Celebrating Collaborations

SMITH COLLEGE

Students and Faculty Working Together
Proceedings from April 12, 2008

Contents

Key to Abbreviations

HC = Hampshire College
J = graduation in January
AC = Ada Comstock Scholar
GR = graduate student

Celebrating Collaborations:
Students and Faculty Working Together
Proceedings from April 12, 2008

Smith College's annual showcase of student research and performance highlights students' intellectual achievements and their collaborative efforts with faculty in a variety of departmental, program and interdisciplinary projects. It is

a celebration of liberal arts education.

The 2008 event featured the work of 254 students who participated in 164 presentations, with the guidance of 116 faculty members. Students participated in individual talks, panels, poster sessions, exhibits and performances, in the areas of science and technology, performing arts, and social, cultural and literary studies.

www.smith.edu/collaborations

Afro-American Studies

Chloe Diamond-Lenow '08

Transformative Theory: Black Women and Reproductive Rights

Paper presentation deriving from seminar class work with Riché Barnes, lecturer in Afro-American studies

Hana Meadway '08

The Spectacular Man: Bobby Seale and O.J. Simpson on Trial

PowerPoint presentation deriving from special studies with Kevin Quashie, associate professor of Afro-American studies

Abigail Minor '08

The Cultural Whitening of 19th-Century Appalachian Mountain Music and Sea Chanteys: Early Collectors' Oversights and Contemporary Revaluation

Paper presentation deriving from special studies with Rebecca Miller, assistant professor of music of the Americas, Hampshire College

The history of American music is a complex one, influenced by many peoples and shaped by their interactions. There is hardly an American music form that has not been touched by multiple traditions, and even forms that have been traditionally regarded as entirely Anglo or African in origin are in fact complex amalgamations of the two. Both Appalachian mountain music and 19th-century sea chanteys have been shaped by cultural exchanges between black and white Americans; both fields have been scholastically and popularly treated, prior to the mid-20th century, as predominantly Anglo-derived. In this special studies, Abigail Minor examined early mountain music and chantey scholarship as they have shaped and been shaped by perceptions of both the Appalachian region and the 19th-century maritime community. She also considered recent collections and scholarship that have helped to illuminate the foundational black influence in both of these forms.

Jocelyn Thomas '08

Feloni's Black Perspective: A Black Lesbian MC in Rap Music Culture

PowerPoint presentation deriving from Mellon Mays Undergraduate Research Fellowship with Steve Waksman, associate professor of music

For her Mellon Mays Undergraduate Fellowship Jocelyn Thomas explored the construction and performance of identity by (queer) Black women in hip-hop culture. Black women's cultural production has often offered spaces for the (re)imagining of their own sexualities and problematizing of dominant notions of gender, sexuality and desire. Seeing a connection between this historical legacy and the contemporary, Thomas focused her larger project into a textual analysis. For her seminar in African American Musical Aesthetics, she examined *A Woman's Revenge,* the debut album of Feloni—a Black lesbian rapper from Detroit. Her analysis drew heavily from Gwendolyn Pough's discussions of the public sphere and Wreck and José Esteban Munoz's theory of Disidentification. A major function of her work has been to broaden the conversation in hip-hop studies around women participants as marginalized and objectified and into a discussion of women as agentive subjects.

Anthropology

Lindsay Humes '09J

Privately Owned: Moroccan Museums Enriching the Community

PowerPoint presentation deriving from study abroad class work with Elliot Fratkin, professor of anthropology

When the cost of living is getting more and more expensive and when basic services are not provided for the community, how does a museum exist in a community? How does a museum get people into the museum? While studying in Morocco, Lindsay Humes conducted field research on how and why private museums utilize community outreach. Her argument was that private museums are structured similar to the Western concept of museum; however, they function as cultural centers and associations by providing necessary services to the community. In support of her thesis, Humes collected research on the following private museums: American Legation Museum in Tangier, Villa des Arts in Rabat and the Musée du Judaïsme Marocain in Casablanca. Her results illustrated that these museums do not attract visitors based on how they preserve and exhibit their material collections, but on what they give the community, which happens to be everything from Arabic language classes to workspaces for contemporary artists.

Shahzrzad Akbar '09

A Case Study of Muslim Women Practicing Hijab in an American College Campus

PowerPoint presentation deriving from class work with Richard Wallace, lecturer in anthropology, University of Massachusetts, Amherst

Hijab is an Arabic word derived from the verb *Hijb,* which means to cover; Hijab is also translated as barrier or screen. Hijab refers to modesty and morality in Islamic scholarship. In this research, Hijab refers to the head-cover Muslim women wear. The research is based on interviews with Muslim women students who practice Hijab and scholarly research on history and multiple meanings of Hijab. Shahzrzad Akbar explored the meaning of Hijab for these Muslim women and their reasons for practicing Hijab. Akbar argued that on an American college campus, the meaning and significance of Hijab changes and multiplies for women. Hijab becomes a way of claiming identity, a tool to represent a lifestyle and to help protect

that lifestyle in post-9/11 America. Wearing Hijab is also a political statement, a practice of activism to portray a different image of Islam. Akbar also discussed some of the challenges and pressure that Muslim women face because of stereotypes and misunderstandings.

Art

Kika Gilbert '08
Investigating Identity Through Photographic Space and Installation
Art presentation deriving from special studies with Fraser Stables, assistant professor of art

Art History

Katrina Greene '08
Constructing a Tragedy: Geometric Analysis of *The Daughter of Jephthah*
Poster presentation deriving from independent work with David Dempsey, associate director of museum services, and Pau Atela, professor of mathematics and statistics
The Daughter of Jephthah is Edgar Degas' most ambitious history painting and one of the prized unfinished canvases at the Smith College Museum of Art. This report is the result of an ongoing investigation into the underlying structure of the painting. The research began as an independent project and has since become a special studies in art history. The goal of the project is to determine if Degas used a grid system to arrive at the current composition and whether a series of pinholes along the edges of the canvas is physical evidence of geometry at work in the image. Greene presented a poster made for the symposium The Art of the Matter: Doing Technical Art History, which took place October 26 and 27, 2007, and gave a PowerPoint presentation that provided an overview of the project as well as a sampling of the analysis she has completed on Degas' methods.

Astronomy

Zoë Ames '09
Searching for T Tauri Stars in the Aquila Rift
Science poster session deriving from special studies with Suzan Edwards, professor of astronomy
Zoë Ames and her team searched for Hα emission sources near known classical T Tauri stars in the Aquila rift using a narrow band Hα filter at 6566 Å and a red continuum filter at 6440 Å. They acquired ~30 fields around four known CTTS and presented five of them located around CTTS HBC 292 and five located around CTTS HBC 684. Their method removes the continuum from the Hα images to identify emission line sources and then determine if they have near infrared excess from 2MASS data. Out of 224 objects with Hα emission, 27 also have near infrared excess suggesting that they are possible T Tauri candidates. The only remaining step to confirm if they are T Tauri stars will be to take spectra.

Rouwenna Lamm '08
Looking Through the Milky Way for New Galaxies in the Taurus Region
Science poster session deriving from REU and special studies with James Lowenthal, associate professor of astronomy

Biological Sciences

Jennifer Tyson '08, Laura-Louise Campbell '10, Kristen Hokenson '07, Emily Stackpole '07 and Scott Edmands GR
Neurotoxicity of Anesthetic Cocktails on Cultured Mouse Cortical Neurons
Science poster session deriving from special studies with Adam Hall, associate professor of biological sciences

Theanne Griffith '08, Erin Watt '06, Brooke Betts '05, Francesca Kotey '09, Danielle Humbert '07, Elizabeth Kelly '06, Kelly Veneskey '05, Nikhila Gill '09 and Kathleen Rowan '03
Menthol Shares General Anesthetic Activity and Sites of Action on the $GABA_A$ Receptor with the Intravenous Agent Propofol
Science poster session deriving from special studies with Adam Hall, associate professor of biological sciences, and Andrew Jenkins, assistant professor of anesthesiology, Emory University
Menthol and related compounds were investigated for modulation of recombinant human γ-aminobutyric acid type A ($GABA_A$, $\alpha_1\beta_2\gamma_{2s}$) receptor currents in Xenopus oocytes. Sub-maximal (EC_{20}) GABA currents were typically enhanced by co-applications of 3-300 μM with (+)-menthol (*e.g.* by ~2-fold at 50 μM) > isopulegol > isomenthol> α -terpineol>> cyclohexanol. Researchers studied menthol's actions on GABAA receptors compared to sedatives (benzodiazepines) and intravenous anesthetics (barbiturates, steroids and propofol). Flumazenil (a benzodiazepine antagonist) and 5 α -pregnanediol (a partial steroid agonist) did not inhibit menthol enhancements. Currents directly activated by propofol were significantly inhibited (by 26 ± 3%) while directly activated pentobarbital currents were enhanced (by 49 ± 23%) by 50 μM (+)-menthol. $GABA_A$ receptors containing β_2 subunits with either a point mutation in a methionine residue to a tryptophan at the 286 position (in transmembrane domain 3, TM-3) or a tyrosine to a tryptophan at the 444 position (TM-4) are insensitive to modulation by propofol. Enhancements of GABA EC_{20} currents by

menthol were equally abolished in $GABA_A$ $\alpha_1\beta_2$(M286W) γ_{2s} and $\alpha_1\beta_2$ (Y444W) γ_{2s} receptors. Thus, menthol may exert its actions on $GABA_A$ receptors *via* sites distinct from benzodiazepines, steroids and barbiturates, and *via* sites important for modulation by propofol. Finally, using an *in vivo* tadpole assay, (+)-menthol acted as a general anesthetic with an EC_{50} of 23.5 ± 4.7 μM (~ 10-fold less potent than propofol). For menthol and its analogs, there was an association between the extent of GABA current enhancement and potency of anesthesia, further implicating these receptors as important sites in anesthesia.

