal ends up in the lettuce plant once it has reached full growth. This is important because aluminum is the third most abundant metal in Earth's soil and lead is associated with numerous human health problems. This project has had many steps that have lead up to the final analysis. First, we tested $AlCl_3$ seeds and $PbCl_2$ seeds in a bioassay to identify the concentration the seeds could tolerate. To do this we set up six petri dishes for each salt solution. The solutions were made up of .001%, .01%, .1%, 1%, 10%, and 100%. The 100% is actually a 5% salt solution. There was also a control set up that contained nothing but distilled water, to compare the results of the solutions with the $AlCl_3$ and $PbCl_2$. The results of the bioassay were that the .01% and .001% concentration of the $AlCl_3$ and $PbCl_2$ were the upper tolerance levels for the plants. Next we took the two best concentrations and created a hydroponics system to develop plant mass for later testing of metal tissue locations. Likewise seeds were germinated in potting soil and watered with the ion solutions. In the near future plant tissues will be analyzed with a mass spectrometer to identify the concentration of metal ions in the plant tissues including roots, stems and leaves.

Michael Bartels
Andrew Greene
Graham Ostrander
Physics & Astronomy

Faculty Sponsor:
Hugh A. Gallagher, Jr.

Coherent Ionospheric Doppler Receiver Observations of Total Electron Content in the Upper Atmosphere

In October 2004, a University of Texas Applied Research Laboratory (ARLUT) Coherent Ionospheric Doppler Receiver (CIDR) was installed at SUNY Oneonta on top of Science I. The CIDR measures Doppler shifts on 150 MHz and 400 MHz signals from beacons on a series of low earth orbiting satellites as these signals transect the ionized layer of the upper atmosphere known as the ionosphere. The integrated number of electrons between the satellite and the receiver (known as the total electron content, TEC) is related to the difference in the Doppler shifts of the 150 MHz and 400 MHz signals. As the satellite passes over head, latitude profiles of TEC are determined. The SUNY Oneonta CIDR is part of a constant magnetic latitude chain of receivers that includes Cornell University, Siena College and M.I.T. With several ground-based receivers and computerized tomography techniques, the large scale three dimensional structure of the electron density in the ionosphere may be inferred. The CIDRs also detect rapid variations in the phase of the signals, known as scintillation, which are indicative of smaller scale electron density structures that adversely effect communication and navigation systems. We present initial analysis of the dependence of TEC latitude profiles on local time and magnetic activity, and the correlation between TEC and particle precipitation.

Robert Barton
Physics & Astronomy

Faculty Sponsor: Paul French

A Simulation Method for Testing Lens Distortion Correction in Video-Based Motion Analysis

For years, video-based measurements of motion have been used in many applications, although several types of error may have an adverse effect on accuracy. In recent work, methods have been developed to correct for these errors. This paper proposes a technique for testing the lens distortion error correction method in the context of the measurement of the air resistance coefficient. The technique involves (a) extraction of the air resistance coefficient from video data of projectile motion over a wide range of velocities, (b) simulation of motion using this coefficient and Euler's method, and (c) re-extraction of the coefficient from video analysis of the simulated motion.

Lindsey Bauer
Biology

Faculty Sponsor: Donna W. Vogler

Floral Gender Variation in Invasive Knotweeds

Japanese Knotweed (*Fallopia japonicus*, formerally known as *Polygonum cuspidatum*), its cogener Giant Knotweed (*Fallopia sacchalinense*), and their associated hybrids are invasive weeds across the Northeastern US. While clonal reproduction is the major source of spread, reproduction by seed is indicated in a few studies but largely the sexual reproductive aspects of their life history is not well known. A survey was undertaken in Fall 2005 to examine variation in floral gender in 6 populations in Otsego Co. NY, of which two were morphologically identified as *F. sacchalinense*, three that appeared to be *F. japonicus*, and one that was taxonomically uncertain. Our preliminary results indicate distinct male and female plants of Japanese Knotweed, whereas Giant Knotweed appears to be largely hermaphrodites. The putative "hybrid" population contains individuals with flowers showing all possible gender types and gynodioecy. Further studies are needed to clarify the potential role of hybridization or introgression in altering reproductive functions in the invasive *Fallopia*.

Laura Burger
Jennifer Sudano
Mathematics, Computer Science & Statistics

Faculty Sponsor: Marius Munteanu

Spiral Decomposition

For centuries people have been captivated with the intriguing properties of spirals. A few of the areas that they are present in include architecture, astronomy, nature, and even magic. In our presentation we look at how to construct spiral decompositions of regular planar regions based on spiral configurations. Although our decompositions are created using only straight lines, the spiral effect comes from the special way of drawing these structures. Our work has been motivated by the geometry of a relatively simple example involving two one-end spirals converging toward the same point. This construction can be generalized in two directions by increasing either the number of one-end spirals or the number of convergence points and spiral ends. In the case of configurations with four convergence points and four spirals, we obtained exactly eight geometrically distinct possibilities. The key observation we used is that geometrically equivalent spiral configurations have isomorphic associated graphs as well as isomorphic clockwise/ counterclockwise orientation at the convergence points. The corresponding decompositions have been constructed using *Geometer's Sketchpad.*

Mary Cedrone
Rebecca Cook
Lori Covey
Psychology

Faculty Sponsor: Geoffrey O'Shea

Incidental Serial Learning by Observation: The Effects of Chunking on Awareness

The Hebb Digits (HD) task, which involves incidental learning of a repeating nine digit sequence, has been a useful paradigm for investigating the transfer of serial information from short-term to long-term memory. Previous results (O'Shea & Clegg, in press) with a modified HD paradigm, permitting separate examination of the perceptual and motor phases of performance, showed that perceptual rather than motor chunking processes more strongly contributed to learning of the repeated digit sequence. The present study investigated whether perceptual learning of the repeated digit sequence could occur through observation. In a variant of the HD paradigm, participants performed a vigilance task while passively observing the digit sequences and responded only once to the repeating digit sequence. Throughout the experiment, participants were exposed to a total of twenty-four nine digit sequences with one digit sequence repeated every third presentation as is standard in the HD paradigm. Learning was assessed by comparing recall performance of the final presentation of the repeating sequence to mean recall performance of the two preceding non-repeated sequences. In the HD paradigm, enhanced recall of the repeated digit sequence compared to the non-repeated sequences is considered evidence of learning. Performance was investigated under two conditions: a non-chunked baseline condition in which the digits were presented individually (No Chunking) and a chunked condition in which the digits were presented in groups of three (Stimulus Chunking). Two types of awareness of sequence repetition, commonly studied under incidental learning conditions, were assessed: Verbal Awareness (e.g., subjective measures) and Recognition Awareness (e.g., identifying sequences as familiar/unfamiliar). Results failed to find incidental observational learning of the repeated sequence under either the No Chunking or Stimulus Chunking conditions. However, Stimulus Chunking was found to increase performance on measures of Verbal and Recognition Awareness compared to the No Chunking condition. These results are discussed in terms of the role of chunking processes in the acquisition and retention of serially-ordered information. Furthermore, the findings of the present study are in agreement with a number of studies in implicit learning indicating an important role for responding in the development of implicit knowledge.

