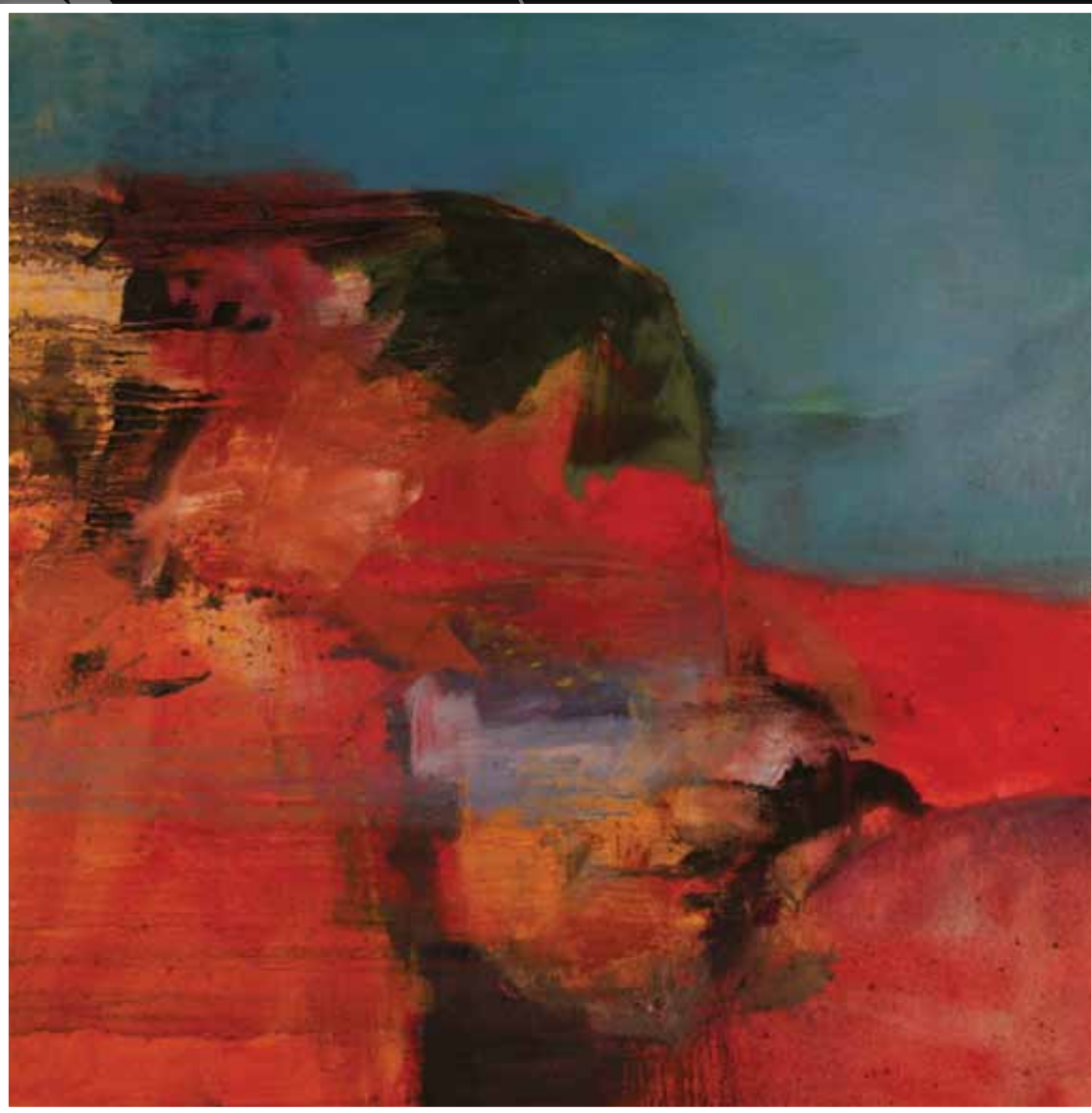


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Sonya Lau "Untitled" oil on canvas, 30"x30"

**Ninth Annual  
Student  
Research Symposium**

**April 8, 2009**

**Coe College**





To the Coe College Community:

Coe College's 9th annual Student Symposium celebrates the outstanding achievements of our undergraduate scholars. The work showcased in this program is the product of honors and independent study projects and collaborative student and faculty research. In each case the students included here have embraced the mission of the liberal arts and have accepted the challenge of testing and demonstrating their personal and intellectual abilities.

One of the hallmarks of a liberal arts education is engaging in the learning process: asking good questions, seeking answers, and presenting convincing conclusions. The students who are sharing their work today exemplify this learning process. Their work represents the highest level of achievement by Coe students and is deserving of recognition by the entire Coe community.

At this year's plenary session Desirae Leipply '04, Program in Molecular Biophysics, Johns Hopkins University, and at the lunch session a panel consisting of recent graduates Darbie Little '05, Laura Farmer '02, and Tracey Freiberg '07 will share their post-graduate experiences.

The students were guided by faculty mentors, who, thanks to their dedication and commitment to the students, helped make this event possible. We would also like to extend a thank you to Chris Upah, Jenni Archibald, and Christina Kroemer for their help in organizing the Student Symposium.

Marie Baehr  
Dean of the Faculty

Marty St. Clair  
Associate Dean of the Faculty

## 2009 STUDENT SYMPOSIUM SCHEDULE

APRIL 8, 2009

### POSTER SESSION

9:00–10:30 AM  
Perrine Gallery

### PLENARY TALK

10:45–11:45 PM  
Kesler Lecture Hall

"The ABCs of Getting Your PhD!"  
Desirae Leipply '04

During Desirae Leipply's career at Coe, she managed to complete a physics major, carry out research in Coe's physics department and (through an international REU program) at Schott Glas Company in Mainz, Germany, and win awards as the national Phi Kappa Phi Distinguished Scholar and the Society of Physics students Outstanding Leadership Scholarship recipient. While at Johns Hopkins University, she has carried out fundamental research into the nature of RNA-ion interactions while also earning a black belt in Taekwondo! She will discuss how she decided to pursue her Ph.D., the experience of earning a doctoral degree in an interdisciplinary field, and the opportunities that have resulted.