Kristin Alligood '08 and Sarah Bashiruddin '10

Understanding the Cellular and Molecular Mechanisms Regulating Post Optic Commissure (POC) Formation in the Zebrafish Forebrain

Science poster session deriving from thesis with Michael Barresi, assistant professor of biological sciences

A fundamental characteristic in the formation of the central nervous system in bilateral creatures is the guidance of axons across the midline to form commissures that functionally connect the two sides of the nervous system. The postoptic commissure (POC) is the first axon pathway to cross the midline in the forebrain of embryonic zebrafish. POC axons cross the midline using a growth substrate made of basal lamina and neuroepithelial cells including astroglia (Barresi, 2005). It was shown previously that GFAP+ astroglia are in place across the midline prior to commissure formation and positioned where crossing will occur; this finding supported a hypothesis that certain glial cells form a bridge-like substrate that supports axon growth. To better understand the development of astroglia in the forebrain, a GFAP:gfp transgenic line was characterized in terms of cellular morphology, timing, positioning and glial placement relative to growing axons. Gastrula stage transplants were conducted to observe isolated GFP+ glia in the commissure region. Across species, a family of secreted guidance cues known as Slits has been shown to guide axons appropriately across the midline. It was shown that Slits influence not only POC formation but also astroglial cell position. In contrast to the repellent effects of Slit 2 or Slit3, knockdown of Slit1a resulted in different phenotypes that suggested a potential role in attraction. It was tested whether temporally controlled local misexpression of Slit1a could attract POC axons and/or astroglial cells in the forebrain. The research shed light on the roles of Slit-mediated glial cell positioning and the importance of axon-glial interactions during commissure development.

Miki Duruz '10 and Sara Markman '11

Differences in Physical Properties of Hairs of Agouti and Non-Agouti *Peromyscus maniculatus* (Deer Mice) Using Macroscopic and Microscopic Images

Science poster session deriving from STRIDE research with Virginia Hayssen, professor of biological sciences

The measured coat color of both agouti and nonagouti *Peromyscus maniculatus* (deer mice) differs between males and females, although this difference is not visible to the naked eye (Roy, 2006). To determine any possible connection between this difference and the morphology of hairs, Miki Duruz and Sara Markman observed individual hairs from the superscapular (upper back) region of male and female agouti and nonagouti *Peromyscus*, which were taken from 20 frozen skins. Length and width of five hairs per specimen were recorded. Male agoutis had the longest (X=10.42 mm) and widest (X=42.01 nm) hairs, while the shortest hairs were from female nonagoutis (X=10.41 mm), which also had the narrowest hairs (X=36.00 nm). Thus, physical characteristics of hair may account for the observations in coat color.

Alex Webster '08

Effect of Stand Characteristics on Precipitation Throughfall in a New England Forest

Science poster session deriving from thesis with Virginia Hayssen, professor of biological sciences, and Andrew Guswa, associate professor of engineering

Forest canopies cause significant reduction and redistribution of rainfall. This honors thesis in the biological sciences examined the effect of forest stand characteristics on the spatial and temporal variability of the resultant throughfall within a New England forest in Whately, Mass. Three stands were characterized by their overstory tree species, stage of stand development and structures. Throughfall was collected in a fixed grid of 25 collectors in each stand for eight multi-event periods in October and November 2007. Data were analyzed and compared both within and among stands, seasons and rainfall magnitudes. Gross precipitation, stand type and small-scale analysis of canopy cover were strong predictors of throughfall depth ($p<0.001$, R-sq=91.3%). Distance from stem, contribution of wet and dry points, and metrological variables were also important. In addition to providing insight into the complexities of throughfall distribution, this is an important early investigation into the hydrology of Smith's research forest for future use.

Hannah Jaris '09

The Genetic Diversity of Ciliates in Near Coastal Sediment

Science poster session deriving from special studies research with Laura A. Katz, professor of biological sciences

Planktonic ciliates play an important role in the food webs of the Earth's oceans as these organisms provide a critical link between bacteria and larger zooplankton and are important grazers on harmful algal bloom species. However, little is known about the distribution of ciliates, and other eukaryotic microbes, in marine plankton and sediments. Martinus Willem Beijerinck's metaphor "Everything is everywhere, the environment selects" is a hypothesis that is often challenged as molecular technologies are being used to study the phylogeography of microorganisms. The

life cycles of many planktonic ciliates included a dormant cyst stage that might explain the "disappearance" of large blooms. Through the use of culture-independent methods and other molecular techniques, special studies student Hannah Jaris worked to assess the population dynamics of Oligotrich and Choreotrich ciliates across space and time. Specifically, she sampled plankton and sediments along two transects from consecutive high and low tide boundaries at a site on Cape Cod, Massachusetts. Jaris analyzed clone libraries to characterize the spatial diversity of ciliates at these sites.

Christina Lyman '08

Unusual Patterns of Evolution in the Ciliate Clade Heterotrichea

Science poster session deriving from thesis with Laura Katz, associate professor of biological sciences

The aim of this study is to investigate patterns of protein evolution in the ciliate class Heterotrichea. Previous work on levels of variation in protein-coding genes reveals a striking and significant pattern—extensively processed ciliate genomes have higher levels of variation as measured by such indices as dN/dS ratios and paralog divergences. Although the level of processing is unknown for ciliates in the class Heterotrichea, data show that these ciliates contain divergent protein coding genes and may also have unusual genome architectures. Using PCR, cloning and sequencing techniques, three conclusions have been reached:

- The high level of diversity we reveal in protein coding genes of heterotrich ciliates suggests that these ciliates have unusual genome structures. Microscopy (e.g., FISH) is being used to investigate this possibility.
- The variation in levels of amino acid divergence among loci suggest that at least some of these loci are not evolving neutrally, either due to relaxed functional constraint or adaptive evolution. This speculation requires further statistical analyses.

Erena Farah Ousman '11, Andrea Gohl AC '08, Penny Luo '08 and Madeline Weigner '09

Comparison of Grazing Rates by Parrotfish and Surgeonfish on Reefs of Belize and the Bahamas

Science poster session deriving from AEMES work with Paulette Peckol, Louise Harrington Professor of Biological Sciences

Erena Farah Ousman, Andrea Gohl, Penny Luo and Madeline Weigner hypothesized that the grazing rates and relative abundances of parrotfish and surgeonfish on a reef off the island of San Salvador, Bahamas, might be responsible for keeping coral cover high and macroalgal cover low. The group looked at student data from the past ten years (1998–2008) taken from two dive sites, Telephone Pole and Snapshot Reef, both of which have thriving coral reef environments. High macroalgal cover is detrimental to coral reefs as it grows and subsequently prevents light from reaching the corals, a process known as shading. Corals are important organisms as they can make their own calcium carbonate "backbone," the reef, and in so doing remove carbon dioxide from the atmosphere while also providing a habitat for a diversity of aquatic organisms. Telephone Pole had declining live coral cover and much higher macroalgal cover over the years while coral cover remained relatively high and stable at Snapshot Reef. The group found that higher algal cover was caused, in part, by the lower grazing rates of two herbivorous fish species at Telephone Pole. In contrast, Snapshot Reef showed higher fish abundances and grazing rates and subsequently, lower algal cover. One possible reason for this difference between the sites was distinctive reef topographies; Snapshot Reef was more structurally complex and therefore provided more protection and places to hide for the fish. This study therefore led to an important conclusion: parrotfish and surgeonfish are extremely important to the balance on coral reefs, and if they are removed due to overfishing, coral reefs may eventually become outcompeted by detrimental macroalgae.

Khue Nguyen '08

The Effect of Heat Shock on Regulation of the MAPKs in C2C12 Cells

Science poster session deriving from thesis with Stylianos Scordilis, professor of biological sciences

Syeda Kashfi Qadri '08

Does Human DNA Found at a Crime Scene Degrade Differently From Parasite DNA in Human Blood?

Science poster session deriving from thesis with Steven Williams, Gates Professor of Biological Sciences

Penny Luo '08

The Diet of Green Crabs Across Three Different Places: Pemaquid Point, Tide Pool and Mud Flat

Science poster session deriving from special studies with L. David Smith, associate professor of biological sciences

Penny Luo examined the diet of the introduced European green crab, *Carcinus maenas*, from three intertidal habitats in Maine in fall 2007 to determine potential effects on abundance and distribution of marine invertebrates in the region for her special studies project. Crabs were collected from a rocky wave-exposed shore, a tide pool, and a mudflat. The gut content of 43 crabs was analyzed to determine gut fullness and types of food found in the foregut. Live crabs were used in a lab experiment to estimate gut clearance rate of hard-shelled snail prey. The experiment showed that harder materials take much longer to digest. Rapid digestion of soft-bodied prey may have affected prey organism proportions found in these gut analyses. However, results indicated that as a mobile omnivore, the green crab has the potential to affect populations of many intertidal and shallow subtidal invertebrates and algae. This introduced species may have an important impact

on a variety of marine habitats, as well as competing with other, native crab species for food.