Kimberly Cheng
Biology

Faculty Sponsor: Donna W. Vogler

Mei Wong, D.O. (Pediatrics, Charles B. Wang Community Health Center)

Increase in Guidelines Compliance by Pediatricians as a Factor in Controlling Childhood Obesity

This study is one of few focusing on childhood obesity within the Asian population in an urban region within the United States. There are strong links indicating the persistence and likelihood of obesity leading from childhood into adulthood. Since obesity can be accompanied by serious health issues, such as cardiovascular diseases, type II diabetes, and dyslipidemia, it is important to identify those at risk as well as those who are overweight and begin treatment at an early age. It is perhaps one of the most effective approaches in controlling and monitoring prevalence rates. An exploratory analysis of this research seeks to determine whether pediatricians are beginning to pay increasing attention in treating and preventing obesity in children. This is done through noting compliance rates with the guidelines in screening and managing obesity set forth by the *American Academy of Pediatrics (AAP).* The results show a statistically significant increase in compliance from 2004 to 2005. Significant increases included the percentages of patients receiving fasting lipid when necessary (p-value=0.003), patients receiving fasting glucose when necessary (p-value=0.001), patients receiving labs (in general) when necessary (p-value=0.001), and the percentage of patients with BMI>85% given advice on exercise and diet by providers (p-value<0.0001). This may be a key factor in reducing the prevalence rate of childhood obesity in the long run. These significant increases in compliance with the guidelines provide hope that the growing obesity epidemic can be addressed by encouraging health providers to follow through with screening and treatment guidelines.

Kelly Murphy Czermerys
Secondary Education: Biology

Faculty Sponsor: Paul J. Bischoff

Creating a Website as a Learning Tool in Science Education

In a mixed grade (9th-12th) Environmental Sciences class at Gilboa-Conesville Central School, the students learned about the Iroquois tribes in a cross-disciplinary study with their science and social studies teachers, Mrs. Julie Mathes and Ms. Michelle Fleischman. They did reading and classroom learning, and visited the Iroquois Museum in Howes Cave, NY, where they learned about this culture's way of life and interaction with the environment. As a Methods student in this class, I guided these students in a six-week project, constructing a website about the Iroquois (www.iroquois.freewebspace.com). To do this, students needed to organize and synthesize knowledge they had gained through reading, field trips, and class work; evaluate additional information they acquired from their own research and integrate it with their prior knowledge; and utilize technology to present their information in an interesting and appealing way. At the end of the project, students reported gaining a greater understanding and appreciation of the Iroquois culture, an increase in their ability to use technology to share information, and enjoyment and enthusiasm for the project.

Shaundra M. Davis
Secondary Education: Earth Sciences

Faculty Sponsor: Paul J. Bischoff

A Chemical Analysis of Black Shales and the Abundance of Biodiversity in Black Shale Sediments

Black shale is a sedimentary rock consisting of fine grain sediments. The black sooty colors of the shales are produced by large amounts of organic carbon deposited during deposition. Previous research has concluded toxic trace elements are precipitated when black shales are weathered. The main objective of the study was to discern if black shales have a profound effect on the biodiversity in aquatic environments. To assess the colonization rates of shales and pebble type sediments, permeable bags of sterilized sediments were placed in Silver Creek and removed at 1-week intervals for 5 weeks. Samples were taken to the lab and observed with a light microscope and all live forms documented. Results showed a proliferation of life in the pebble sediments and virtually no life in the black shales. A bioassay was conducted using a 100% concentration of .0075 black shale and creek water to determine the toxicity of water containing constituents of black shale. Stone fly larvae were used in the bioassay. After 1 day, there was a 50 % kill rate in the most concentrated solutions of black shale. Further testing of black shale sediments for heavy metals is under study. Thus far the results indicate that black shales are extremely hostile environments.

Thomas Davis,
Kenneth Wagner
Chemistry & Biochemistry

Faculty Sponsor: John Schaumloffel

Concentration of Chemicals in Commonly Used Smokeless Tobacco

Many people choose to use smokeless tobacco, particularly in rural areas. Smokeless tobacco contains numerous hazardous chemicals including carcinogens. At the same time, there is much less literature and public awareness of the dangers of smokeless tobacco. Using liquid-solid extraction, solid phase extraction, and gas chromatography-mass spectrometry, we will analyze samples of smokeless tobacco to determine the presence of compounds such as benzene, N-nitrosonornicotine (NNN), 4-(N-nitroso-N-methylamino)-1-(3-pyridyl)-1-butanone (NNK), and others. Results for the analysis of popular brands and varieties (e.g. flavored) of smokeless tobacco will be presented.

Matt Deitch
Linda Kruger
Tim McClarren
Economics & Business

Faculty Sponsor:
Christine Harrington

Is Sector Rotation Always Profitable Over The Business Cycle?

This study considers whether industry sector rotation is a profitable investment strategy on average. The motivation for this study is from a 1994 *Fortune* magazine article that claims that industry sector rotation is a profitable investment strategy when the phase of the business cycle changes. This claim has also surfaced in college text books. We address the average profitability of sector rotation by examining average industry sector returns over the past three business cycles. We consider five industrial sectors: Basic Industries, Consumer Durables, Consumer Staples, Financials, and Capital Goods. We find support for the notion that sector rotation is on average profitable for every sector except for Consumer Staples.