### GRADUATE AND PROFESSIONAL SCHOOL PANEL

12:00 noon – 1:00 PM  
Lynch Room

- Looking Forward to Graduate and Professional School
- Darbie Little '05 – chemistry/biochemistry major at Coe; currently on leave from M.D. program at the University of Iowa to complete a Masters in Public Health and Masters in Health Administration
- Laura Farmer '02 – religion and creative writing major at Coe; M.A. in English from Syracuse University
- Tracey Freiberg '07 – economics major at Coe; M.S. in economics from Duke University

### ORAL PRESENTATION SESSIONS

1:30 – 2:30 PM

#### Session 1: Stuart 405

Dr. Rachael Neal, Facilitator

- "Salimos Adelante": Women Striving for Autonomy in El Roblar, Nicaragua  
Johanna Schnell
- Social Interactions within Physical Activity: Exploring the Effect of Context Dependent Social Interactions on Self-Esteem Elevation  
Willetta Waisath
- Practical Strategies for Promoting Diversity on College Campuses  
Brandon Burton  
Nancy Cruz  
Cassie Morgan  
Megan Olson  
Byanka Romero

#### Session 2: Daehler-Kitchin Auditorium

Dr. Dennis Barnett, Facilitator

- At First Glance: Poems  
Jason Bradford
- "Venice Burning"  
Destiny Riley
- "Where the Body Is"  
Ezra Stewart-Silver

#### Session 3: Kesler Lecture Hall

Ms. Christy Wolfe, Facilitator

- Phi Beta Kappa Public Relations Service Learning Project  
Melissa Entzminger  
Darla Frank  
Kyle Heineman  
Caitlin Johnson  
Nick Ludwig  
Meridith Toay

- *Basket Pegs: An Alternative Exchange Rate Regime for Emerging Nations*  
Zach Huitink
- *Integrating Service-Learning and Professional Writing: Outcomes and Experiences*  
Shogun Pradhan  
Ankit S.J.B. Rana

2:40 – 4:00 PM

**Session 1: Stuart 405**

Dr. Lynda Barrow, Facilitator

- *Privatized War and the State: Force, Legitimacy and Private Military Firms in Iraq*  
Sam Haraway
- *The Irish Republican Army: A Case Study in Terrorism*  
Mitchell Lincoln
- *Is the Israeli-Palestine Conflict Truly Religiously Motivated?*  
Holly Broadwater  
Kevin Dyrland  
Nick Keyes  
Anastasia Schifler
- *European Colonization's Impact on Economic Development*  
Nicole Thiher

**Session 2: Kesler Lecture Hall**

Dr. Michael Leonardo, Facilitator

- *Fact or Fiction: Second DIP Passive Hyperextension Indicates Global Joint Flexibility in Humans*  
Sarah Manatt  
Brent Yotty
- *Characterization of the Microbial Flora Associated with the Marine Tube Worm *Phragmatopoma Lapidosa**  
Patricia Davis
- *Automated Exploration and Searching*  
Andre Mitchell
- *How to Go Green: Analysis and Recommendations for Greenhouse Gases Emissions Reduction*  
Eric Hayek

**Session 3: Daehler-Kitehin Auditorium**

Dr. Derek Buckaloo, Facilitator

- *Artificial Intelligence: Contemplating the Chinese Room*  
Matt Beltrami
- *Living in Color: Exploration of Sculptural Form*  
Gary Webb
- *No One Could Understand Us from So Far Away: Issues of Duality in Orphan Pamuk's "Snow"*  
Jenna Shaw

**Recognition of First-Year Portfolio Award winners:**

Britt Anderson  
Alex Barbeau  
Taryn Bossert  
Anne Kozisek  
Shannon Schreur  
Jennifer Zeman

Cover art provided by Sonya Lau

## ABSTRACTS – POSTER PRESENTATIONS

**Sarah K. Anciaux, Class of 2011**

**Rebecca Pine, Class of 2010**

*Faculty Sponsor: Dr. Maria Dean*

**The Purification and Characterization of Biocement Proteins from *Pectinaria gouldii* and *Phragmatopoma lapidosa***

*Pectinaria gouldii* and *Phragmatopoma lapidosa* are two marine annelids studied in an ongoing project by the biochemistry group at Coe College. *P. gouldii* is a benthic worm with ice cream cone-shaped tubes while *P. lapidosa* is a gregarious worm living in large reef structures. Both worms produce a proteinaceous biocement to which they attach sand grains to form their housing tubes. The purpose of the ongoing project is to determine the protein composition of this cement using various methods such as protein extraction, gel electrophoresis, amino acid derivitization studied with high performance liquid chromatography (HPLC), surface enhanced Raman spectroscopy (SERS), scanning electron microscopy and energy dispersive spectroscopy (SEM/EDS). We report on the comparison of two different protein concentration procedures and additional methods to investigate phosphorylated proteins in the biocement.

**Nuru Baith, Class of 2011**

**Stephanie Fredrickson, Class of 2011**

**Joe Giachino, Class of 2010**

**Prateek Haralalka, Class of 2011**

**Shaun Lehmann, Class of 2010**

**Austin Mouw, Class of 2011**

*Faculty Sponsor: Ms. Karen Sindelar*

**Public Speaking Service-Learning: Truman Speak Up! Project**

This is a project of Communicating Common Ground (CCG), a national service learning initiative in multi-cultural education of the National Communication Association. Coe College public speaking students, under the direction of their instructor, Karen Sindelar, created two days of hands-on workshops for about sixty Truman Elementary fourth and fifth grade students as a service-learning project. Coe students went to Truman Elementary School on three days to 1) give workshops on speech writing, 2) give workshops on speech delivery, 3) give role model speeches for fifth graders, and 4) assist fifth graders in writing speeches on Native American culture. Then, the fifth graders performed those speeches for the college students while the college students made a celebration meal of Indian fry bread and Indian tacos. The Coe students researched and created these fifteen-minute workshops to explain aspects of oral communication as part of their public speaking curriculum to better understand research, create presentations for a new audience, and improve community impact of their voices. Funding for this project came from grants from the Southern Poverty Law Center and the Teaching Tolerance program, Iowa Campus Compact, and State Farm Insurance.

**Karen Bauman, Class of 2010**

**Dipak Mainali, Class of 2009**

**Nina Schiroo, Class of 2009**

*Faculty Sponsor: Dr. Maria Dean*

**The Cloning, Sequencing, and Characterization of cDNA from *Pectinaria gouldii***

*Pectinaria gouldii* is a marine annelid that produces a protein-based cement (biocement) to construct protective structures. The cement has numerous possible applications, e.g., dentistry, surgery, military, etc. In addition to finding, characterizing, and cloning cement-producing genes, this project is designed to develop an overall understanding of all the protein-coding DNA sequences.

In order to better understand the organism and its ability to make this cement-like protein, we extracted total RNA from living worms, purified the mRNA, converted it to cDNA, and cloned the cDNA into a plasmid vector. The recombinant plasmids were then used to transform *E. coli* to complete the cDNA library. The amplified cDNA was purified and subjected to automated DNA sequencing. We were successful in finding several cDNA sequences analyzed via bioinformatics software. Four of them have already been published to GenBank.

**Sarah Beck, Class of 2009**

**Nazli Tarhan, Class of 2010**

*Faculty Sponsor: Dr. Nukhet Yarbrough*

**Is Need for Closure Related to Creative Thinking, Perceptual Ambiguity Tolerance, and Voting Behavior?**

We investigated the relationship of Kruglanski & Webster's Need for Closure Scale to creative thinking, perceptual ambiguity tolerance, and voting behavior. Contrary to expectations there were no correlations between the scores on the Need for Closure Scale and the instruments measuring creative thinking and ambiguity tolerance. Results discuss voting behavior for people with high, moderate and low need for closure.