Rhiannon Chubb '10

5' Race of mRNA from a Mutant Gene

Science poster session deriving from STRIDE research with Carolyn Wetzel, assistant professor of biological sciences

The *SppA* gene of *Arabidopsis thaliana* is interrupted by a T-DNA insert in the untranscribed region (UTR) preceding the gene to create a mutant line of plants that may have altered mRNA sequence and function. The mutation does not appear to impact growth under moderate conditions, though differences have been observed in plants under high light stress. To attribute these physiological differences to loss of the SppA protein, it must be verified that the T-DNA insert creates a null mutant. For her STRIDE research this year, Rhiannon Chubb sequenced the 5' end of mRNA from wild type and mutant plants to determine whether the mutant produces a functional SppA protein. This was accomplished using RNA ligase mediated rapid amplification of 5' complementary DNA (5' RLM-RACE).

Yutian Gan GR

Exercising Muscle: What Happens to the Proteome

Science poster session deriving from thesis with Stylianos Scordilis, professor of biological sciences

Little is known about the global changes in protein expression of skeletal muscle subsequent to non-damaging, eccentrically biased exercise, downhill running of exercise-naïve mice. Using a proteome analysis of two-dimensional gel electrophoresis followed by mass spectrometry, Yutian Gan established a method for differential proteome profiling. At several time points following the exercise, 439 proteins were detected in the male mouse proteome that changed by +/- twofold and were significantly different ($p < 0.05$) from the control, pre-exercise proteome. She is in the process of identifying all of these proteins in the male and has undertaken the identical analysis in females. The results of these studies will identify the proteins, establish the time courses of their expressions, give insights into gender-specificity of the proteome and its changes, as well as indicate the pathways that interact to produce the observed physiological adaptations. (Supported by the Blakeslee Fund, a Sally Wilens Fellowship, the Howard Hughes Medical Institute and the Center for Proteomics)

Nastassia Shields '09

The Adaptation of *E. coli* to Shifts in Temperature

Science poster session deriving from special studies with Christine White-Ziegler, associate professor of biological sciences

For her special studies project, Nastassia Shields studied *E. coli*'s ability to adapt to shifts in temperature, particularly human body temperature (37 °C). Since *E. coli* requires iron for metabolic processes but finds an iron-starved environment upon entering the human host, she also studied the effect of iron on gene expression. Relative gene expression was examined via quantitative real time RT-PCR. The genes *cysP* and *hisJ*, which are involved in amino acid utilization, showed different responses to changes in temperature and iron. *hisJ* is regulated by temperature but not by iron, while *cysP* appeared to be regulated by temperature only in the presence of iron. The iron acquisition genes *fes* and *cirA* showed both an iron and temperature regulatory effect; lack of iron along with a shift from 23 °C to 37 °C increased the expression of both genes. Since there are different changes in gene expression due to iron and temperature, it suggests that gene expression may be regulated by different mechanisms. Understanding how *E.coli* uses temperature and iron to adapt gene expression to grow and compete in the human host helps us understand the pathogenesis of the bacterium.

Ying Mei '08

The Effect of Temperature on *E. coli* Gene Regulation

Science poster session deriving from special studies with Christine White-Ziegler, associate professor of biological sciences

To efficiently colonize, bacteria must regulate gene expression in order to adapt to environmental changes. Virulent factors are highly regulated in response to multiple environmental changes from nonhost and host cues, such as temperature as an important environmental cue that helps the mesophile, *Escherichia coli* K-12, adapt to the differences in mammalian host and external environments. The use of microarrays allowed the lab to identify 126 genes in *E.coli* K-12 that increased expression at human body temperature (37ÿC) (White-Ziegler et al. 2007. *J Bacterio*l 189, 5429–40), while 297 genes were highly expressed at an external temperature (23ÿC) (White-Ziegler et al. 2008 *Microbiology* 154, 148–166). Interestingly, 279 of the genes are thermoregulated and controlled by a global transcriptional regulator, H-NS. Great interest is focused on iron acquisition genes, since nine out of twelve iron acquisition genes that respond to temperature were also regulated by H-NS. In the *hns651* mutant strain, transcription at both 37°C and 23°C was significantly reduced, suggesting a common, activating role for H-NS for all of these genes. Since H-NS is only known to act as a repressor, it was hypothesized that H-NS might act indirectly on iron utilization gene expression by decreasing transcription of the ferric uptake regulator (Fur). Similar levels of *fur* were measured at both 37°C and 23°C in the wild type strain. Furthermore, in the absence of H-NS, there was a decrease in *fur* levels at both temperatures, suggesting a positive, rather than a negative role for H-NS on *fur* transcription. Current experiments are aimed at understanding the mechanism by which H-NS controls gene expression and discovering how H-NS responds to temperature by observing the response of bacteria gene expression to the overexpression of H-NS.

Elyse Macksoud '10

Characterization of a Transcriptional Fusion to Identify a Thermoregulatory Protein in *E. coli*

Science poster session deriving from STRIDE research with Christine White-Ziegler, associate professor of biological sciences

Previous work conducted in Christine White-Ziegler's lab has shown that *Escherichia coli* increase the expression of iron genes at host body temperature (37ºC) versus at room temperature (23ºC) to facilitate adaptation within the host. As her STRIDE project, Elyse Macksoud studied the temperature effects on *fes*, a gene involved in iron uptake. She worked with a strain of *E. coli* containing a transcriptional fusion with the *fes* promoter and the lac-ZYA operon. To determine that the fusion contained wild type sequence, she grew the bacteria at 37ºC and 23ºC and compared their phenotypic expression, which confirmed that *fes* activation was temperature-regulated. The fusion was also studied by sequencing the DNA to compare the fusion with wild type sequence. Future work will include in vivo transposon mutagenesis, which involves inserting a random DNA fragment and determining if the fragment has inserted into a *fes* activator or repressor based on phenotypic growth and sequencing.

Chemistry

Julie Pyle '08

Difficulties with DMAP: Investigating the Mechanism of the Dakin–West Reaction

Science poster session deriving from thesis with David Bickar, associate professor of chemistry

The Dakin-West reaction converts carboxylic acids into ketones and carbon dioxide using acetic anhydride and a base catalyst. DMAP (4-dimethylaminopyridine) is a very efficient catalyst, but it has unexpected complications. When the reaction proceeds normally, 10 percent forms an acylpyridinium salt that reacts with phenylacetic acid and leads to rapid gas production. However, if DMAP is combined with acetic anhydride before adding phenylacetic acid, no carbon dioxide production is observed. NMR studies revealed that when combined with acetic anhydride, DMAP becomes protonated and side products are formed. If a base such as triethylamine is added, carbon dioxide is produced. Protonated DMAP cannot react further, so if DMAP is added first, an auxiliary base must be used. Conversely, if phenylacetic acid is added first, it stops the formation of side products, allowing the Dakin-West reaction to proceed.

Pyae Naing '10 and Tenzin Dechen '10

An Investigation of the Chemistry and Reactivity of Iron Gall Ink: New Insights to an Ancient Problem

Science poster session deriving from summer research with Lâle Burk, senior lecturer in chemistry, and David Dempsey, associate director of museum services

Pyae Naing's and Tenzin Dechen's project focused on the chemistry and properties of iron gall ink, one of the oldest and most widely used inks worldwide. In spite of its corrosive properties, iron gall ink was used commonly in Western cultures through the 19th century in art, in producing documents and in printing money. In this research, Naing and Dechen investigated the formation of the iron complex responsible for the color and the reasons for the corrosive properties of this historical ink. The techniques utilized to study different preparations of the ink included paper and thin layer chromatography, as well as spectral methods including visible and x-ray fluorescence spectroscopy. Artificial aging experiments, some still ongoing, were carried out to establish the types of paper that were most prone to degradation. Further experiments (e.g., reflective infrared studies) will lead to additional insights into the problem of corrosion associated with iron gall ink.

Diana Colon '08 and Sara Sirois '11

Horseradish Peroxidase vs. Methyltrioxorhenium Metal Catalyst in Vanillin Synthesis

Science poster session deriving from special studies and AEMES work with Lâle Burk, senior lecturer in chemistry

Vanillin is a compound used extensively in flavoring, perfumery and for insect control. It is extracted from dried or cured full-grown unripe pods of the orchid *Vanilla plantifolia* that is native to northern tropical Latin America. Vanillin is structurally similar to isoeugenol, which can be prepared from eugenol, the major constituent of clove (*Syzygium aromaticum*) oil. While vanillin contains an aldehyde group, isoeugenol contains a three carbon alkene group that can be oxidized to form vanillin. The interconversion of these natural compounds has been the subject of many studies in the literature. According to previous reports, vanillin can be prepared from isoeugenol catalytically using horseradish peroxidase, or alternatively, using the more recently described metal catalyst, methyltrioxorhenium. In the present research, Diana Colón and Sara Sirois focused on comparing the effectiveness and yields of these two catalytic approaches to the preparation of vanillin.

Kasia Kornecki '08

Where, O Where Is Your Hydrogen From?

Science poster session deriving from thesis with Maureen Fagan, assistant professor of chemistry

Palladium enolate complexes are possible intermediates for coupling reactions in which a new bond is formed between the enolate alpha-carbon and an sp or sp2 carbon via transmetallation or electrophilic C-H activation. However, at the elevated temperatures often required for these coupling reactions, such enolate complexes are subject to first-order decomposition to release various Pd complexes. One of these complexes may be a bis-enolate, which results from the disproportionation of the original complex. Deuterium labeling studies have shown that reduc-

tive elimination products potentially originate from a C-H activation of the phenyl group on the second enolate.