Stefanie DeMonaco
Biology

Faculty Sponsor: Nigel Mann

Call Note Evolution in Tropical Wrens

Wrens belong to the family Troglodytidae and consists of approximately 75 to 95 species. They are small active song birds and are usually hard to observe, but many of them are nevertheless conspicuous due to their loud musical vocalisations. The *Thryothorus* genus is the largest, containing 28 species. Distribution of this genus is mainly tropical with the exception of the Carolina wren (*T. ludovicianus*) which extends into the United States. In most *Thryothorus* wrens, males and females coordinate their songs to create a variety of complex duets. The duets may function to defend the territory, to help in recognition of neighbors and mates, and possibly to help coordinate breeding activities. Other types of vocalization used by wrens are termed call notes; these may be used for contact between conspecifics, as an alarm in response to a predator or intruder, and to signal distress when caught. Differences between songs across species will have resulted partly due to the sexually selected forces that act upon them. However, this selection pressure is likely to be absent from call note evolution as calls are not used in sexual situations. Studies with passerines have shown that songs are learned while call characteristics are not, implying that it is only songs that are subject to cultural evolution. Therefore, significant information about evolution in *Thryothorus* wrens can be obtained by comparing calls with a molecular phylogeny. During a previous study, a molecular phylogeny of *Thryothorus* wrens was created using nuclear and mitochondrial DNA sequences. Also, a large data set of calls was collected for these species and has been made available for the present study. The calls are being categorized by species, location, type of call, and structural characteristics. Sonograms will then be created for each call on time-frequency plots by using sound analysis software. Call note structure and classifications will be compared to the phylogenetic relationships. It is hypothesized that, in general, patterns of call note structure will be consistent with the phylogeny. Any unexpected differences may show the presence of selective forces on calls such as the environment of the species, and will be of particular interest. For example, species living in dense vegetation will have different constraints on sound projection than species living in more open habitats.

Ed Drantch
Communication Arts

Faculty Sponsor: Christine Quail

Steal this Song

In recent years, intellectual property has become a large concern of the Recording Industry Association of America (RIAA). Copyright, in particular, is the main focus of their frustration. Many Internet users, with the help of increases in technology, have been downloading music illegally (or, "illegally") from file sharing networks. They are concerned that we, customers of Internet Service Providers (ISPs), are infringing upon copyright laws by downloading songs that are protected by copyright. Various musicians and bands have complained of profit loss, as a direct result of downloading music. The RIAA has subpoenaed various ISPs, for lists of users

who are downloading music off of the Internet. The association has sued families for hundreds of thousands of dollars in fines' and it's not just one family, it's hundreds of families. Many people around the nation favor the lawsuits brought about by the recording industry. On the other hand, however, many people are quite opposed. In our preliminary research, we have attempted to analyze students' perceptions of and opinions about copyright, music, and downloading, with the hopes of expanding this into a fuller industrial analysis. Over 100 surveys were administered and preliminary data gathered. Questions were qualitative and quantitative, and focused on downloading practices, legal questions, and ethical questions. Contradictory data was gathered that suggests a disconnect between legal concepts, personal practices, and legal and ethical perceptions. This research is significant for mass communication, communication studies, and the music industry fields. Issues about cultural expression, free exchange of ideas, and the history of the political economics of culture are central to the study of culture and communication in the contemporary era. This study raises questions that could be further explored through fuller interviews with students, music industry professionals, and legal analysts and scholars.

Amy Egbert
Mary Velan
Rachel Baxter
Morgan Brooks
Samantha Marcinka
Chris Siragusa
Psychology/Human Ecology/Athletics

Faculty Sponsors: Lawrence Guzy, William Proulx, Tracey Ranieri

Do Changes in Cognition, Performance, and Mood Occur as a Function of Dehydration and Subsequent Re-hydration? An Exploratory Study

Under stressful conditions individuals tend to involuntary dehydrate until stress is diminished. On a college campus, students may unintentionally dehydrate themselves just prior to an exam or while working on other graded material such as a term paper with a looming deadline. There is just no time to slow down and take a drink of water. Dehydration may take its toll on academic performance by slowing the cognitive process and motor performance, where students may find it difficult to perform to some optimum standard, e.g., failure to comprehend and errors in reasoning. Further, if mood is detrimentally affected students may become more irritable and impatient. The focus of our research will be on pre- and post-hydration changes in cognition, behavior, and mood associated with water and a commercially available performance drink (Pocari). Research has shown that re-hydration with water takes longer to assimilate in the vascular system than some of the re-hydration drinks, e.g., Pocari and Astro-Aide. **Method:** Five men will participate in the study. Participants will be asked to refrain from drinking beginning with 7 PM the previous day. Further, they will be given a menu of foods that are acceptable to eat the day prior to the study to insure dehydration. Subjects will report at 8 AM the following morning after dehydration. They will provide a urine specimen prior to and after testing. On two of the three testing days, subjects will randomly receive either 2000 ml of water or Pocari. They will be required to finish the drink in 10 minutes. On the remaining day, they will not receive any drink (Cntrl). They will complete a battery of tests that include a short-term memory test, the Stroop Color Test, Sleepiness Questionnaire, and Mood Scale. They will rest for 15 minutes and then perform the tests once again. This is a double blind study where neither the experimenter nor subject will know what drink is being consumed. The drinks will be modified so that they will look and taste identical. We have chosen Pocari as our experimental drink as extensive research has been conducted on it and it is commercially available. Pocari is a very popular drink among the Asian Community. The drink was developed at the University of Kyoto in Japan. **Results and Discussion.** Data collection is presently in progress.

David Friedberg
Biology

Faculty Sponsor: Donna W. Vogler

The Phenomenon of Self Pollination in Tropical Plants

The research project that I intend to perform would examine the potential for self pollination in tropical plants that are adapted to attracting a floral pollinator. Self pollination is when pollen of the same flower or a different flower on the same plant comes in contact with the stigma. Pollen grains, which ultimately produce the plant's sperm cells, are located on the anther which is the topmost part of a plant stamen. The stamen (with the anther and all its pollen) is the male part of the flower. The stigma is the part of the pistil that receives the pollen. The pistil of the flower is the female part of the flower that contains the ovules. If the ovules receive sperm cells from their own pollen, the seeds produced will be self-fertilized, and inbred. Most pollination, however, occurs through cross pollination. This is the transfer of pollen from one flower to the stigma of another flower. If the ovules receive sperm cells from pollen of an unrelated flower the seeds produced will be outcrossed.

There are many factors and floral conditions that can enhance the likelihood of cross pollination. Pollen can be transferred through pollination by wind (anemophily) but the more familiar and more efficient way of cross pollination is by zoophily. Zoophily is the pollination of a flower by animals. Many animal species have played a role in pollination, including: bees (melittophily), water (hydrophily), beetles (cantharophily), bats (chiropterogamy), insects (entomophily), ants (myrmecophily), birds (ornithogamy), flies (myophily), moths (phalaenophily), butterflies (psychophily), and slugs or snails (malacophily). The mutualistism between plants and their pollinators, and the unique adaptation of floral morphology to the specific pollinators was studied even by Charles Darwin.