**Steven Beckwith, Class of 2010**  
**Sarah Belaire, Class of 2009**  
**Brett Biermann, Class of 2009**  
**Audrey Decker, Class of 2011**  
**Marie Hunt, Class of 2009**  
**Crystal Robinson, Class of 2011**

*Faculty Sponsor: Dr. Michael Baker*

#### **Prenatal Methamphetamine Exposure During E7-E9 Impaired Detour Learning Performance in 7-day-old Male Domestic Fowl Chicks**

Several previous studies from this laboratory investigated effects of prenatal methamphetamine exposure (E10-E12) on spatial learning in domestic chicks using the detour learning task (DLT). Although deficits were observed in several studies, effects were not robust. Critical periods play an important role in embryological development and the critical period may be different depending on the system of interest. The E10-E12 period was used because it is a time of rapid brain growth in the chick embryo and effects on locomotor, defensive, and immune processes were observed for several psychoactive substances, including a similar psychostimulant, cocaine. In the current study, methamphetamine exposure occurred during an earlier period. Fertile eggs were acquired from a commercial hatchery and incubated for 21 days at 38°C and 56% relative humidity. On days E7-E9 of the incubation, methamphetamine (0.0, 4.0, 8.0, 12.0, or 16.0 mg/kg of egg weight; in a saline solution) was injected into the air space of the egg. Each chick received four DLT trials on PHD 4-7 and detour latency was recorded. The DLT is a maze in which the chick can see a social reinforce (i.e., two cohort chicks), but cannot move directly along its line of sight to reinstate social contact. The chick must learn to initially move away from the goal in order to access it. Analysis of detour latency data indicated a significant effect of MA Dose,  $F(4, 55) = 2.847$ ,  $p = .032$ , and Trials,  $F(3, 165) = 32.745$ ,  $p = .001$ . Detour latencies for all five MA Dose groups decreased across the four trials. However, detour latencies for the 12.0 ( $p = .009$ ) and 16.0 ( $p = .014$ ) mg/kg groups were significantly longer than controls. These data indicate that prenatal MA exposure during E7-E9 of embryological development significantly impaired detour learning performance in male chicks less than one week old.

#### **Jack Berkowitz, Class of 2011**

*Faculty Sponsor: Dr. Steven Feller*

#### **Elucidation of Quadrupole Parameters by Simulation of $^{10}\text{B}$ NMR Powder Patterns**

We developed a method of analyzing  $^{10}\text{B}$  NMR spectra, and then using exhaustive simulation procedures, fitted quadrupole parameters to them. Distributions of parameters are also accounted for. Experimental data for vitreous boron oxide, vitreous and crystalline cesium triborate, vitreous cesium diborate, crystalline potassium diborate, and cesium enneaborate have been fitted to yield their quadrupole parameters. There may be multiple sites within the spectra or just one. These may result from differences in short range order or intermediate range structure. The asymmetry parameter is particularly sensitive to differences in the environments of three-coordinated borons placed in differing intermediate range order positions.

#### **Saurav Bista, Class of 2010**

#### **Anthony O'Donovan-Zavada, Class of 2011**

*Faculty Sponsors: Dr. Steven Feller, Dr. Mario Affatigato*

#### **Packing in Alkali and Alkaline-Earth Borosilicate Glass Systems**

Packing fraction (pf) is defined as the ratio of ionic volume to molar volume and is a useful parameter for analyzing structural changes with composition. Alkali borosilicate glasses of the form  $\text{RM}_2\text{O}\cdot\text{B}_2\text{O}_3\cdot\text{KSiO}_2$  were studied using fixed K while varying R. This was done for several suitable K values for each alkali used. Packing fractions were determined using density data and Shannon radii and compared with previous studies of binary alkali glasses. Further, two alkaline-earth borosilicate glass families of the form  $\text{RMO}\cdot\text{B}_2\text{O}_3\cdot\text{KSiO}_2$  were studied and compared to the relevant binary systems. Alkali ions having volumes larger than oxygen (K, Rb and Cs) dominate the packing at all K values; we define this as ionic packing. For alkalis smaller than oxygen (Li and Na) the packing is controlled by the covalent oxygen network (borate and silicate units); this is defined as covalent packing. The alkaline-earth borosilicates ( $\text{RCaO}\cdot\text{B}_2\text{O}_3\cdot\text{KSiO}_2$  and  $\text{RBaO}\cdot\text{B}_2\text{O}_3\cdot\text{KSiO}_2$ ) have packing that is in between the ionic and covalent packing trends of the alkali borosilicate systems.

#### **Karin Carter, Class of 2011**

*Faculty Sponsor: Dr. Joyce Janca-Aji*

#### **The Influence of French Colonization on African Art**

French colonization in Africa is a difficult concept for most Americans to accurately appreciate because they have not witnessed the oppression and cultural identity struggles that have occurred in the northern and northwestern regions of Africa. There is not a universal experience that can be used to explain these specific struggles, but it is possible to communicate the emotion and a sense of feeling from the art created by the oppressed people. The evolution of art subjects, techniques, and media within the confines of a specific culture can provide insight into conflict

and tension on a universal level. I observed artwork produced in the northern and northwestern regions of Africa and discovered a shift in the style, techniques, and media from the pre-colonial period, the period prior to the 17th-century, and the post-colonial period after French colonization of Africa, in the 1960s. I have composed a video slide show that incorporates social commentary regarding colonization from “The Colonizer and the Colonized” the work of a Tunisian writer, Albert Memmi, and music that suggests the musical shift in pre- and post-colonial periods, as well as various examples of original art that progresses through the two time periods.

#### **Tanja Duehrkop, Class of 2010**

*Faculty Sponsor: Dr. Steven Singleton*

#### **The Structure of Lead Borate and Lead Silicate Glasses using $\text{Eu}^{3+}$ fluorescence**

The local electronic structure of lead borate and lead silicate glasses was studied using a fluorescent  $\text{Eu}^{3+}$  probe. In the lead borates, the  $\text{Eu}^{3+}$  ( $^3\text{D}_0 \rightarrow ^7\text{F}_0$ ) transition shows a linear red shift with increasing PbO content. The same shift was observed in the silicates from 55%–80% PbO, however only a small shift occurred from 25%–55%. This can be explained by the structural change occurring in PbO: In silicate glasses, lead oxide usually behaves as a glass modifier at low concentration and is believed to change into a glass former at higher concentrations. A red shift is also observed in bismuth borate glasses.

#### **Molly Ehm, Class of 2009**

*Faculty Sponsor: Dr. Michael Baker*

#### **Effects of Emotion-Provoking Imagery on Likelihood to Contribute to Environmental Conservation Causes**

Research in marketing and advertising has found that positive and/or negative images in print advertising provoke emotional responses in their audience (Chowdhury, 2008). In order to promote environmental conservation efforts, it may be useful to know what emotions increase a person's likelihood to donate and/or volunteer for environmental conservation causes. Arousing guilt through negative images when marketing may not be the most effective way to promote conservation because it has been found that guilt arousal has not been effective in changing global attitudes or behavior (Bozinoff, 1983). However, other research has shown that a negative stimulus produced stronger associations in the brain than an equally arousing positive stimulus (Ito, 1998). Because of the inconsistent findings and the relative lack of research done in marketing conservation efforts, the effect of negative and positive visual stimuli need to be explored more thoroughly. This research explored the emotional effects of positive, negative, and a combination of positive and negative imagery using visual images of the environment. Positive images consisted of pictures that highlight the aesthetic beauty of undisturbed environments. Negative images consisted of pictures that highlight the destruction of the environment. Participants were asked to view images and answer a survey measuring their emotional responses and likelihood to donate and/or volunteer for environmental conservation. It was expected that emotional responses provoked by the visual stimuli would affect the likelihood of donations and/or volunteerism. Data collection was still in progress at press time.