Lauren Owen '10 and Margaret Nyamumbo '11

Effects of Sunlight on Atmospheric Hydroperoxides

Science poster session deriving from work-study with Shizuka Hsieh, assistant professor of chemistry

Jennie Brown '08

Understanding Biofilm Formation: Adsorption of Polylysine and Alginate on Funcationalized Silica Surfaces

Science poster session deriving from thesis with Kate Queeney, associate professor of chemistry

Controlled adsorption of the well-understood protein model poly-L-lysine (PLL) and subsequent deposition of the polysaccharide alginate to functionalized silica can provide insight into the mechanisms of biofilm formation. On a hydrophilic silanol surface, PLL films are compact and their formation governed by electrostatic interactions; film thickness and continuity reached a maximum at intermediate solution ionic strength, decreasing with additional salt concentration. Alginate film thickness and continuity were correlated with the homogeneity of the underlying PLL film. By contrast, the PLL films adsorbed to hydrophobic silane surfaces were much thicker and were most continuous at low polymer molecular weights, but alginate film thickness and homogeneity did not appear to follow that of the underlying PLL film. Future work will focus upon explaining these data through examination of film homogeneity and composition through AFM imaging and ATR IR spectroscopy studies.

Margaret Kulkarni '10

Exploring the Initial Oxidation of Si(100)

Science poster session deriving from STRIDE research with Kate Queeney, associate professor of chemistry

Cynthia Franqui '10

Visualizing Polylysine and Alignate Adsorption Using Atomic Force Microscopy

Science poster session deriving from work with Kate Queeney, associate professor of chemistry

The poly-L-lysine (PLL)-mediated adsorption of alginate to hydrophobic and hydrophilic substrates is a useful model system for understanding the initial stages of biofilm formation. Work in our lab using a variety of techniques has shown that film continuity and morphology are strongly influenced by the underlying substrate. The current work uses atomic force microscopy (AFM) to examine differences in film morphology as a function both of substrate surface chemistry and of adsorption conditions. On a hydrophobic, electrically neutral alkylsilane monolayer, PLL films adsorbed from pH 11 buffer and air- dried exhibit morphologies that are suggestive of polymer shrinking as water is removed from the film, with networks of PLL surrounding regularly spaced patches of bare surface. The proportion of surface covered by PLL decreases with increasing PLL molecular weight, which suggests stronger PLL-surface interactions for the lower MW polymers. Since adsorption under these conditions is thought to be driven by a transition from alpha helix in solution to random coil for adsorbed PLL, these results may indicate a lesser amount of uncoiling for the larger MW PLL. The role of drying in determining film morphologies is explored by comparing subsequently adsorbed alginate films on both pre-dried and undried PLL overlayers. On hydrophilic silica PLL adsorbed at neutral pH forms much more uniform films, consistent with strong electrostatic interactions between the positively charged PLL and the negatively charged surface. As ionic strength increases, PLL begins to aggregate on the surface to form a much more discontinuous film, consistent with competition for binding sites between PLL and cations in solution. Alginate adsorption to these PLL overlayers results in more complex morphologies indicative more of isolated molecular adsorption than of true film formation.

Maureen Reilly '08

Cobalt Complexed Alkynes in the Diels–Alder Reaction

Science poster session deriving from thesis with Kevin Shea, associate professor of chemistry

Recent years have seen an increased interest in reactions involving organometallic reagents that efficiently convert acyclic compounds into complex polycyclic targets. Among this class of transformations, the Diels-Alder reaction is an especially useful strategy. This research focuses on the use of cobalt-stabilized propargyl carbocations as effective withdrawing groups on Diels-Alder dienophiles. A Diels-Alder adduct has been successfully formed in a reaction of a model compound with the specified functionality and pyrrole, indicating that cobalt-complexed alkynes on dienophiles can promote Diels-Alder reactions. Successful realization of this idea with the highlighted model system has enabled the researchers to turn their focus to more complex targets available via intramolecular and tandem Diels-Alder/Pauson-Khand transformations.

Erin Davis GR '08

Synthesis of Cyclic Diels–Alder Dienes

Science poster session deriving from special studies with Kevin Shea, associate professor of chemistry

Holly Boyle '09

Thermodynamic Stability of the Oxidized Guanine Lesion Spiroiminodihydantoin

Science poster session deriving from special studies with Elizabeth Jamieson, assistant professor of chemistry

Seiko Fujii '08

Synthesis of a Novel Diels–Alder Diene

Science poster session deriving from thesis with Kevin Shea, associate professor of chemistry

The Diels-Alder reaction is one of the most widely used

reactions in organic synthesis. The Shea lab is investigating the synthesis of a 2-substituted diene containing a cobalt-complexed alkyne and its reactivity in Diels-Alder reactions. They postulated that the electron donating cobalt-complexed alkyne on the diene should accelerate the cycloaddition. Dehydration of tertiary allylic alcohol with various dehydration reagents yielded the target diene in low yields. They hypothesized that the E1 reaction of the cobalt-stabilized carbocation leads to formation of unwanted products. An alternate method to synthesize target diene via the Peterson olefination is currently under investigation.

Vida Chen '08 and Julie Olson '10

Synthesis of Steroid Derivatives

Science poster session deriving from special studies with Kevin Shea, associate professor of chemistry

Steroids are a class of biosynthetically derived molecules that encompass cholesterol, the precursor to many important steroid derivatives, steroid hormones such as androgens and estrogens, and bile acids that assist in absorption of lipids in the intestines. Steroids are characterized by the tetracyclic ring system, and synthesis of this carbon backbone can lead to the synthesis of many important natural products. The goal of this project is to synthesize the tetracyclic carbon backbone of steroids focusing on a synthetic route that uses a Pauson-Khand reaction following a Diels-Alder reaction.

The synthesis begins with the reaction of commercially available propiolic acid 1 to produce allylic alcohol 2. Oxidation followed by reaction with Wittig reagent 3 enabled conversion of allylic alcohol 2 into dienyl bromide 4. The Sonogashira reaction allowed the coupling of phenyl acetylene and dienyl bromide 4 to yield dienyne 5. Reduction of 5 yielded dienyne alcohol 6.

Dienyne 6 could then be oxidized to form aldehyde 7, which would then undergo a second Wittig reaction to yield the Diels-Alder precursor 11. At this point, molecule 11 would undergo tandem Diels-Alder and Pauson-Khand cyclization reactions to form the final product. (Supported by Howard Hughes Medical Institute)

Deborah Abiola Ahove '11, Margaret Mongare '10, Zazi Nylander '09J and Louisa Onyewadume '09

Cation Transport via Novel Synthetic Ion Channels

Science poster session deriving from special studies with Cristina Suarez, associate professor of chemistry, and Adam Hall, associate professor of biological sciences

Chemistry and Art

Kathryn Harada '08

Technical and Art Historical Analysis of Paintings

Poster presentation deriving from special studies with David Dempsey, associate director of museum services, and Lâle Burk, senior lecturer in chemistry

In her special studies research project, Kathryn Harada has been conducting pigment analysis and practicing conservation techniques on four small Italian panel paintings. Her objective for this project was to estimate the date of production of the panels and to restore them to a stable condition. To identify the pigments used in these paintings, Harada used a portable x-ray fluorescence machine. It was determined that three of the paintings were modern date, as there was a significant amount of cobalt found, an element not notably used in pigments until the 19th century. More analysis of the fourth painting must be done to determine its relative date.

Savannah Sessions '08

The Daguerreotype: Process, Deterioration, Preservation

Seelye 204; poster presentation deriving from special studies with Lâle Burk, senior lecturer in chemistry, and David Dempsey, associate director of museum services

Daguerreotype photographs pose a particular challenge to museums: they are both photograph and object simultaneously. Because of the dual nature of these objects, a multitude of questions exist about the appropriate ways to care for them. This project began as a Praxis internship in summer 2007 where Savannah Sessions worked as a curatorial assistant at the Maine Historical Society cataloging and housing a recent acquisition of daguerreotypes. Working with both the chemistry department and the Smith College Museum of Art, Savannah continued this project by further exploring the creation, deterioration, and preservation of daguerreotype photographs. Savannah looked at a number of different factors contributing to the deterioration of daguerreotypes and used that information to create a housing and care standards manual for museums to use on their collections.

Classics

Aiden Leigh Bartelt '11

Murdering Mothers: Understanding and Representing Andrea Yates

PowerPoint presentation deriving from STRIDE research with Thalia Pandiri, professor of classical languages and literatures and of comparative literature

Aiden Leigh Bartelt collected and analyzed popular media responses to the Andrea Yates case during the first few months after the story broke. In this presentation, she detailed some of the multiple and shifting slants in text

media regarding religion, psychiatry, American womanhood and the judicial system in relation to the case. She also spoke on how Andrea Yates' story became a frame for social critiques on subjects from the death penalty to feminism. This was accompanied by analysis of images that suggested Andrea Yates' distance from comprehensible sanity, her outsider status as a transgressor of multiple intersecting norms, and the struggle of her relatives and peers to comprehend her actions. Bartelt concluded that the manner in which these images were paired with relatively empathetic, but not unconflicted, text media both reflected and informed a sense of popular compassion for someone who was, nevertheless, still unalterably Other.

Carly Maberry '08

Designing *Metamorphoses:* The Production and Web Design Internship for the *Metamorphoses* Journal

PowerPoint presentation deriving from internship with Thalia Pandiri, professor of classical languages and literatures and of comparative literature

As the editorial, production and Web management intern for *Metamorphoses,* the Five College Journal for Literary Translation, from July 2007 to June 2008, Carly Maberry worked closely with Editor-in-Chief Thalia Pandiri to edit and proofread content for the special 2007 double issue on the Arab World. After producing this issue and updating and redesigning the Web site (www.smith.edu/metamorphoses), Maberry was promoted to production editor for both 2008 issues. In her presentation, Maberry gave an overview of the process of producing the literary journal and designing and maintaining the journal's Web site.