Despite the obvious advantage of outcrossing, some plants retain the ability to self pollinate. Self pollination would be an advantage if pollinators become absent or unable to reach the flowers at any point of time. At this point in time the plants that are able to self pollinate will be at a selective advantage. In the face of pollinator unpredictability, the most advantageous strategy would be to self, but only late in the flowers' life after all opportunities to allow an animal pollinator to bring in outcrossed pollen. Delayed selfing is thought to be more common in temperate habitats such as our eastern deciduous forest where spring conditions of cold or rain may make it difficult for bees or other pollinators to get to the flowers, sometimes for weeks. The phenomenon has not been studied very much in tropical species because it was thought that the year-round warm conditions wouldn't limit the access of pollinating insects or birds to their plants. I would like to challenge that assumption.

In the United States, several public and private gardens in the South now have extensive collections of tropical plant species. In most cases, tropical garden plants taken from exotic locations do not have their normal pollinators. If zoophily takes place, it can only happen with pollinators that are found in the US, such as honeybees or native hummingbirds. Yet, many of these same species are able to produce fruit. While some of the fertilized seeds may have come from US pollinators visiting an exotic plant, there is some potential that self pollination or delayed pollination is able to happen. To look for evidence of delayed selfing, a flower must be bagged with fine mesh while it is still in bud. Replicate flowers are collected at the time of opening, and others are collected at the end of floral life. If pollen is found on the stigma of a bagged flower late in floral development, but not early, this is evidence of delayed selfing. The best test for this is to look for the growth of pollen tubes, which indicate not only has self pollination occurred, but that it is successfully growing towards the ovules.

Alison Garland
Deidre Euson
Crystal Lovette
Rebecca Pratt
Joseph Ryder
David Sutton
Mathematics, Computer Science & Statistics

Faculty Sponsor: Jen-Ting Wang

Where to Go Grocery Shopping in Oneonta, New York

A study was conducted to compare the average food price at grocery stores in Oneonta. The three selected grocery stores included were Hannaford, Price Chopper and Wal-Mart. To compare the prices, six students were broken up into three groups of two and assigned a grocery store to take a sample from. Each group then chose a sampling design that would best estimate the mean for all food products in their allocated grocery store. Furthermore, each group computed an average price that was later compared with the other two estimates. Concluding the study was an analysis of variance performed to test whether or not there was a statistically significant difference in the means.

Thomas Gottherer
Joseph Macura
Aysha Maisonet
Jessica Sickles
Angela Zzie
Psychology

Faculty Sponsors: Peter A. DiNardo, Steven J. Gilbert

Stroop Sentences as a Diagnostic Test of Fear of Spiders

The "emotional Stroop" is a variation of the color-word Stroop in which subjects name the colors of words that either do or do not have personal emotional relevance. When instructed to say the color of the words as quickly as possible, color naming latency for emotionally relevant words is greater than for non- emotionally relevant words. Most explanations assume that the emotional meaning of the words activates an "attentional bias", making it difficult to override the word reading process and switch to color naming. Our purpose was to determine if the emotional Stroop effect could be enhanced by embedding emotionally relevant words in meaningful sentences, thereby increasing the activation of an emotional attentive bias. In a 2x2x2 mixed factorial design, subjects high vs. low in fear of spiders saw 96 word strings which varied in content (spider vs. neutral) and form (sentence vs. random). Mean latency per word was measured. We predicted that high fear subjects would show the greatest latencies for spider-sentences, and greater latencies for spider-strings than for neutral strings, irrespective of form. The prediction for low fear subjects was greater latencies for sentences vs. random presentation form, but no effect of spider vs. neutral words. Overall, the results did not support these hypotheses. An ANOVA showed that subjects' latencies were longer for spider ($M = .81$, $SD = .18$) than for neutral ($M = .76$, $SD = .16$) word strings, $F(1,39) = 13.775$, $p < .001$, irrespective of fear status or form of presentation. The finding that color naming for neutral words was unaffected by the sentence v. non-sentence context suggests that subjects were not processing the sentences, and therefore missing their meaning. A planned follow-up study will alter the presentation of stimuli to increase the salience of the content and structure of the word-strings.

Erin Grogan
Biology

Faculty Sponsor: Nancy Bachman

Cancer Histology Image Database

This project involved mastering the operation of the motorized Olympus BX51 microscope and digital camera to analyze histological slides of human cancers. We took images of normal and cancer tissues from different parts of the human body, such as skin, digestive system, and female reproductive system. We then cataloged the slides by acquiring several images, typically at low, medium and high power. To help guide us in comparing the normal and cancerous tissues, histology and anatomy textbooks were consulted. An accessible database

of the images was then created. This database can then be used to help others learn human cancer histology.

Geoffrey J. Harlow
Biology

Faculty Sponsor: Fred Zalatan

Knockout of Fatty Acid Transport Gene in the Bacterium Caulobacter crescentus

Fatty acids are important to cells for membrane structure and energy. In this way, fatty acids are extremely important to life. As such, cells must find ways to acquire and transport fatty acids into their cells. *Caulobacter crescentus* is a gram negative aquatic bacterium that tends to live in low nutrient environments. Being that it lives in these low nutrient environments, it must have an effective mechanism to bring nutrients, such as fatty acids, into the cell. *C. crescentus* contains a gene that is believed to encode a fatty acid transport protein (FATP). A gene with a similar sequence has been characterized in other bacteria and has been shown to function in fatty acid transport. To test whether or not the gene in question from *C. crescentus* has a similar function, the long-term goal is to knock out the function of the gene and note any changes in cellular characteristics. In order to accomplish this goal, a DNA fragment containing the putative FATP gene from *C. crescentus* was isolated and cloned into a plasmid vector. We are in the process of inserting a DNA fragment (one which encodes resistance to the antibiotic gentamycin) in the middle of the FATP gene. We then plan on inserting this knocked out gene into a second plasmid that is compatible with *C. crescentus*. This second plasmid will then be used to introduce the non-functional FATP gene into the bacterium. Comparisons will be made between normal cells with functional FATP and those with non-functional FATP based on differences in fatty acid uptake.