#### **Meghan Felton, Class of 2009**

*Faculty Sponsor: Dr. Harlo Hadow*

#### **Breeding Songbirds of a Regenerating Aspen Clear-cut in Northern Minnesota**

Clear-cutting is a widely-used method for harvesting timber, which is economical and time-efficient, but may have negative ecological impacts. These impacts have been studied in an aspen clear-cut in the Superior National Forest in northern Minnesota. Territory-mapping censuses of breeding songbirds and vegetation surveys were conducted in 1980, 1981, 1991, and 2008, after the area was clear-cut in 1979. This study answers questions about how avian succession progresses as the forest recovers from a logging disturbance by comparing bird species diversity and foliage height diversity as the site recovers.

#### **Maranda Franke, Class of 2010**

#### **Tyler Mullenbach, Class of 2010**

*Faculty Sponsor: Dr. Steven Feller*

#### **Structural Characterization of Alkaline-Earth Borosilicate Glasses through Density Modeling**

The densities of nearly 120 alkaline-earth borosilicate glasses were determined using pycnometry. These results were used to make inferences about the underlying atomic level structure of alkaline-earth borosilicate glasses. Dell, Bray, and Xiao produced structural models where the glass is composed of micro-phase separated borate and silicate networks and depicted the manner in which alkali oxide modifier is shared amongst the borate and silicate network. Density models were created that utilized these hypotheses and proportional sharing. A sharing of alkaline-earth oxide amongst the borate and silicate networks was observed along with evidence suggesting the Dell hypotheses overestimate the amount of alkali oxide modifier being used by the borate network.

**Ben Franta, Class of 2009**  
**Landon Tweeton, Class of 2011**

*Faculty Sponsor: Dr. Mario Affatigato*

**Laser-Induced Crystallization of Alkali Borate Glasses**

We report on the effects of 785 nm light irradiation at 84 and 160 mW on copper-doped alkali borate glasses. Glasses of the chemical formula  $y(\text{CuO}) \cdot (1-y)[x(\text{Z}_2\text{O}) \cdot (1-x)(\text{B}_2\text{O}_3)]$  were made, with  $y = 0.05$ ,  $0.1 < x < 0.5$ , and Z representing either Li or Cs. Modification of the surface, including crystallization, was measured as a function of laser power and sample composition. Laser-drawn surface patterning and spheroidization were also performed. Scanning electron microscopy, atomic force microscopy, micro-Raman spectroscopy, and x-ray fluorescence spectroscopy were used to characterize the changes induced by the laser light.

**Linda Freiha, Class of 2009**  
**Sarah Gates, Class of 2009**

*Faculty Sponsor: Mr. Chad Libby*

**A Cross Sectional Examination of Body Fat Percentages in Intercollegiate Athletes In and Out of Season**

Statement of the Problem: We would like to examine the level of body fat composition in male and female athletes when they are in season compared to the off season. This experiment is done to determine the type of physiological changes that occur as changes in body composition affect performance and body kinematics.

Specific Aims and Hypothesis: We hypothesize that after taking body fat measurements men's and women's cross country will have the least amount of body fat when compared to soccer, volleyball, and football. In general, we think that football will have the most body fat. Due to the greater amount of endurance required for men's and women's soccer we think that they will have less body fat than volleyball players. About four weeks after the conclusion of the season we think that body fat percentages will increase in each sport. We predict that cross country and football will have the greatest increase in body fat providing that they discontinue seasonal activity all together.

Experimental Design and General Methods: During the last month of the competitive season of each sport, we will obtain body fat measurements from ten athletes from each of the six teams (men's and women's cross country, men's and women's soccer, volleyball, and football). Body fat composition will be measured using bioelectrical impedance and skin fold calipers. Caliper measurements will be taken at the triceps (midway between acromion and olecranon processes), subscapular area (at the inferior angle of the scapula), iliac crest (most lateral aspect immediately above the iliac crest), and abdomen (5 cm adjacent to the umbilicus) on both male and female subjects. The caliper will be applied 1 cm below, and at right angles to the pinch. All testing will be done on the right side of the body. Each site will be measured three times, and the average measurement will be used to compute body fat percentage. A refractometer will be used to measure the specific gravity of urine prior to bioelectrical impedance to ensure the proper level of hydration is attained.

Measurements will be taken at the same time of day during and post-season, and each subject will be measured by the same ATS both times. The subjects used will have to meet specific criteria such as: active the entire season, no significant injury during season, and they must not be training for another sport immediately post season. Prior to the testing, a survey will be sent out covering areas such as eating habits, medications or supplements used, activity level, and any time lost due to injuries or illness. Four weeks post season the same survey will be given out and measurements will again be taken.

**Elizabeth Grossman, Class of 2011**  
**Kayla James, Class of 2010**

*Faculty Sponsor: Dr. Daniel Lebn*

**Assimilation and Contrast Effects of Implicit Priming as a Function of Self-Consciousness Across the Continuum of Awareness**

Our study investigated the influence of self-consciousness and implicit primes on behavior. By first administering the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975), we were able to assess participants' individual levels of self-consciousness prior to the experiment. We were interested in the effect of individual levels of self-consciousness on the way participants processed and responded to implicit stimuli. By manipulating self-awareness with a web camera, we wanted to determine the effect of situationally-induced self-awareness. We not only investigated the effect of the manipulation, but also whether or not people's self-consciousness level played a role in their awareness of the implicit primes, and if this factor then determined how they responded in experimental tasks. Based on findings from past research, we predicted that an unconscious awareness of implicit primes would lead to assimilative behavior, whereas a conscious awareness of the primes would result in contrast behavior. Results show a three-way interaction between prime, self-consciousness, and self-awareness conditions. For participants high in self-consciousness in the self-aware (i.e., webcam) condition, assimilation was seen in response to cooperative primes, and contrast was seen in response to competitive primes.

**Amanda Havel, Class of 2009**

*Faculty Sponsors: Dr. Steven Feller, Dr. Mario Affatigato*

**Design and Operation of a New Roller Quencher for Rapidly Cooling Melts into Glasses**

We discuss the design and construction of a new roller quencher that is capable of cooling liquids up to  $1.8 \times 10^6$  K/s. The new roller quencher is based on refinements to our proven twin-roller designs. This new generation of machines will have a number of advantages over the existing ones, including digital control of the rollers' speed and gap adjustment, the ability to control the atmosphere over the resulting glass samples, ease of cleaning, and size. We also discuss the use of roller quenching at Coe College to form borate and other glasses.

**Kyle Heineman, Class of 2011**  
**Jin Xu, Class of 2011**

*Faculty Sponsor: Ms. Karen Sindelar*

**Public Speaking Service-Learning: The George Washington Carver Project**

This is a project of Communicating Common Ground (CCG), a national service learning initiative in multi-cultural education of the National Communication Association. Thirty-two Coe Public Speaking students, under the direction of their instructor, Karen Sindelar, created a day of hands-on workshops for about fifty Truman Elementary fifth grade students as a service-learning project as part of their public speaking curriculum to better understand research, create presentations for a new audience, and improve community impact of their voices. The children came to the African American Historical Museum and Cultural Center of Iowa on March 4, 2008 to learn about George Washington Carver's life as an educator, chemist, environmentalist, crop rotation specialist, artist, botanist, and inventor. These workshops covered topics relating to farming around the world, the food industry, the many uses of the peanut and soybean, making dyes and paints from agricultural products, recycling, water quality and Carver's time teaching agriculture at Iowa State and Tuskegee.