Alison Smith '08

War No More?: An Examination of War and Lament in Homer's *Iliad*

PowerPoint presentation deriving from thesis with Justina Gregory, professor of classical languages and literatures

Comparative Literature

Sarah Muffly '08

Caribbean Women Respond to the Brontës

Paper presentation deriving from thesis with Dawn Fulton, associate professor of French studies

For her honors thesis in comparative literature, Sarah Muffly studied the 20th-century, Caribbean rewritings of two Victorian novels: *Wide Sargasso Sea,* by Jean Rhys, which is a response to Charlotte Brontë's *Jane Eyre*, and *La migration des coeurs*, by Maryse Condé, which is a response to Emily Brontë's *Wuthering Heights.* She looked at *Jane Eyre* and *Wide Sargasso Sea* and examined how the latter uses landscape, narrative structure and one character's experience to present the idea of hybrid identity. Muffly then analyzed *La migration des coeurs* and *Wuthering Heights* and showed how Condé's novel also highlights hybrid identity by reflecting it in narrative structure, setting and in the representation of race. Finally, she studied how the two Caribbean novels expose multiple sources of oppression of characters in all the novels and how the rewritings stress the importance of hearing the voices of the oppressed characters.

Angelina Zaytsev '08

Strolling Through the City with Baudelaire and Blok

Paper presentation deriving from special studies with Maria Nemcová Banerjee, professor of Russian language and literature

In the course of her collegiate experience as both a comparative literature and French studies major, Angelina Zaytsev noticed a void in her studies of French literature: the period between Romanticism and the avant-garde lacked significance in her mind. Yet when she considered her other area of study, Russian literature, the adjacent time period was evoked with the glittering title of "the Silver Age." Deciding her knowledge would benefit from a comparison of the symbolist literary movement, Zaytsev did a special study with Maria Banerjee in the topic, completing the semester with an analysis of the works *Tableaux Parisiens* by Charles Baudelaire and the *Gorod* (the City) cycle by Aleksandr Blok. Whereas the two texts were situated in disparate spatial and temporal contexts, their similar themes, metaphors and images made the comparison possible. The final portion of her analysis was an application of the theories of Vyacheslav Ivanov, a major symbolist theorist/poet, on the creation of myth in poetry as the final test of a true poet-theurgist.

Computer Science

Allison Bellew '08

Wireless Sensor Data Acquisition NetworK

Science poster session deriving from special studies with Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

Clarissa Chan '11

Teaching Computers Medieval Latin

Science poster session deriving from AEMES work with Nicholas Howe, assistant professor of computer science

Alexandra Gorin '08

Wind Turbine Technology and Energy Markets

Science poster session deriving from special studies with Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

Wind power is expected to provide more of the nation's electric power, yet many issues prevent it from widespread use. This project examines obstacles to the use of wind power that are created by electricity market rules. The project focuses on modeling wind power in the electric

power system and electricity markets. The project includes research on current wind turbine technologies, and also hourly wind speed and energy load databases. Statistics are used to analyze the pairing of load levels and wind speeds in MatLab using power flow equations to model real energy supply and demand response. The objective is to propose methods to increase wind power participation in electricity markets.

Allison Bellew '08
Data Mining Wikipedia for the Untold Story
Science poster session deriving from special studies with Dominique Thiebaut, associate professor of computer science

Dance

Rebeccah Bogue '08, Kamille King '08, Lucy Brush '08, Lorna Troost '08, Marguerite Simpson '08 and Zoë Marr '08
Senior Dance Choreography Projects
Dance performance deriving from senior seminar with Susan Waltner, professor of dance

Cyndal Ellis '08
Zar: Reexamining the Ecstatic Dance Traditions of North Africa
PowerPoint and DVD presentation deriving from special studies with Donna Mejia, visiting artist in dance

Education and Child Study

Graeham Dodd '08
Students as Stakeholders in Academic-Community Partnerships
Paper presentation deriving from special studies with Lucy Mule, assistant professor of education and child study

Eileen E. Woodward AC '08 and Marie Alamed AC '09
A Walk Through the Smith College Campus—Mural Created by Students in The Teaching of Visual Arts in the Classroom
Art presentation deriving from Praxis internship and classwork with Cathy Topal, teacher of visual arts, Campus School; lecturer in education and child study
This mural was created under the direction and guidance of Cathy Topal in the style of Romare Bearden, an artist in search of social change and known for his collages, photomontages, prints and paintings. The mural was based on the research of Eileen Woodward, who, backed by the architectural expertise of Marie Alamed, completed a summer-long Praxis internship exploring many of Smith's significant buildings and structures, the noteworthy history behind them, their architects and architectural styles. This project, for Topal's EDC 305, helped students experience ways in which the arts can be used to build classroom community, as well as to experience a strategy for creating an effective, visually appealing mural in the classroom. The dynamics of undertaking a mural project require many different skills—research, planning, organization, compromise, collaboration, writing and creativity, to name a few. The comprehensive educational premise behind both the Praxis and the mural provided students with tangible strategies that allow for a social and academic atmosphere in schools and classrooms.

Economics

Puja Singhal '08
India's Unwanted Female Children: District-level Analysis of Gender Differential in Child Mortality
PowerPoint presentation deriving from thesis with Robert Buchele, professor of economics

Huong Nguyen '08
To Retire or Not to Retire, That Is the Question
PowerPoint presentation deriving from classwork with Elizabeth Savoca, professor of economics
This research stemmed from class work in the Population and Economics seminar. The median age of retirement has declined in the United States during the past fifty years. This trend has multiple implications for policies regarding Social Security or Health Care. While the early retirement trend among older men has been studied extensively, the retirement decisions of older women do not get as much attention. There are a number of explanations for the early retirement age of older men, most of which are results of the expansion in Social Security benefits. This research aims to examine whether the older female population experiences the same effects or what causes the differences, if any. Professor Savoca has helped extensively with finding the appropriate data and constructing variables used in the regression analysis.

Engineering

Mary Gowins '11 and Katelyn Gerecht '10
Smith College Research on Water: The Experimental Forest
Science poster session deriving from STRIDE research and AEMES work with Andrew Guswa, associate professor of engineering; Robert Newton, professor of geology; and Amy Larson Rhodes, associate professor of geology
Smith College is developing an experimental forest at West Whately, Mass. The forest will be a primary site for student and instructor research, and an encouraging location for

advancing student familiarity with climatic, hydrological and geological instrumentation. Creation of a long-term climate observation station is a crucial step towards site vitality. Basic climatic data (temperature, pressure, precipitation, etc.) provide an important framework for further experimentation and analysis of detailed data. In order to construct a context for data collected at this site, historical data from the National Climatic Data Center (NCDC) were analyzed for nearby stations in Amherst, Ashfield, Chesterfield and Sunderland. The historical temperature data at the Amherst station indicate a gradual increase in temperature in recent years, a trend we expect to see in our future data from the experimental forest. This local increase in air temperature may be linked to global climate change. Yearly temperature extremes are consistent, with January as the coldest (14–34°F) and July the warmest (59–83°F). Precipitation has remained stable in a periodic cycle. February consistently had the least amount of rainfall (3.09"), and May and November received the greatest amount (4.29"). A tipping bucket rain gauge will be installed within the next month. The data collected will be used to make predictions about the impacts of global climate change on our local forested ecosystems.

Diana Chiyangwa '08, Stephanie Lewellen '08 and Dooshaye Moonshiram '08

Design of an Electrical Energy Monitoring System

Science poster session deriving from classwork in Engineering Design Clinic sponsored by Augustus Design with Susannah Howe, design clinic director; Andrew Guswa, associate professor of engineering; and Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

In collaboration with Augustus Design, this student team designed and validated a wireless system to monitor and report electrical energy usage by location and time without disrupting operations. The team developed a conceptual design, purchased and modified various sensor and microcontroller components, wrote software to integrate the components, and tested the prototype system on both residential and manufacturing applications.

Kitu Patel '08 and Briana Tomboulian '08

Design of a Reactor to Treat Wastewater from a Semiconductor Manufacturing Plant

Science poster session deriving from classwork in Engineering Design Clinic sponsored by IBM with Susannah Howe, design clinic director; Andrew Guswa, associate professor of engineering; and Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

In collaboration with IBM, this student team designed a catalytic reactor to decompose hydrogen peroxide in wastewater generated by IBM's semiconductor manufacturing facility in Fishkill, NY. The team identified suitable catalysts, modeled the chemical reaction process, conducted a sensitivity analysis by varying reactor parameters, developed a final design based on modeling results, and prepared process and implementation drawings for their proposed design.

Indira Deonandan '08, Nora Paul-Schultz '08 and Katherine Travis '08

Design of a Low-Power, Low-Cost Bioaerosol Collector

Science poster session deriving from classwork in Engineering Design Clinic sponsored by MIT Lincoln Laboratories with Susannah Howe, design clinic director; Andrew Guswa, associate professor of engineering; and Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

In collaboration with MIT Lincoln Laboratory, this student team designed and developed a low-power, low-cost bioaerosol collector. The team researched existing technologies, prepared a conceptual design to harness solar and wind energy to direct airflow, evaluated multiple collection geometries, built the collector housing and collection geometry, integrated the collector with a measurement and control system, and tested and refined the final prototype to validate performance through collection and elution efficiencies.

Natalie Flores '08 and Jessica Wilbarger '08

Roaring Brook Stream Restoration

Science poster session deriving from classwork in Engineering Design Clinic sponsored by the Natural Resources Conservation Service with Susannah Howe, design clinic director; Andrew Guswa, associate professor of engineering; and Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

In collaboration with the Natural Resources Conservation Service, this student team developed a design to stabilize a reach of the Roaring Brook Stream in Whately, Mass., and restore the stream channel equilibrium to protect a house and barn on an adjacent property. The team analyzed existing conditions though hydrologic and hydraulic modeling, identified and modeled design options to stabilize the stream, met with the local homeowner to select a final design, and prepared final design documents including construction drawings and cost estimates.