Joshua Hewlett
Mathematics and Engineering
Jamie Barber
Biology
Thomas Pullen
Earth Sciences

Faculty Sponsor: Paul French

The Measurement of Adiabatic Heating in Air Column Resonance

In previous work, a musical instrument with resonant air columns, known as a Dinh Pa, has been built and used to measure the speed of sound with 0.23% accuracy between -7 and 24 degrees centigrade. In this paper, we have modeled the behavior of our thermometers using Newton's Law of Cooling and we have measured the effect of the adiabatic heating caused by the standing waves. The temperature lag was found to be only 12% of the resolution of our best thermometer, indicating that adiabatic heating is negligible in our technique to measure the speed of sound.

Toni Johnson
Biology

Faculty Sponsor: Nancy Bachman

Comparison of Ion Exchange and Affinity Chromatography

Chromatography is a separation method that manipulates the difference dispersion between a mobile phase and a stationary phase in order to separate the components of a mixture. The techniques of chromatography vary on a wide spectrum according to the differential compatibility of substances for a gas or liquid mobile medium and for a stationary absorbing medium through which the liquid or gas substance passes. Processes of chromatography can be used for both analytical and preparative purposes. One procedure in Biochemistry that incorporates both purposes is protein purification, which uses several types of chromatographic techniques. Two of the main techniques used in protein purification are ion exchange chromatography and affinity chromatography. Both techniques are variations of absorption chromatography, in which the compounds to be separated are passed onto a solid absorbent surface; eventually the compounds are separated and identified

according to their varying degrees of absorption rates. The two techniques differ with regards to the absorbent mechanism that is used. For example, in ion exchange chromatography, the solid absorbent used has charged groups that are chemically allied to a solid matrix, also know as the column. In affinity chromatography, a bio-specific process is used in separation; often a ligand is used to form a covalent bond with the solid matrix. For affinity purification of antibodies, often a bacterial protein, Protein A, which has affinity for immunoglobulin G, is attached to the column. Ion exchange chromatography is used more in preparative protein purification, which produces mass quantities of proteins for commercial production, such as enzymes and insulin, while affinity purification is usually done on an analytical scale. My project has involved mastering the operation of a mostly automated low pressure liquid chromatography system. In my first experiment, I separated a mixture of known proteins by ion exchange chromatography. Next, I will use affinity chromatography to purify the immunoglobulin G fraction containing polyclonal antibody to the human neighbor of cytochrome oxidase IV protein.

Thomas Kelly
Physics & Astronomy

Faculty Sponsor: Hugh Gallagher, Jr.

Monitoring Coronal Mass Ejections Using the SOHO Space Telescope

Coronal Mass Ejections (CME's) have received a great deal of attention lately due to enhancements in observational techniques and their potential impact of CME's on space and ground based systems. The Large-Angle and Spectrometric Coronagraph (LASCO) on board the Solar and Heliospheric Observatory (SOHO) has been recording white light images of the Sun's corona for about a decade. Using LASCO images, we examined the acceleration and configuration of three CME's that occurred on October 23, 2004, August 23, 2005 and February 17, 2006. In order to track the CME's, we created a MATLAB program that allowed the user to obtain the coordinates of specific CME features and follow them as the CME traveled through space. We find that the CME's experience significant acceleration out to 12 to 20 Solar Radii where they achieve a maximum speed of approximately 600 km/s. Our observations also show that the CME's retain their shape as they expand outward suggesting that a magnetic field is responsible for the overall structure of the CME. Thus, magnetic buoyancy may play a role in the CME acceleration.

Tom Lampert
Biology

Faculty Sponsor: Nancy Bachman

Localizing Human CGI-112 with Different Fluorescent Markers

DNA is a double stranded chain of nucleotides that stores genetic information. This code is mainly used by cells to create specific proteins which control almost all functions of life. But these processes are not always perfect; irregular proteins can sometimes be made. These malfunctioning proteins are the cause for many different disorders. Neurological diseases such as Alzheimer's and Parkinson's are examples of disorders due to irregular proteins. A gene of unknown function, CGI-112, expresses a protein that might be related to proteasomes, cellular complexes involved in the degradation of proteins to their component amino acids. A defect in this cycle of protein degradation is partially responsible for the two diseases previously mentioned. In this project, we hoped to help uncover the function of the CGI-112 protein. One method of determining the function of this gene is to attach a fluorescent marker to the protein and use a fluorescent microscope to track it within the cell. Using different fluorescent markers is important to see if the actual marker may affect the protein and its subcellular location. The two tags that have previously been attached to CGI-112 are green fluorescent protein (GFP) and a segment of the myc oncoprotein. The first step in this process was isolating the plasmid DNA encoding the tagged CGI-112 and confirming its sequence using the dideoxy method. The next step was to transfect the two differently tagged DNAs into HeLa (human cervical cancer) cells, so they could express the proteins. Antibody treatments were then performed so that the myc tag can be detected. An antibody fused to a dye (Alexa 594) that fluoresces red was bound to the CGI-112-myc protein. Then, using a fluorescent microscope with various fluorochrome filters, we have demonstrated that there are indeed differences in the localization of the two proteins: CGI-112-GFP and CGI-112-myc. Both tags localize widely in the cell, both in the cytoplasm and the nucleus. However in cells highly expressing CGI-112-GFP, "dots" of staining are

frequently seen, mainly in the cytoplasm; these are rarely if ever seen with the CGI-112 myc protein. The relative size difference in the two tags--GFP is about 408-439 amino acids long while myc is only 31 amino acids long—may lead to this difference in localization pattern. We conclude that care must be taken when working with tagged proteins. To best understand the localization and possible function of CG1-112, specific antibodies for detecting the normal protein need to be prepared.