Funding for this project came from the Iowa Campus Compact and State Farm "Good Neighbors" grant, Iowa Farm Bureau, Delta Kappa Gamma Beta Nu and Theta Chapters of Iowa, Hy-Vee Food Stores and the Iowa Soybean Association.

**Emily Ingalls, Class of 2010**  
**Katie Mraz, Class of 2009**  
**Ben Roush, Class of 2009**

*Faculty Sponsor: Dr. Sara Farrell*

**The Effects of Organizational Citizenship Behaviors: How Motives and Reward Impact Perceptions of Organizational Justice**

Organizational Citizenship Behaviors (OCB) are helpful but not required behaviors, exhibited by employees that, in the aggregate, benefit the organization. Past research has divided motivation for OCB into two categories: altruism and impression management (IM). In our research we sought to find the effect of an employee's motivation for OCB on co-workers' perceptions of organizational fairness. Additionally, we investigated the impact of reward for OCB on such perceptions of fairness. We conducted an experiment in which participants were assigned to one of four conditions: altruism/reward, altruism/no reward, IM/reward, and IM/no reward. Participants read a vignette that described a co-worker participating in OCB for altruistic or IM reasons that were then rewarded or not rewarded. Participants then completed a questionnaire to report their level of perceived organizational fairness, helpfulness of the OCB to the organization (i.e., instrumentality), and how much they liked the coworker. We expect greater perceptions when an altruistic motive is present rather than an IM motive. Additionally, we expect that the presence of reward will lead to a greater perception of fairness when an altruistic motive is present, but a lower perception of fairness when the OCB is selfishly motivated. Finally, we expect employee liking and instrumentality to mediate the relationship between motives and fairness perceptions.

**Caitlin Johnson, Class of 2010**  
**Ivan Marvodiev, Class of 2010**  
**Tim Sandquist, Class of 2011**

*Faculty Sponsor: Ms. Karen Sindelar*

**Public Speaking Service-Learning: Butxon, Iowa—A Black Utopia**

This is a project of Communicating Common Ground (CCG), a national service learning initiative in multi-cultural education of the National Communication Association, National Campus Compact, the Southern Poverty Law Center and the Association of American Colleges and Universities. Thirty-seven Coe Public Speaking students, under the direction of their instructor, Karen Sindelar, created a day of hands-on workshops for about sixty Truman Elementary fifth grade students as a service-learning project as part of their public speaking curriculum to better understand research, creating presentations for a new audience, and community impact of their voices. The children came to the African American Historical Museum and Cultural Center of Iowa on March 3, 2009 to learn about the coal mining ghost town of Buxton, Iowa. The college students created workshops that covered topics about archeology, discrimination, a black man's utopia, coal mining history, techniques, tools, and songs, Buxton's YMCA, education system, and the Buxton Wonders African American baseball team. Twenty ESL students also helped with this project by providing origami and anime art activities related to Buxton for the children. Theta and Beta Nu chapters of the Delta Kappa Gamma Honor Society of Key Women Educators provided grant money and retired teachers as mentors to the college students and chaperones for the children. Iowa Campus Compact and State Farm Insurance also funded this event.

## Nicholas Keyes, Class of 2011

*Faculty Sponsor: Dr. Randy Christensen*

### Axolotl (*Ambystoma mexicanum*) Regeneration: Wnt-7a Sequence and Expression

The process of regeneration has long held a special place in the study of developmental biology. The repetition of the processes of development to rebuild specific parts of a full grown being can be done, to differing degrees, by almost all organisms. Of special interest are those that are beyond the capabilities of human regeneration, going on to rebuild perfect replicas of what was lost. Salamanders, in this case *Ambystoma mexicanum* (axolotl), offer us a look into this extraordinary ability. To better understand this unique ability, the gene *Wnt-7a* was chosen for observation for its known role in development, but unconfirmed role in regeneration, at least in Axolotl. Partial copies of its sequence were obtained from regenerate tissue, which, in the future, will be used to obtain a full sequence of the entire gene.

## Katie Mraz, Class of 2009

### Nicole Wood, Class of 2009

*Faculty Sponsor: Dr. Sara Farrell*

### Assessment of Outcomes of a Poverty Simulation Exercise Using Kirkpatrick's Training Assessment Model

The present study uses Kirkpatrick's model of training criteria to evaluate the effectiveness of a poverty simulation exercise. The Community Action Poverty Simulation (distributed by the Missouri Association for Community Action) allows participants to act a role of a person living below the poverty line for four weeks lasting fifteen minutes each. They experienced the daily struggles impoverished people face such as transportation, daycare, and bill paying. Prior to the simulation, participants learned about the state of poverty in Iowa, in Cedar Rapids, and in the neighborhood surrounding Coe College. At the end of the simulation, participants had the chance to discuss their experience during a debriefing session. Our assessment involves administering a survey to measure our dependent variables, corresponding to Kirkpatrick's first three criteria: level of satisfaction with the simulation, knowledge of poverty, and attitudes and behaviors related to poverty.

Compared to control participants (who do not participate in the simulation), we expected that experimental participants would show a greater knowledge of information about poverty, as well as a greater increase in positive attitudes, behaviors and behavioral intentions to provide aid to persons in poverty from pre-test to post-test. Results were mixed and provided limited support for the hypotheses.

## Kate Olson, Class of 2009

*Faculty Sponsor: Dr. Thomas Moye*

### Cedar Rapids Symphony Audience Survey

The purpose of the survey created is to examine the preferences of Cedar Rapids Symphony customers pertaining to advertising methods and preferred genre of performances. Questions are tailored to establish relevant demographic information and to determine if there is a correlation between the demographic information and customers preferred method of advertising, as well as their preferred genre of concerts to attend. This survey will be administered to actual Cedar Rapids Symphony concert attendees, and the results will be presented to the director of the Symphony to use for future promotional purposes and in planning future performances.

## David Schroeder, Class of 2009

*Faculty Sponsor: Dr. Terry Hostetler*

### Silmaril: Rendering Slowed Light

Silmaril is a rendering engine capable of simulating various forms of indirect light transport while allowing the photons to travel at a finite speed, causing various lighting effects to emerge which are imperceptible in the real world, and which may be helpful in the explanation of relativity and the speed of light. All readily available rendering engines make one assumption in common: that light travels at an infinite speed. While this is very nearly correct, I was interested to see what lighting effects would emerge were light slowed to a speed on the order of a meter per second. The output from my renderer is a series of images which can be assembled into an animation, showing the propagation of light.