Alison Cloutier '08, Elizabeth Dulac '08 and Pisey Lim '08

Design of an Access Spur for the Manhan Rail Trail Extension

Science poster session deriving from classwork in Engineering Design Clinic sponsored by the Northampton Office of Planning and Development with Susannah Howe, design clinic director; Andrew Guswa, associate professor of engineering; and Judith Cardell, Clare Boothe Luce Assistant Professor of Computer Engineering

In collaboration with the Northampton Office of Planning and Development and a volunteer geotechnical liaison

from HyGround Engineering, this student team designed an access spur for the Manhan Rail Trail extension to connect the trail extension behind Smith's Physical Plant with Hebert Avenue, off of South Street. The team completed the design and geotechnical analysis of a soil embankment to support the span, selected surface material for the trail, proposed signage for the access spur connections, and prepared final design documents including construction plans and cost estimates.

Katherine Travis '08
Measuring Tree Sap Flux: Sensor Design and Development
Science poster session deriving from special studies with Andrew Guswa, associate professor of engineering

Modupe Adegoke '10
DPOAE Measurement Analysis in the Complex Plane
Science poster session deriving from special studies with Susan Voss, associate professor of engineering

Margaret Kulkarni '10, Elisabeth Wolfe '10, Najia Ahmed '09, Rosalie Ray '10 and Jessica Wilbarger '08
Putting on a Smaller Shoe: Concrete Solutions for Reducing Smith's Carbon Footprint
Panel presentation deriving from special studies with Donna Riley, associate professor of engineering
In spring 2008, students from the Smith chapter of Engineers for a Sustainable World took part in a special studies course that was motivated by Smith College President Carol Christ's signing of the American College and University Presidents Climate Commitment. Students carried out an inventory of Smith's greenhouse gas emissions, updating a previous inventory by Elizabeth Thomas '05. Working closely with Todd Holland and Gary Hartwell at Physical Plant, the group found Smith's 2007 greenhouse gas emissions to be approximately 35,000 Metric Tons of CO2 equivalents (MT eCO2), a 13 percent decrease since 2004, and 2 percent above 1990 emissions. Approximately 94 percent of our emissions are from heat and electricity production for the campus. Smith's carbon footprint will be significantly reduced with the installation of a cogeneration plant to combine heating and electricity production, which will come online next year. Other potential measures include investing more in purchasing local food; placing energy meters on individual buildings; reviewing the environmental effects of the Campus Car Policy; and providing a database so that Smith can get yearly feedback on how its emissions reduction efforts are succeeding.

Johanna Pfeifer '10, Taylor Buono '10 and Stephanie Erickson '10
Energy Conscious Building Design
PowerPoint presentation deriving from special studies with Paul Voss, assistant professor of engineering
At the end of the 2006–07 school year, Laurie Sanders, a representative of the building committee of the Westhampton Library, approached Johanna Pfeifer, Taylor Buono and Stephanie Erickson about the possibility of Smith students working as energy efficiency consultants for the library project.

For their special studies project, the students further explored and applied theories of energy efficient building design. Working as consultants for the construction of a new library in Westhampton, Mass., the three students concentrated on researching new technologies like nanogel and glaubers salt, created a mathematical model that shows energy consumption and gain throughout a two-year period, made design changes and developed estimates of cost savings.

Claire Denton-Spalding '10, Lauren Keller '09, Erica Kibbe '09, Rosalie Ray '10 and Marice Uy '09
Designing for Economic Empowerment: Product Development in Esteli, Nicaragua
PowerPoint presentation deriving from special studies with Susannah Howe, design clinic director; Donna Riley, associate professor of engineering; and Nola Reinhardt, professor of economics
Over the past year, this special studies focused on innovation and product design in developing countries. In May the team traveled for two weeks to Estelí, Nicaragua, where they collaborated with students and professors from Grand Valley State University in Michigan and from two Nicaraguan universities. Students from all four institutions were grouped into product development teams to brainstorm ideas and create products. Since their return from Nicaragua, the students have built and tested a prototype for the most promising product, an extra bike-seat mounted on the crossbar. They also researched the Nicaraguan economy, its challenges for small business, and the feasibility of opening an Innovation Center in Estelí to spawn more new ideas and businesses.

English Literature and Poetry

Molly Hamer '10
A Poetic Collection: Sylvia Plath in the Archives
Poster presentation deriving from STRIDE research with Cornelia Pearsall, associate professor of English language and literature
As a STRIDE scholar, sophomore Molly Hamer worked on a variety of projects exploring the life and work of American poet Sylvia Plath. In her presentation, she described her experience conducting archival research on Plath in the Smith College Mortimer Rare Book Room and in the Lilly Library at Indiana University. She detailed the insights she gained into Plath's poetry, as well as what she discovered about the challenging and rewarding process of working with archival materials.

Carly Maberry '08

"I am I": Sylvia Plath's Formation and Presentation of Her Self

Paper presentation deriving from special studies with Karen Kukil, associate curator, libraries, special collections, and Michael Thurston, associate professor of English language and literature

In her special studies with Karen Kukil and Michael Thurston, Carly Maberry explored Sylvia Plath's changing relationship with her own identity. She combined extensive research in the Sylvia Plath Collection in the Mortimer Rare Book Room, the Sylvia Plath Hughes Papers and the Smith College Archives, as well as the Ted Hughes Papers at Emory University, with detailed studies of Plath's published journals, fiction and poetry. Maberry's final paper, "'I am I': Sylvia Plath's Formation and Presentation of Her Self," analyzes the progression of Plath's identity development and reads Sylvia Plath's life and work as a triumphant celebration of rebirth and personal power. In her presentation, Maberry explained her positive approach to studying Plath and analyzed examples of rebirth from three periods of Plath's life and writing.

Ketsia Mareck-Loftus '08

The Sovereignty Princess in Germanic and Celtic Mythology

Paper presentation deriving from special studies with Craig Davis, professor of English language and literature

Ketsia Mareck-Loftus gave a preliminary report on her special studies project this spring, in which she examined the way the Anglo-Saxon poet of *Beowulf* adapted the figure of the "sovereignty princess" from Celtic tradition. This character gives the male hero the guidance he needs to rule effectively, cultivating the loyalty of his followers, as well as providing an heir through which to pass on his authority to the next generation. Queen Wealhtheow serves as sovereignty princess to King Hrothgar, inspiring loyalty among the Danes, even under attack from "anti-sovereignty" monsters. But Beowulf rejects a sovereignty princess of his own in the person of Queen Hygd. In spite of his great strength, then, Beowulf ultimately fails to preserve his kingdom, abandoned by all his retainers but one and dying without an heir of his body. An old Geatish woman weeps by his pyre, representing the bereft sovereignty of a now doomed people.

Thuy Le '09, Hannah Leung '10J, Hana Sun '08 and Lai Wa Wu '08

Asian American Travelers' Tales

Panel presentation deriving from classwork with Floyd Cheung, associate professor of English language and literature

Like everyone else, Asian Americans travel all of the time—voluntarily and involuntarily, and in many directions within the USA and abroad. In their classwork, however, Cheung and his seminar students concentrated on how Asian Americans are perceived and how they perceive themselves when they travel to countries of heritage. What is at stake in searching for one's roots? Can roots be found, or must they be imagined? After reviewing some of the "return" narratives they had studied, Cheung and his students reflected on their own travel experiences to China, Viet Nam, and Hong Kong.

Vanessa Bergmann '08

Memory in India

Poetry reading deriving from special studies with Mary Koncel, writing counselor, Jacobson Center for Writing, Teaching and Learning; lecturer in English language and literature

Jennifer Wise '10

Poetry Matters 2007–08

DVD presentation deriving from STRIDE research with Ann Boutelle, senior lecturer in English language and literature

Film Studies

Elizabeth Lyons '08

The Theory and Practice of Internships

DVD presentation deriving from special studies with Jefferson Hunter, professor of English language and literature

French Studies

Abiola Ahove '11, Julia Behrs '10, Sean DeMoranville HC '11, Kerri Hart-Morris '08, Suzanne Moran '11, Emily Penn '11 and Bethany Singer-Baefsky '11

Wiki: Creating, Editing and Thinking AND (Re) Creating, (Re) Editing and (Re) Thinking the French *Banlieue*

PowerPoint presentation deriving from classwork with Anouk Alquier, lecturer in French studies

Sarah Ayres Green '11

***Hernani:* A Night to Remember**

Poster presentation deriving from classwork with Mary Ellen Birkett, professor of French studies

Sarah Green drew upon a variety of sources to create dramatized memorabilia from the opening night of Victor Hugo's 1830 play *Hernani*. She attempted to re-create the climate surrounding the occasion, which was a momentous one largely because of public awareness of the play's controversial elements, such as its unbecoming portrayal of the nobility and monarchy. She collected the memoirs of Hugo's contemporaries—both of his followers and his foes, from the support system that enabled his production and the bureaucracy that tried to prevent it—as well as accounts of rehearsals, administrative exchanges and the premiere itself, and created a "memory box" meant to emulate a personal collection. Part of Green's goal was

to investigate what and how we commemorate an event, and the ways in which we all contribute to an ongoing historical moment by simply participating in the culture around us.