Anna Legname
Psychology

Faculty Sponsor: Peter A. DiNardo

Eating Disorders at SUNY Oneonta: Correlates of Body Image and Weight Concerns

According to the National College Health Assessment done in 2005 by the Office of Health Education, 2.5% of SUNY Oneonta's students reported being diagnosed with Anorexia and 3.4% with Bulimia between 2004 and 2005. If we consider those who have partial syndromes, the problem is even greater. Studies show that partial syndrome sufferers can develop full-blown/clinical Anorexia or Bulimia in the future, so it is important to identify those who are at a greater risk in order to effectively prevent them from developing these illnesses. Several studies have identified factors such as early concern about being overweight, body dissatisfaction, and distorted body image as predictors of eating disorders symptoms. Our purpose was to replicate and update findings of earlier studies and compare males and females in a college population on how they perceive their bodies, and how dissatisfied and concerned they are with their weight and body shape. Killen et al. (1994) measured factors such as fear of gaining weight, importance of weight in life, worry about weight and body shape, history of dieting, and how fat they felt. High scores on this measurement predicted future development of eating disorders. Rozin and Fallon (1995) used a questionnaire in which participants looked at an array of 9 figure drawings of female and male body shapes from Stunkard, A.J. and Schulsinger, F. (1993). Participants selected images that represented their current body shape, ideal body shape, the body shape they were attracted to, and the body shape they believed the opposite sex was attracted to. Women reported more distorted body image and more dissatisfaction than men and were inaccurate about which female shape men were attracted to. Female participants believed men were attracted to thinner female body shapes, while in reality men were attracted to heavier figures. Males' perception of what the opposite sex finds attractive was more accurate. Our participants were 252 students with a mean age of 19, from which 60% were women and 40% were men. In order to measure participants' body image distortion, their Body Mass Index was correlated with their current body shape and results showed that our students are very aware of how their bodies look like and showed little distortion. Body dissatisfaction was measured by taking the difference of scores between current body shape and ideal body shape. Our hypothesis that women would have more dissatisfaction than men was not supported. Male students were also dissatisfied, and they were actually more dissatisfied as they got closer to graduating college. In general, women were more concerned about weight and body shape than men, but to our surprise male participants' scores on the concerns questionnaire were very high. We also noted that male BMI increased with years in college and their dissatisfaction was correlated with this increase. More attention should be given to male college students in how their weight gain can affect psychological health.

Joe Miller
Earth Sciences

Faculty Sponsor: P. Jay Fleisher

Glacial Thinning and Retreat, Bering Glacier, Alaska

Significant loss of surface ice mass from the eastern piedmont lobe of the Bering Glacier has been measured using several methods from 1998 to 2005. Direct measurements of thinning and retreat, complemented by annual aerial and ground photography along a 20 km ice front, were accomplished using conventional and newly designed techniques. Data from June 2005 are consistent with the previous seven years of observation. Conventional surveys of ice surface gradient extending 1 km upglacier from two ice front sites to elevations below 100 m indicate that the post-surge loss of ice mass remains near the 10 m/year values noted since 1998. A calibrated cable placed 9.8 m in a steam drilled hole in June 2005 at the apex of the piedmont lobe will yield

annual ablation at approximately 400 m above MSL for 2005-2006. Surface downwasting measured by progressive exposure of meter long, white PVC pipe placed in auger holes 90 cm deep at 3 sites during June 2005 yielded results of 5.7, 8.0, and 8.5 cm/day. These are well within the previously observed range of 4.4 to 10.9 cm/day. The significance of variable factors tested in 2005 that might influence these rates are ice crystal texture, foliation scale and orientation, per cent of debris cover, weather conditions, slope inclination and aspect, and elevation. Annual retreat of the ice front on land in the Tsivat Basin southward to Arrowhead Island in Vitus Lake was measured using differential GPS surveys accurate to +/- 2m. The 2005 results were similar to previously measured rates of 50-75 m/year. Calving retreat in adjacent ice contact lakes varies significantly depending on water depth.

Donald Myers
Biology

Faculty Sponsor: Adam K. Ryburn

Molecular Systematic Investigations of Echinacea (*Asteraceae: Heliantheae*) Based on Nuclear Ribosomal ITS and ETS Gene Sequences

One of the world's most valuable and extremely popular medicinal herbs, *Echinacea* has a variety of medicinal properties. Described by Conrad Moench in 1794, *Echinacea* is a North American genus comprising 4–9 species. Commonly known as the purple coneflower, it is distributed primarily in the Midwest but escaped populations have naturalized in many areas including the Northeast. Taxonomists differ in their opinion as to the number of species. Advances in molecular biology, especially in the techniques of sequencing DNA, now permit from a molecular perspective, an examination of the taxonomic position of *Echinacea* in the family and the relationship of its species. Thus my work has attempted to construct a phylogeny of the genus using nucleotide sequence data from the internal transcribed spacer (ITS) and external transcribed spacer (ETS) regions of nuclear ribosomal DNA (nrDNA) to examine the monophyly and circumscription of *Echinacea* and its species.

Gary Osarczuk
Secondary Education: Earth Sciences

Faculty Sponsor: Paul J. Bischoff

The Corrosive Effects of Rock Salt on Common Building Materials

This study investigates the corrosive effects of rock salts on Brick, Steel, and Aluminum. All materials were added to solution water combined with rock salt equal to or exceeding the point of saturation. Materials were analyzed in weekly intervals for 6 weeks. Corrosiveness was determined by loss of mass as well as visual deterioration. Rate of deterioration was observed to determine if rate changes as exposure time increases. Microscopic pictures were taken of weekly visual deterioration via a dissecting microscope and will be on display. All results will be presented in final presentation.

Sean Perry
Communication Arts

Faculty Sponsor: Jon Arakaki

The Jackass Generation: An Analysis of MTV's Jackass and the Aestheticizing of Violence

At a very young age many children are exposed to violence. Throughout childhood, we are introduced to nursery rhymes and songs with good intent, but oftentimes they contained questionable messages. There is a good chance, for example, that *Rock-a-Bye Baby* is one of the first nursery rhymes a child is exposed to. The lyrics are as follows:

Rock-a-bye baby on the tree top,
When the wind blows the cradle will rock,
When the bough breaks the cradle will fall,
And down will come baby, cradle and all.

Many times children are sung this song before they are able to talk, but the song sends a morbid message that could give the child a complex. Margaret Ballard of the *University of Dallas News* wrote, "Whoever wrote the original version should be ashamed of himself. How could anyone put a

baby in a dangerous situation and then callously sing 'down will come baby, cradle and all.'" Ballard later stated that, "Eliminating violence in nursery rhymes would help prevent children from growing callous to violence at an early age." Most people are raised with violence at this early age by the mass media. Television and film, as well as nursery rhymes, can numb us to violence. By the time we are adults we are so desensitized to violence that we enjoy watching it as well as find humor in it. Males usually tend to be involved in, as well as entertained, by acts of violence. This project is a case study of *Jackass* and will address the question: What media are people exposed to that would make violence an accepted part of their life? I administered 100 surveys to 51 male and 49 female college students to get their opinions of *Jackass* as well as to find out how much influence it has on them. Ninety-six percent of the respondents stated that they have watched Jackass: The Movie and/or the television show *Jackass*. Ninety-three percent of the survey takers felt that the show was funny and entertaining. Seventy-nine percent of the people surveyed witnessed someone reenact a stunt that was similar to those on *Jackass*. Those who reenacted a *Jackass*-like stunt were roughly 9 percent female and 91 percent male. Another frightening statistic is that 42 percent of the respondents "personally participated in a *Jackass*-like stunt." Ninety-four percent of the respondents believed that males are more likely, followed by 5 percent believing that either male or female has equal chance, and 1 percent felt that a female would be more probable. I also conducted interviews, held a focus group on media violence, and organized a content analysis project about the humor in the television show *America's Funniest Home Videos*. From my research I have determined that television shows like *Jackass* aestheticize violence and make it an acceptable part of society.