## Sara Voss, Class of 2009

*Faculty Sponsor: Mr. Calvin Van Nieuwaal*

### Performance of Graph Isomorphism Algorithms

Graphs are a powerful tool in pattern matching. A significant number of graph isomorphism algorithms are presented in literature but few papers characterize their performance. Consequently, it is not known how the algorithms are affected by the type, size, and node numbering variations presented in real world applications. A benchmarking activity is presented for general graph isomorphism algorithms that aim to be practical solutions to the problem. Highly structured graphs ranging from a few nodes up to around 16,000 nodes will be considered. The affect of the node numbering is also explored.

## Suzanne Webster, Class of 2009

*Faculty Sponsor: Dr. Thomas Moye*

### Blocking in Human Causal Judgment

Compound conditioning occurs when two or more stimuli are presented and withdrawn together (e.g., tone + light). When substituted for a simple conditioned stimulus (CS), the compound stimulus is then considered a compound CS. Blocking is a phenomena of classical conditioning which occurs when one element of the compound CS (e.g., tone) is already fully conditioned and, later, that conditioned element is then paired with a neutral element (e.g., light). What has been discovered in the past is that, even though the two remain paired as a compound CS, the reaction to the neutral element (e.g., light) remains neutral because the reaction to the compound CS is based on the initial conditioned element (e.g., tone). For example, if you fully condition receiving a shock upon hearing a tone, the subject will associate the tone with the shock, therefore, just by hearing a tone the subject will have a reaction: shock or not. By adding the presence of a flash of light along with the tone, the tone/light combination will be noted, but the reaction will remain to the tone. Thus, if only the flash of light is presented the subject will show no reaction (e.g., fear) to the neutral stimulus. To test this phenomenon, students from a Research Methods course were recruited to participate in a computerized study. First, the participants were divided into two groups: one Blocking and the other Control. The test was given to each participant separately.

During the test, each was asked to imagine they were doctors whose patients were becoming ill from some unknown fruit. In the first phase, both group's participants were presented (via the computer program) with each fruit individually—until a total of six different fruits (grape, apple, cantaloupe, lime, cherry, banana) were shown—and they were asked to predict if each fruit was the reason for their patient's illness. After each prediction, the participant was told whether or not the fruit in question truly made their patient ill. The Block group was exposed to the apple as making their patient sick and for the Control group, the illness-causing fruit was grapes. In the second phase, both groups were exposed to a series of fruit combinations with the apple and the cantaloupe being paired together as making the patient ill. After each participant saw each combination they were asked to rate—on a scale of 1 to 10—the likelihood of each pair being the cause of the illness. The findings from our testing supported the hypothesis that blocking is responsible for human causal judgment: comparing the cantaloupe (neutral fruit) ratings from both the Control and the Blocking groups.

## Aerial Weston, Class of 2010

*Faculty Sponsor: Ms. Karen Sindelar*

### Public Speaking Service-Learning: The Harlem Renaissance Project

Coe College public speaking students, under the direction of their instructor, Karen Sindelar, created a day of hands-on workshops for about sixty Truman Elementary fourth and fifth grade students as a service-learning project. The children came to the African American Historical Museum and Cultural Center of Iowa on April 3, 2007 to learn about the Harlem Renaissance. The Coe students researched and created eight fifteen-minute workshops to explain various elements of this time, including poetry, jazz, scat singing, swing dancing, photography, and art, as part of their public speaking curriculum to better understand research, create presentations for a new audience, and improve the community impact of their voices. Funding for this project came from grants from the Southern Poverty Law Center and the Teaching Tolerance program.

## ABSTRACTS – ORAL PRESENTATIONS

### Matt Beltrami, Class of 2009

*Faculty Sponsor: Dr. John Lemos*

#### Artificial Intelligence: Contemplating the Chinese Room

John Searle's deceptively simple proposals regarding the potential for artificial intelligence machines have confounded philosophers for decades. Much of this confusion is caused by readers extrapolating arguments that Searle does not intend to make and ideas which he does not endorse. By clarifying the basic argument made in Searle's famous "Minds, Brains, and Programs" article, and by drawing an essential distinction between simulation and duplication, a more clear and compatible account of John Searle's article can be made. Once Searle's philosophy is made clear, it is apparent that his thought is wholly compatible with philosophers who are commonly seen as major challengers to his ideas, such as William Lycan. The purpose of this article is to develop a holistic, pragmatic approach to understanding the future potential for creating artificial intelligence machines, using John Searle's "Minds, Brains, and Programs" as a theoretical foundation.

### Jason Bradford, Class of 2010

*Faculty Sponsor: Dr. Ann Struthers*

#### At First Glance: Poems

I will first describe my experience with writing a creative thesis and why I felt the need to write a creative thesis, considering it is partly optional. I will then read selected poems from my creative thesis and discuss my inspiration for them. I can then field questions, if any are asked.

**Holly Broadwater, Class of 2009**

**Kevin Dyrland, Class of 2010**

**Nick Keyes, Class of 2011**

**Anastasia Schifler, Class of 2009**

*Faculty Sponsor: Dr. Lynda Barrow*

#### **Is the Israeli-Palestine Conflict Truly Religiously Motivated?**

Over the past several decades the violence in Israel and Palestine has continued with little disruption or hope of lasting peace. There have been several reasons offered for the continuing conflict in the Israel/Palestine region. The most prominent reason is that the conflict is religiously motivated and therefore will continue. A panel of four students will present different views on the conflict and attempt to justify whether or not the conflict is truly religiously motivated.

**Brandon Burton, Class of 2010**

**Nancy Cruz, Class of 2011**

**Cassie Morgan, Class of 2011**

**Megan Olson, Class of 2009**

**Byanka Romero, Class of 2010**

*Faculty Sponsors: Dr. Rachael Neal, Mr. Erik Albinson*

#### **Practical Strategies for Promoting Diversity on College Campuses**

While diversity is a value of higher education, it is apparent that campuses across the nation are plagued by the social ills of prejudice and hate. In order to get a better understanding of this issue, this team of Coe students has conducted a review of literature about diversity and social justice initiatives on college campuses. The research team utilized an interdisciplinary approach to studying diversity on college campuses by drawing from the fields of higher education, student affairs, and sociology. This oral presentation will highlight the team's findings, and it will outline strategies for incorporating effective diversity initiatives on Coe's campus.

**Patricia Davison, Class of 2009**

*Faculty Sponsor: Dr. Michael Leonardo*

#### **Characterization of the Microbial Flora Associated with the Marine Tube Worm *Phragmatopoma Lapidosa***

*Phragmatopoma lapidosa* is a reef building marine worm found in turbulent intertidal waters. This species builds reefs by gluing sand grains with a strong, proteinaceous cement it produces. Scanning electron microscopic studies of *Pectinaria gouldii*, a related worm species, revealed microorganisms growing on its surface. This observation led us to study the surface flora of *P. lapidosa*. Six morphologically distinct colony types were isolated from swabs of the body and reef of the worms, using Marine Broth agar. Each isolate was named after their colony morphology; Snotty, White, Opaque, Green, Red, and Orange. These isolates were characterized physiologically using Gram stains, carbon source utilization and anaerobic growth tests. The chromosomal DNA of each isolate was extracted. The universal fragment of the 16S ribosomal DNA gene was amplified via PCR, cloned into a plasmid and transformed into *E. coli*. The rDNA from each isolate was sequenced using a LICOR 4300.