Elizabeth Ankudowich '08

Colonialism and the Search for Identity

Paper presentation deriving from classwork with Dawn Fulton, associate professor of French studies

Elizabeth Ankudowich explored identity construction in a colonial environment, and specifically the influence of racism on the black individual's identity. She applied sociological theory and the theories of psychoanalyst Franz Fanon to explain how, in a colonial context, racism is internalized during an individual's identity construction. She used the work of the poet Leon-Gontran Damas as an example of how the racism of colonialism manifested itself in the identities of black individuals who were subordinated by white Europeans. Damas' poem *Hoquet* demonstrates how black culture and identity may be reinvented and how it may prevail in the face of white cultural imperialism during colonialism.

Nancy Dunn AC '08

Plus Ça Change: Graphing Voter Eligibility in 19th-Century France

PowerPoint presentation deriving from classwork with Mary Ellen Birkett, professor of French studies

Geology

Eliza Parsons '08

Where Do We Draw the Line? Establishing New Elementary School District Boundaries in Burlington, Vt., to Reduce Socioeconomic Segregation

Science poster session deriving from classwork with H. Robert Burger, Achilles Professor of Geology

Andrea Gohl AC '08

Urban Geology: Giant Fossil Sponges Rule in the Canals of Miami, Florida

Science poster session deriving from special studies with H. Allen Curran, William R. Kenan, Jr., Professor Emeritus of Geology

Andrea Gohl examined the morphology of recently discovered late Pleistocene demosponge biostromes, composed of the newly described species *Miamiamplia vasiforma*, in Miami, Florida, to understand better this unique occurrence of sponges in high-energy tidal channel environments. Fossil sponge samples from modern drainage canals were collected and analyzed under the microscope. Results indicated that sponges had an unequal distribution of spicules and quartz throughout their structure. Irregular composition of the sponges made their attachment to substrates possible and provided a rigid structure for protection from wave energy. This study will provide valuable new information on poorly understood energetic habitats of demosponges.

Hoa-Lan Vo '10

"Digging" for Trilobites at the Smithsonian Museum of Natural History: The Resolution!

Science poster session deriving from STRIDE research with Bosiljka Glumac, associate professor of geology

For her STRIDE research, Hoa-Lan Vo traveled to the National Museum of Natural History (NMNH) of the Smithsonian Institution in Washington, D.C., to study trilobites of Steptoean age (Late Cambrian or about 500 million years old). Steptoean fossils are very rare in the northern U.S. Appalachians: the only two known occurrences are trilobites from northwestern Vermont and southeastern New York stored at the NMNH. Globally, Steptoean carbonate rocks display unusually high carbon isotope signatures, which can be used to age date non- or poorly fossiliferous deposits. Field studies of the strata that yielded trilobites of presumable Steptoean age revealed no record of elevated carbon isotope values in Vermont, and inconclusive evidence in New York. To test the age of these trilobites, this study examined carbon isotope values of the carbonate rock matrix surrounding the fossils. The results provided invaluable new information about Cambrian deposits from the northern Appalachians

Catherine Shafer '08

Sedimentary Delta Modeling

Science poster session deriving from special studies with Bosiljka Glumac, associate professor of geology

Understanding the dynamics of sediment deposition in deltaic systems is of great importance because these deposits represent our primary source of coal and are also excellent petroleum reservoirs. Following the instructions developed by the National Center for Earth-surface Dynamics, Catherine Shafer constructed a " Delta Box," which demonstrated deposition of sediment from a point source (mouth of a river) into a standing body of water (sea, ocean, lake). For her special studies work with Professor Bosiljka Glumac, Shafer used the delta to reconstruct the classic "slug" model of sequence stratigraphy for teaching purposes. She ran the model by feeding water and sediment (mixture of sand and coal) into water whose level could be kept steady or could be risen or lowered at different rates to produce various sediment deposition patterns. Overall, the model proved to be an effective teaching tool, easy to assemble and fun to operate.

Ruth Indrick '08

Critical Zone Interactions: The Influence of Geology and Human Activities on Soil and Plant Chemistry in the Vineyards Surrounding Milton Freewater, Oregon

Science poster session deriving from thesis with Robert Newton, professor of geology

Maya Wei-Haas '09

Is the Northampton Landfill Contaminating the Groundwater?

Science poster session deriving from Mellon Mays Fellowship Research with Robert Newton, professor of geology, and Amy Larson Rhodes, associate professor of geology

The Northampton Sanitary Landfill is located in a region of Paleozoic provenance sands and gravel that are underlain by the Mesozoic New Haven Arkose Formation. During July 2007, arsenic was reported in concentrations exceeding the Environmental Protection Agency's recommended maximum contaminant level of 0.01 mg/L in a private well located down gradient of the landfill at 981 Park Hill Road. For her independent research for the Mellon Mays Fellowship, Maya Wei-Haas analyzed groundwater and surface water chemistry data collected by the environmental consulting firms Stantec, Fuss O'Neill, and Gradient Corporation to determine the source of arsenic and the risk of contamination for the surrounding wells. Results of this analysis suggest the presence of a leachate plume and support that arsenic is mobilized from the aquifer itself and is not directly released from the landfill.

Marie McLane '08

Mysterious Meandering Microbial Mats: Clues to the Environment Post Snowball Earth—700 Million Years Ago

Science poster session deriving from special studies with Sara Pruss, assistant professor of geology

Marquela Stevenson '09

Gastropod Predation of San Salvador, Bahamas

Science poster session deriving from special studies with Sara Pruss, assistant professor of geology

Drilling frequency (percentage of shells with bore holes), was analyzed from two beaches from the north (Haitian Boat Beach) and south (Sandy Point Beach) of San Salvador Island, Bahamas. Previous work determined that a statistically significant difference in drilling frequencies existed between the beaches. Recent research has focused on determining the relative abundances of bivalves within the two populations to determine what factors are contributing to differences in predation intensity. From the data collected, it appears that while the populations collected from these two beaches differ, *Glycymeris, Divaricella quadrisulcata,* and *Chione cancellata,* were preferentially bored by gastropods at Haitian Boat Beach. Although abundant at Sandy Point, these mollusks are not frequently bored. These modern insights into gastropod predation on molluscs are valuable when comparing changes, such as escalation, in predation through geologic history.

Danielle Schmandt '09

Looking for Skeletons in the Cambrian Closet

Science poster session deriving from special studies with Sara Pruss, assistant professor of geology

Following the initial radiation of calcareous skeletal organisms during the Cambrian Explosion (~540 million years ago), there was a decline in organisms secreting calcareous skeletons during the Middle and Upper Cambrian (~500 million years ago). Thin-sections of samples gathered from exposures in western Newfoundland, Canada, were analyzed using the point-count method (200 points per slide) to identify which organisms remained through the later Cambrian and in what environments they lived. Four units of the Middle-Upper Cambrian Petit Jardin Formation (the March Formation, Campbell's Member, Big Cove Member and Felix Member) were analyzed, revealing that trilobites were the most abundant skeletal components. The March and Big Cove formations were deposited in deep-water settings and had the most fossiliferous material, whereas the shallow-marine strata preserved in the Campbell's and Felix members were generally lacking in skeletal material. These results may ultimately contribute to a greater understanding of life during the Cambrian.

Ling Cheung '09, Andrea Gohl AC '08, Penny Luo '08 and Maya Wei-Haas '09

Coral Reef Ed-Ventures 2007: An Environmental Education Program for Children of San Pedro, Belize

Science poster session deriving from summer program work with H. Allen Curran, William R. Kenan, Jr., Professor Emeritus of Geology; Paulette Peckol, Louise Harrington Professor of Biological Sciences; and Susan Etheredge, associate professor of education and child study

The Meso-American barrier reef is the largest reef in the Western hemisphere. Providing many resources, the reef greatly contributes to the way of life of people living close to it, such as in San Pedro, Belize. Located just 0.5 miles from the reef, the San Pedro community relies on the continued health of the reef for its livelihood. Launched in 2000 and in collaboration with the Hol Chan Marine Reserve, the Smith College Coral Reef Ed-Ventures program gives children an opportunity to explore and learn more about the fragile environments of the reef. Using hands-on activities and fieldtrips, the inquiry-based curriculum engages children in learning about sustainability and their environment. With many new and returning enthusiastic students, the program has become an important component of the education of San Pedro's children.

Christina Buliga '11, Jesse Bellini '11 and Emily Hart '10

Tracing Road Salt Pollution at Kampoosa Bog, Stockbridge, Mass.: Variation in Exchangeable Sodium on Peat

Science poster session deriving from STRIDE research with Amy Larson Rhodes, associate professor of geology; Andrew Guswa, associate professor of engineering; and Robert Newton, professor of geology

Government

Samantha Lyon '08

Activism at Smith: Documenting Oral Histories

DVD presentation deriving from special studies with Martha Ackelsberg, William R. Kenan, Jr., Professor of Government

Samantha Lyon presented a video showing what Smith students had to say about activism on campus. The oral history project took place in fall 2007. Through interviewing students on camera, Lyon hoped to document current student activism and create a database of personal and factual information about campus activism at Smith (2004–07). The full interviews are available for viewing in the Smith College Archives and will serve as a tool for future activists and as primary documents for research on student activism in the new millennium at Smith College. She hopes that the project encourages other activists to pick up the camera and interview each other about the work they are doing, or otherwise record their thoughts and actions to submit to the archives, and urges them to "take control of history."