Lisa Scaraville
Anna Monroy
Secondary Education: Biology

Faculty Sponsor: Paul J. Bischoff

Ecological Survey of Emmons Bog

The purpose of this study was to describe the plants and animals that live within Emmons bog and to learn how these species can survive in this environment. This study also investigates the living communities and how they interact with the biotic environment. Water quality was determined using a water quality index. Five of the nine water quality index tests were carried out. These were pH, dissolved Oxygen, phosphates, fecal coli form and temperature. Water quality index value of 69.14 was found. A Burlese funnel was used to isolate and observe micro and macro invertebrates and, plant species were carefully observed and indexed using field guides. Very few species were isolated using the Burlese funnel. However, numerous species of protists were observed using an oxygen deprivation microscope analysis. Plants species identified thus far include *Sarracenia purpurea, Chamaedaphne calyculata,* Oxycoccus microcarpus and Gattung *Sphagnum.*

Danielle Schmider
Abigail Costello
Secondary Education: Biology

Faculty Sponsor: Paul J. Bischoff

Survey of Biodiversity among Gymnamoebae Morphotypes of Muddy Sediment Tree Bark and Rock Surfaces in the Susquehanna River

This study involved the culturing of gymnamoebae from samples of sediment, bark, and rock scrapings taken from the Emmons NY canoe launch location of the Susquehanna River, NY. From this site, we evaluated the amoebae population and morphotype numbers among the different sources, and from our evaluation of these factors, we inferred the river's biodiversity status and fitness. To enumerate amoebae, the aliquot method of protozoa culturing was used. In the aliquot method, a diluted sample of each river environment was placed in multi well culture plates along with 2 ml filtered river water and a small amount of malt-yeast agar. After a week long period of culture growth, the culture plates were viewed under a phase contrast microscope and each time morphotype 1, 2, 3 or 4 was seen within a culture well, classification was recorded. Morphotype 1 have extended fine psuepodia, morphotype 2 are limax shaped and move slowly, morphotype 3 are limax shaped but move erratically, and morphotype 4 are broad or fan shaped. Calculations involving numbers of each

morphotype observed and the dilution factor for each plate were then carried out to obtain amoebae populations per source area or weight. Thus far the following data has been calculated for the muddy sediment. Values are populations per liter. Type 1 numbers –mean 9.3×10^5, range 2.2×10^6, s.d. 9.9×10^5 ; Type 2 numbers –mean 8.2×10^5 , range 1.5×10^6, s.d. 6.9×10^5, Type 3 numbers –mean 1.5×10^5 , range 5.1×10^5, s.d. 2.4×10^5 and Type 4 numbers –mean 4.3×10^5 , range 8.5×10^5, s.d. 4.4×10^5. The following data has been calculated per gram of dry tree bark: Type 1 numbers –mean 2.0×10^6, range 3.7×10^5, s.d. 2.6×10^5, Type 2 numbers –mean 2.2×10^6, range 1.5×10^6, s.d. 1.0×10^6, Type 3 numbers –mean 2.7×10^5, range 9.2×10^4, s.d. 6.5×10^4 and Type 4 numbers –mean 1.3×10^6, range 1.0×10^6, s.d. 7.1×10^5. Further data will be collected and analyzed for rock scrapings and later presented.

Manny Soto
Psychology

Faculty Sponsor: Geoffrey O'Shea

The Effects of Advanced Information on Reaction Time

In speeded choice reaction tasks, one of the well-known effects is the repetition effect or the observation that reaction time (RT) to a stimulus that is identical to the previous stimulus is faster than RT to a stimulus that is different than the previous stimulus. In general, repetition effects are limited to a specific time period in the stimulus-response sequence. Specifically, when the response-to-stimulus interval (RSI) or the time elapsing between the response to one stimulus and the appearance of the next stimulus, is less than 500 ms, a repetition effect is observed. However, for RSIs greater than 500 ms, an alternation effect is observed in which responses are faster to a stimulus that is different than the previous stimulus. There are two theoretical accounts of the repetition effect: 1) the repetition effect results from an automatic process in which less time is needed to select the response since it is the same response that was selected on the previous trial or 2) the repetition effect reflects a conscious strategy on the part of the subject in which there is greater preparation to respond to the same stimulus as the previous trial rather than a different stimulus. The present experiment examined the effects of providing advanced information to subjects as to the nature of the forthcoming stimulus in an attempt to determine whether the repetition effect results from automatic or conscious processing of stimuli. Using two different RSIs, 250 ms and 750 ms, it was found that the repetition effect was observed under the former RSI, but there was no alternation effect observed under the 750 ms RSI. These results suggest that utilization of advanced information to speed decisions occurs only at the longer, but not at the shorter RSIs. Furthermore, the present results imply that conscious decision-making strategies are useful at the longer RSIs, but not at the shorter RSIs where decision making is influenced by automatic processes.

Mark Tracy
Earth Sciences

Faculty Sponsor: P. Jay Fleisher

Englacial and Subglacial Conduit Flow, Past and Present, Bering Glacier, Alaska

Field experiments and mapping procedures initiated in 1998 on the eastern sector of Bering piedmont glacier, Alaska, are part of a multi-phase, long-term investigation of ablation and retreat. The primary objective was to measure typical summer rates of downwasting and retreat, and investigate effective controlling factors. Diurnal surface downwasting measurements at three ablation sites located approximately 1 km upglacier from the ice front varied from 5.7 to 8.5 cm/day for debris-free ice in June, 2005. Meter-long segments of PVC pipe were placed in hand-augered holes then monitored by repeated measurements of the amount of pipe exposed due to ice surface lowering. Rates of annual downwasting were measured from ice surface profiles that extend 1 km upglacier from an ice front datum. These show bi-annual fluctuation between 10 and 16 m/year for debris-free ice since 1998. The effects of broadly disbursed debris resulted in accelerated ablation that reached limits of 12 and 21 m/year. The cover of a well defined debris band caused retarded melting of 2 to 4 m/year. The same profiles show that retreat on land and in shallow ponds averaged 50-75 m/year. A calibrated cable installed in 2005 to a depth of 9.3 m at the piedmont apex 400 feet above msl will be checked in 2006 to assess the effects of cooler conditions at a higher elevation. The influence of other factors (i.e. foliation, crystal

size, infiltration capacity, and other weather conditions) on rates of downwasting is currently under investigation. Discharge through abandoned englacial tunnels was estimated by applying a technique used in limestone caves. Wave length and depth of shallow asymmetric cup-like indentations (scallops) on tunnel walls are used to estimate velocity of englacial water flow, which when multiplied by tunnel dimensions yields an estimated discharge at the time of tunnel formation.