Full sequence of the amplified fragments were obtained for White, Snotty, Green and Opaque; while almost complete, sequences were obtained for Red and Orange. A BLAST nucleotide search was performed for each isolate's sequence to see if there were matches with known rDNA sequences within the NCBI environmental samples database. A search using the Ribosomal Database Project was done for each isolate's sequence as well. The results of the BLAST search turned up only metagenomic sequence matches. All isolates matched with marine metagenome sequences. Red, White, Green and Opaque also matched with freshwater sediment metagenome sequences. Green and Orange had human gut metagenome sequence matches. Green also matched with a mouse gut metagenome. Snotty also matched with a coral metagenome. The results of the RDP analyses identified a phylogenetic relationships for White, Green and Opaque (*Enterobacteriaceae*), Orange (*Planococcaceae*) but nothing for Red and Snotty. From these analyses, it is very likely that the bacterial isolates from *P. lapidosa* are previously unknown, unnamed species. Additional phylogenetic analyses of these sequences are in progress to confirm this assessment.

**Melissa Entzminger, Class of 2009**

**Darla Frank, Class of 2010**

**Kyle Heineman, Class of 2011**

**Caitlin Johnson, Class of 2010**

**Nick Ludwig, Class of 2011**

**Meridith Toay, Class of 2011**

*Faculty Sponsor: Ms. Karen Sindelar*

#### **Phi Beta Kappa Public Relations Service Learning Project**

Public Relation professionals are liaisons between the client and the public (Newsom, 2007). In Professor Sindelar's Public Relations (PR) class we were assigned to be the PR professionals for our client, the Honorary Society of Phi Beta Kappa (PBK). The Coe College PBK chapter's goal was to raise awareness of this honorary society throughout the campus. Our group devised a variety of mediums to communicate the history, ideology, and benefits of PBK. We created a banner, brochure, three-fold display, video, and website. Overall, we established a multimedia campaign for our client. We were able to accomplish this through a \$200 grant from PBK.

**Sam Haraway, Class of 2009**

*Faculty Sponsor: Dr. William G. Flanagan*

#### **Privatized War and the State: Force, Legitimacy & Private Military Firms in Iraq**

While the contracting of military services—including armed security, the training of foreign militaries, and logistical support—to private military firms (PMFs) is not a new phenomenon, state reliance on them is. PMFs have played an unprecedented role in all aspects of the US invasion and occupation of Iraq, thus creating important challenges for the Weberian conceptualization of the state as holding a monopoly over the legitimate use of physical force. My thesis traces the origins of the private military industry, identifying how its use in Iraq is distinct from previous cases, and then explores the extent to which the contracting of PMFs in Iraq have created a market incentive for force, and the extent to which PMFs represent a foreign policy proxy. The paper concludes by discussing how this trend of increased reliance on PMFs may both shape future combat and further challenge the role of the state.

**Eric Hayek, Class of 2009**

*Faculty Sponsor: Mr. David Hayes*

#### **How to Go Green: Analysis and Recommendations for Greenhouse Gases Emissions Reduction**

Regulation of carbon dioxide and other greenhouse gas emissions is currently one of the most controversial issues in domestic and international politics. There have been various international, national, and regional agreements created to deal with this concern. However, questions remain whether these agreements have the necessary elements needed for successful emissions reduction.

My research explored the effectiveness and efficiency of various strategies, both in economic theory and in current practice, which might be utilized to successfully regulate and reduce greenhouse gas emissions. This included a comparative analysis of cap and trade systems, integrated carbon taxation schemes, the Kyoto Protocol, the European Union Emission Trading Scheme and proposed plans for the United States. My paper concludes that a mixture of strategies and policy approaches will be required to effectively deal with this important issue.

**Zach Huitink, Class of 2009**

*Faculty Sponsors: Dr. Mickey Wu, Mr. Roshan Khattry*

#### **Basket Pegs: An Alternative Exchange Rate Regime for Emerging Nations**

The purpose of this thesis is to determine whether select emerging countries currently following a fixed exchange rate regime would benefit from adopting a basket approach—valuing their money in terms of several as opposed to one reference currency. The construction of a currency basket includes two choices: first, the choice of currencies to include in the basket, and second, weights to assign to each currency chosen. For this analysis currencies are selected from the Special Drawing Rights (SDR), a basket constructed by the International Monetary Fund for use as an official reserve asset and unit of account, and according to developing country trade patterns. Various approaches to basket weighting are measured against weighting via the Markowitz Portfolio method, a well-known model for building stock portfolios, to determine the optimal construction strategy.

**Mitchell Lincoln, Class of 2009**

*Faculty Sponsor: Dr. Bruce Nesmith*

#### **The Irish Republican Army: A Case Study in Terrorism**

The paper examines the political impact and effectiveness of the Irish Republican Army during “The Troubles.” Various sources, ranging from historians to political scientists, were used to investigate the background of the conflict, its history and its effect on the government and populations of Northern Ireland and the British Government. It is concluded that it was the masterful use of terrorism that managed to change the Northern Ireland movement from reform to revolution. The IRA's tactics were successful in eliciting the desired response from authorities with limited backlash from the people they were claiming to represent. The British tried many responses to defeat the IRA militarily but military gains were often overshadowed by political losses in support from the people of Northern Ireland. It was these grievances, paired with the successful tactics in portraying Great Britain as an oppressor that led to the movement's success in achieving the self-governance and relative autonomy that it enjoys today.

**Sarah Manatt, Class of 2009**

**Brent Yotty, Class of 2009**

*Faculty Sponsor: Mr. Chad Libby*

#### **Fact or Fiction: Second DIP Passive Hyperextension Indicates Global Joint Flexibility in Humans**

A medical myth exists that the second DIP joint can be hyperextended passively to indicate the flexibility of an individual. We hypothesize that this is incorrect and that flexibility is influenced more by the activity level and by a habit of regular stretching.

Twenty-five Coe students were chosen at random over the course of four weeks. For each subject, flexibility measurements were taken at the shoulder, hip, ankle, and second DIP joints on the non-dominant side. Each measurement taken was repeated three times and the median of the scores was recorded. The subjects also answered several questions about activity level, stretching habits, previous injuries, and demographic information. The data collected will be analyzed statistically to determine any correlations between measurements.

The statistical portion of the research is still pending.

## Andre Mitchell, Class of 2009

*Faculty Sponsors: Dr. Terry Hostetler, Mr. Calvin Van Niewaal*

### Automated Exploration and Searching

Exploring and searching for targets within an environment is a key component when developing sophisticated artificial intelligence. If we can understand in detail how our brain performs certain operations, such as observing the environment, analyzing and collecting clues about where things can be found within the environment and searching for particular targets, we will be able to create automated entities which explore environments similarly to the way that we humans do. This allows us to create powerful simulators which can be used to test the efficiency of the design of a large construction before it is built, like a shopping mall. By modifying and customizing the A-start shortest path algorithm I have developed an algorithm that takes into consideration the exploration factor. Entities driven by physiological need explore an unknown environment in search for targets to satisfy those needs.