Alex Vito
Shannon Mulz
Kristin Healy
Joseph Macura
Stacy Meyer
Gary Wannamaker
Psychology

Faculty Sponsor: Lawrence Guzy

A Lateral Misperception Effect (LME) Along a Simulated Roadway: An Exploratory Study with a Pedestrian at the Hunt Union

Introduction: Usually an obstacle´s position is accurately identified when it can be viewed relative to the white line painted on the side of the road. When the road´s profile changes so that contact with the surface cannot be viewed, an obstacle on the soft shoulder may be laterally misperceived as being in the road and accidentally struck by an approaching vehicle. The LME has implications for all ground transportation safety, including aircraft waiting to cross a runway when all are correctly positioned off to the side. **Method:** Twelve men and women, mean age 20.3 years sat 1, 2, and 3 m to the left of a line 46 m L x 5 cm W that progressed to the crest of a hill. The pedestrian´s lower legs could not be seen as she was standing beyond the crest. The pedestrian stood at 3 locations relative to the line (on the line, and 1 m to the left and right of it). A perpendicular line, 5 cm W x 5 m L, was placed 3 m in front of the participant and was bisected by the long line. The line contained random letters placed 16 cm apart and the participant marked a chart using the letters to identify the pedestrian´s position. **Results:** The farther the participant sat to the left the stronger the illusory effect of identifying the pedestrian 15 cm or 45 cm in the road when the pedestrian was either 1 m to the right or standing on the long line, $F(4,44)=7.28$, $p<.001$. **Discussion:** The LME was supported and the findings are consistent with a misapplication of the monocular depth cue of linear perspective with respect to the continuation of the unseen line. The LME may be responsible for a number of (near) accidents often misattributed to other causes. **Learning Objectives:** 1. An illusion dealing with lateral misperception where objects are viewed as in the road when they are safely off the roadway. 2. Aspects of (near) accident and their prevention along along a long linear path. 3. This new illusion may explain why accidents occur when objects are on the side of road.

Shanna Wynn
David Abrams
Communication Arts

Faculty Sponsor: Christine Quail

Video Games and Society

This session will illustrate the multiple questions, perspectives, and methodologies that can be used to study one social phenomenon—in this case, the video game. During its thirty year history, video games have suffered the same fate as their predecessors, such as television and even early films, as being considered an empty, hollow form of entertainment. Yet over the last decade, video games as a medium have slowly begun to arouse interest in academic circles. Many of those who grew up playing video games are now coming of age and entering the workforce, and still possess an interest in games, not only as a leisure activity, but also as an area of study. In my research, I (Abrams) am answering the following questions:

- Is the divide between older and younger generations view of gaming caused by misunderstanding/unfamiliarity with this form of media?
- Can a video game player get deeper themes and motifs from a game that another cannot?

I use a comprehensive survey, as well as research done by others, as the methods to answer these questions. Research from such sources as The Video Game Theory Reader and Lori Norton-Meier's "Joining the video-game literacy club: A reluctant mother tries to join the 'flow,'" in combination with the surveys allows me to answer these questions. With this research, I hope to

better understand whether video games are the next step in the evolution of entertainment, or rather a purely visceral, sensory experience. In addition to asking questions about the generation gap between technologies and consumers, it is also important to address other cultural issues, as seen in Wynn's research questions:

- Has the progression of the female video game character from damsel in distress to heroine been empowering?
- Do female characters need to be sexualized in order to be credible?

Using the methods of a survey, textual analysis, and a literature review, I (Wynn) have found data which shows how gender is constructed in the video game medium. The role of the female has expanded over time. Female characters are no longer committed to the "damsel in distress" position. However, even though female characters are now taking on the role of heroines, it seems they must, to some degree, be a sexual icon. Although it is empowering to see a beautiful woman be able to kick butt," is she too beautiful? I am a female who actively participates in video games; therefore this research is compelling to me. I would like to know how it affects other females, and whether these female characters have positive or negative effects as role models to younger players. By placing these two research projects side-by-side, it is possible to present a holistic and complex analysis of video games in society and culture.

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The Lateral Misperception Effect (LME) Where Obstacles are Misplaced as a Function of Lateral Placement and Slope of a Long Line: A Laboratory Study

Introduction: The lateral misperception effect (LME) may be a factor in many roadside accidents where obstacles are struck from behind. The problem occurs when a line identifying the side of the road cannot be viewed relative to an object resting on the surface and that object is misperceived as being in the road. We conducted a laboratory study to determine whether a) lateral distance and b) slope of a long line are contributing factors. **Method:** Nine subjects were seated and adjusted to a uniform height. An illuminated electroluminescent line (1.9 cm W x 2.8 m L) extended along the right sagittal plane. The line was placed parallel with the subject´s line of sight when looking straight ahead and at lateral distances of 38, 76, & 152 cm. For each lateral position, the long line was parallel with the floor and upward sloping angles of 8 and 16 degrees. A track, 6 m L was placed 152 cm beyond, perpendicular, and bisected the lateral line. The track contained a vertical electroluminescent target, 1.9 cm W x 20.32 cm H. The subject´s task was to align the target so that it appeared to be a continuation of the line. **Results:** The target was misplaced to the right for all three lateral locations of the line, $F(2,16)=566.9$, $p=0.000$. Misperceptions were M =16 (near), 31 (middle), & 59 (furthest) cm lateral positions. A significant effect was found for target misperception as a result of slope, $F(2,16)=8.49$, $p=0.003$. The 16 deg slope produced an illusory effect of M=35.2 cm, followed by the 8 deg slope (M=34.5 cm), and level (M=33.4 cm). **Discussion:** These findings support previous research conducted in the environment that objects safely off to the side appear in the road. The LME would have implications for all ground transportation accidents. **Learning Objectives:** 1. A new illusion, the Lateral Misperception Effect, will be discussed as to its importance in transportation safety. 2. To apply a perceptual illusion that may result in incorrect action due to laterally misperceiving an object's position along a long linear extent.