## Megan Mozley, Class of 2009

*Faculty Sponsor: Dr. Daniel Lebn*

### To Attend or Avoid?: The Effect of Self-Esteem on the Processing of Self-Relevant Information as a Function of Self-Consciousness

The goal of the present study is to investigate the effect of self-esteem on processing of self-relevant information, and if that effect is modified by self-consciousness. Participants complete the Self-Consciousness Inventory prior to the study to determine their trait levels of self-consciousness. Then, in the lab, participants complete a task for which they randomly receive feedback to induce high-or low self-esteem. They next perform a Dot Probe task, in which two words will appear on a computer screen followed by a dot on one of the sides of the monitor. Participants indicate, as quickly as possible, which side of the screen the dot appears on. The word pairs in the task are combinations of negative traits, positive traits, or neutral words. We predict reaction times will vary according to the interactions of self-consciousness, self-esteem, and word pairs. For instance, relative to the other conditions, we expect low self-consciousness participants in the low self-esteem conditions will have the slowest reaction times when the dot appears on the side of the screen opposite a negative trait (which is paired with a neutral word). This effect is due to perceptual defense: the tendency for low self-esteem individuals to avoid negative self-relevant information.

## Shogun Pradhan, Class of 2011

### Ankit S.J.B Rana, Class of 2011

*Faculty Sponsor: Dr. Jane Nesmith*

### Integrating Service-Learning and Professional Writing: Outcomes and Experiences

During fall semester 2009, our Professional Writing class put our knowledge into practice by doing a service-learning project with The Arc of East Central Iowa, a local non-profit organization. The ten students in our class completed a number of promotional writing projects for the Arc, including brochures, news releases, a fund-raising letter, and two news articles. In this presentation, we will briefly explain how our class went about this project, from brainstorming with an Arc staff member to doing research to drafting and revising our work. We will present two of the documents we created and discuss the choices we made when creating them. We will then discuss the way Arc used our materials, and how it benefited the organization. Finally, we will reflect on how a service-learning project enhanced our educational experience in Professional Writing.

## Destiny Riley, Class of 2009

*Faculty Sponsor: Mr. Charles Aukema*

### “Venice Burning”

A girl struggles to find her way through grief following her boyfriend’s recent suicide. She leaves the havoc of her mother’s home in Iowa for the friendships and trouble she left in Milwaukee. Wading through sorrow and drug addiction, she defines herself through consequences and triumphs.

## Johanna Schnell, Class of 2009

*Faculty Sponsor: Aynn Setright, School of International Training*

### “Salimos Adelante”: Women Striving for Autonomy in El Roblar, Nicaragua

Both the cooperative and the women’s movement are fairly new in Nicaragua: the Sandinistas began introducing cooperatives during its Agrarian Land reform, while the women’s movement didn’t begin until roughly 1955, the year they won suffrage. In the community El Roblar, the two movements are intertwined with the recent creation of the all-female agricultural cooperative El Privilegio.

My research focused on how the members of El Privilegio have achieved autonomy with the assistance of their cooperative. Specifically, I trace two main programs: access to credit and *capacitaciones*. Credit access allows the members to secure loans they would otherwise be denied in order to fund the start-up of a small business. *Capacitación* is more complex: a combination of workshops provided by the UCA San Ramón, participation in the cooperative, and participation in other non-governmental organizations working in El Roblar which strengthen their ability to effect change in their community and improve their own financial standing. Both credit and *capacitaciones* are opportunities for women not only for an economic foothold in a region bereft of much support, but also a re-examination of a country-woman’s role within her family and her community.

## Jenna Shaw, Class of 2009

*Faculty Sponsor: Dr. Ann Struthers*

### No One Could Understand Us from So Far Away: Issues of Duality in Orhan Pamuk’s “Snow”

My honor’s thesis in English is an examination of the concept of duality in contemporary Turkish writer Orhan Pamuk’s 2004 novel, “Snow”. Principle chapters consider the ways in which duality as a literary device is used to draw attention to central issues in modern Turkey: the treatment of women, as well as political and religious fundamentalism.

My interest in the region is prompted by my time studying in southern Turkey in the summer of 2007. I was drawn to contemporary Turkish literature as a way of contextualizing my experience in the country and gaining a richer understanding of the social and historical context of modern Turkish culture. “Snow” encompasses a range of topical concerns, including militant Islamism, religious headscarves, Republican coups, martyr-suicides, rural poverty, relationships with the West, and national identity. I am particularly interested in the ways in which Pamuk uses the stylistic and narrative apparatus of duality to address issues that are central to understanding the protagonist, Ka, and to understanding Turkey itself: sexuality, politics, and religion. Presenting characters and viewpoints from opposing positions illustrates the ways in which these critical, pervasive issues are fundamentally similar.

## Ezra Stewart-Silver, Class of 2009

*Faculty Sponsors: Dr. Ann Struthers, Mr. Gordon Memenga*

### “Where the Body Is”

This is the oral presentation of Ezra Stewart-Silver’s Creative Writing thesis “Where the Body Is.” Ezra will read from his collection of poetry, in accordance with the English Department’s requirement of a public presentation of a student thesis.

## Nicole Thiher, Class of 2010

*Faculty Sponsor: Dr. Mickey Wu*

### European Colonization’s Impact on Economic Development

Europe began to colonize the world in 1415 and continued to dominate different regions all the way until the mid-1900s. Each European colonizer had its own way of running colonies and developed different types of colonies, with different sets of institutions. Institutions are built over time and often do not change easily, so it is here that the more lasting impacts of European colonialism can be found. Using other economists’ empirical studies on colonization, I have developed a set of economic growth control variables along with my variables for economic colonial institutions and use the Human Development Index to measure each one’s effect on economic development. It appears that some European countries did aid their colonies more, whether intentionally or unintentionally, in developing and that the types of colonies that were settled by Europeans are better off today than those that were simply controlled for profit purposes. This suggests that colonization has indeed had some lasting impact on the economic development of these former colonies.

## Willetta Waisath, Class of 2009

*Faculty Sponsor: Dr. Daniel Lebn*

### Social Interactions within Physical Activity: Exploring the Effect of Context Dependent Social Interactions on Self-Esteem Elevation

These two studies investigate the link between global self-esteem and social interaction proposed by Leary’s (1995) Sociometer Hypothesis. Study 1 employs a self-report measure designed to explore existing correlational relationships between level of trait self-esteem measured by the Rosenberg Self-esteem Scale and number of social interactions during a typical episode of physical activity. Participants in Study 2 are assigned to one of three exercise class conditions (bland, partner, or group) where the social environment is manipulated by the exercise leader. Number of social interactions within the context of the exercise class is expected to affect elevation in global self-esteem and level of group cohesion within participants.

## Gary Webb, Class of 2009

*Faculty Sponsor: Mr. John Beckelman*

### Living in Color: Exploration of Sculptural Form

My senior thesis exhibition, a collection of largely sculptural works, is the culmination of my research and practice of art over four years of study at Coe. Working in metal, wood, and ceramics, I see sculpture as a tool to heighten the viewer’s sensibility and observation. I am interested in the transformation of the viewer, an active participant in bringing life to the work. These minimalist sculptures emphasize subtlety in an attempt to recognize the beauty of everyday life, leaving the viewer emotionally and intellectually charged. In this presentation, I will discuss the research and ideas behind my work, with particular focus on how contemporary art history informs my process.

My exhibition opens on April 17<sup>th</sup> in the Marvin Cone Gallery.