History and Rare Books

Sonic Woytonik '08

Chesapeake Servants and Slaves: Race Relations in 17th-Century Virginia

Paper presentation deriving from special studies with Neal Salisbury, Barbara Richmond 1940 Professor in the Social Sciences (History)

Sonic Woytonik examined the shift from an indentured labor force to a slave labor system in Virginia between 1620 and 1680. Through analysis of colonial law, bills of servitude and sale, and secondary source material, Woytonik explored the link between racially collaborative resistance by the lower class and the gradual elimination of white indentured servitude from the labor paradigm. The resulting paper provided background for viewing Bacon's Rebellion as the catalyst for ending indenture in the Chesapeake region.

Zoe Mindell '08

What Do Raphael, Palladio and Three Popes Have in Common?

PowerPoint presentation deriving from special studies with Martin Antonetti, curator of rare books and lecturer in art. Neilson Library

What do Raphael, Palladio and three popes have in common? The answer is Ludovico degli Arrighi, a sixteenth-century Italian scribe and printer. Arrighi's manuscripts and printed books indicate his career spanned approximately 20 years, during which he received commissions from prelates, popes and wealthy humanists. Recent evidence suggests he even collaborated with Raphael on a sumptuous manuscript, never completed. Zoe Mindell, a student assistant in the Mortimer Rare Book Room, has been working with curator Martin Antonetti to solve the mysteries surrounding Arrighi's life and works. During her Junior Year Abroad in Florence, Italy, Mindell followed Arrighi's trail from Vicenza, Italy, to Madrid, Spain. Based on her research abroad and special studies with Martin Antonetti in spring 2008, Mindell proposed that Arrighi, lost to history after the Sack of Rome in 1527, might have escaped to Vicenza and continued his career under a former patron, the same Vicentine noble who discovered the architect Palladio.

Celeste Holz '08

African History Through Film

DVD presentation deriving from special studies with David Newbury, Gwendolen Carter Professor of African Studies (History)

Eleanor Jefferson '08

Doing as the Romans Do: Cultural Change in the Provinces

Paper presentation deriving from special studies with Richard Lim, professor of history

Italian Studies

Anielka Sanchez '08

A Failed Revolution? The History of the Red Brigades, an Italian Terrorist Organization

Paper presentation deriving from thesis with Giovanna Bellesia, professor of Italian language and literature

Felicitas Burgi '08

Italians in Switzerland After WWII—From Exploitation to Privilege

PowerPoint presentation deriving from thesis with Anna Botta, professor of Italian language and literature and of comparative literature

For her senior honors thesis, Felicitas Burgi explored the history of Italian immigrants to Switzerland after World War II. Burgi identified three comprehensive accounts of first-generation Italians in Switzerland and used them to obtain a picture of how the Italians perceived Switzerland and the Swiss during their stay. She embedded the analysis of the testimonies in a bigger picture, which shows the history of the phenomena, and also gives a brief overview of the various institutions that helped the immigrant upon arrival. She was particularly interested in identifying critical factors that influence the satisfaction of the immigrant with his situation abroad.

Lillian Lingham '08

The Role of the Media: Constructing Cultural Identities

PowerPoint presentation deriving from classwork with Anna Botta, professor of Italian language and literature and of comparative literature

In this presentation, Lillian Lingham tries to answer the following question: How does the media construct identities? This analysis is particularly significant in the era of globalization and migration. Before an immigrant finds a way to assert his or her identity, the media makes the first impression by producing books, articles, TV shows and movies that portray them. Lingham looked at different forms of media: movies, narratives, articles and music, to find how the immigrants were portrayed by the host-country and how the immigrants use to the media to assert their own identity. With the media playing a major role in today's era of globalization, it is important to question and reevaluate the portraits presented.

Sara Goldstein '08

Le Altre Voci: The Voices of Immigrants in Italy Today

Paper presentation deriving from classwork with Anna Botta, professor of Italian language and literature and of comparative literature

Sara Goldstein became interested in the recent wave of immigration in Italy during her junior year abroad. This past fall, she was able to study the immigration phenomenon in Professor Anna Botta's Europe on the Move course. For Goldstein's presentation, she discussed three papers that she wrote for the course, each covering a different aspect of immigration in Italy. She first discussed a paper about a memoir written by an Albanian immigrant juxtaposed with the history of Albanian immigration in Italy and the tensions that exist today in Italy regarding immigration. In the second portion of her presentation, Goldstein spoke about xenophobia in Italy through an analysis of how the Italian public reacted to Oriana Fallaci's controversial book *The Rage and the Pride*, which discusses the danger of Islam. The final part of her presentation highlighted a popular Italian book from the immigrant literature genre called *I, the Seller of Elephants* by Pap Khouma. Goldstein wrote her seminar paper on how this book exemplifies all of the issues associated with immigration in Europe today. Each portion of her presentation highlighted the many dilemmas and complications in Italy that have resulted from the rise in immigration.

Jewish Studies

Meredith Badler '08 and Chloe Brownstein '08

Representing the Holocaust Today and Tomorrow

Panel presentation deriving from research project and honors thesis with Justin Cammy, assistant professor of Jewish studies

In this panel discussion, senior comparative literature majors Meredith Badler and Chloe Brownstein presented their separate independent work. Badler's honors thesis, titled "Quest for Representation: Contemporary Post-Holocaust Fiction by Modiano, Foer and Sebald," was advised by Cammy and Professor Emeritus David Ball. This study compared three recent texts by postwar authors from different countries, each dealing with the theme of the quest as a way to uncover and engage with the past. In her independent research project, Brownstein has spent several years working on an archival Web site about Cammy's grandmother, a survivor of the Theresienstadt ghetto. The project employs documents, objects and video testimony to create a personal micro-history, which has already been used in classroom study and will perhaps help us shed light on a future means of Holocaust remembrance.

Landscape Studies

Elizabeth Chiarelli '08

Learning Through Landscapes: Advanced Landscape Design for a Northampton Bike Trail Destination and Access Point

Poster presentation deriving from special studies with Reid Bertone-Johnson, lecturer in landscape studies

Mathematics and Statistics

Anna Boatwright GR, Emily Gunawan GR and Jennifer Koonz GR

Conjugacy Classes in Coxeter Groups

Science poster session deriving from class work with Ruth Haas, professor of mathematics and statistics and of engineering

A Coxeter group is a type of group that is generated by involutions. Coxeter groups are often used to study geometrical symmetries. Two finite Coxeter groups were studied, those of type B--n and those of type Dn. The research group, led by Professor Ruth Haas, was primarily interested in the conjugacy classes of the involutions of each group and the relationships between these conjugacy classes. They explicitly determined the elements of each involution conjugacy class of B--n. They found formulae to determine the order of each involution conjugacy class of B--n and to count the number of involution conjugacy classes in B--n. They observed distinct patterns in the interrelationship between the involution conjugacy classes. The research group then looked at the conjugacy classes in the subgroup D--n to determine their properties.

Rosanna Speller '08

Knots and Minimum Distance Energy

Science poster session deriving from special studies with Elizabeth Denne, assistant professor of mathematics and statistics

In a spring 2008 special studies project, Rosanna Speller and Professor Denne and continued work that they had started in a research program in summer 2007. They aimed to find which polygonal knots have least Minimum Distance Energy. Speller previously showed that the energy is minimized for convex polygons. They hope relating the

energy to chords of polygons will be a helpful step toward showing that regular n-gons have the least minimum distance energy for all polygonal knots.

Alison McDonough '10J, Jennifer Wise '10 and Megan Heenehan GR

Coloring Graphs With Given Crossing Patterns

Science poster session deriving from class work with Michael Albertson, L. Clark Seelye Professor of Mathematics and Statistics

Hillary Sackett '08, Samantha Oestreicher GR, Cheryl Milton GR and Megan Sawyer GR

Fibonacci Sequences and the Golden Angle in Plants

Science poster session deriving from class work with Christophe Golé, associate professor of mathematics and statistics

Historically, the connection between the golden angle and Fibonacci spirals in plants has been widely accepted. However, the phyllotaxis group at Smith previously found plant structures where the ties between Fibonacci numbers and the golden angle were severed. This severing was caused by non-standard growth orderings of botanical elements. The 2008 student research team has refined previous results to determine that simplest example of alternate growth orderings in phyllotaxis occurs for the Fibonacci pair (2,3). Furthermore, this team has explored all possible orderings for the (2,3) case. In an effort to further understand the different orders of this case, methods of projection of the multi-dimensional fronts onto a two-dimensional plane were refined.

Music

Chrys Webb Woodbury '10 and Catherine Mulhern '10

"You Say Potato..." Two Instruments Encountering the Same Score

Music performance deriving from class work with Judith Gordon, assistant professor of music

Catherine Mulhern and Chrys Webb Woodbury collaborated with Judith Gordon on an experimental performance of the first movement of Brahms Sonata in E-flat Major, opus 120, no. 2, sharing the solo part between their two instruments, clarinet and viola. Careful study of the phrase structure led to conversations about what is uniquely expressive for a given instrument, and how those qualities shape an interpretation. Ultimately they found no inherent differences that would significantly alter the musical choices each performer makes. Rehearsals focused on cultivating a relationship between the sound worlds of the two instruments, with emphasis on how persuasive they both are as solo voices.

Arianne Abela '08

"Oh! stay and hear": Collaboration With Composer Ronald Perera and Performer of Premiere, Jane Bryden

Music performance deriving from class work with Jane Bryden, Iva Dee Hiatt Professor of Music, and Clifton J. Noble, piano

Arianne Abela performed a song cycle, *Shakespeare Songs,* by Ronald Perera, former professor of music and composition at Smith College who held the Elsie Irwin Sweeney Chair in Music. The presentation included collaborative class work with Jane Bryden, chair of the music department and voice teacher, as well as work with Ron Perera. Arianne presented background information on Perera's compositional process, which began during his sabbatical in London in 1985–86. Perera took various texts from Shakespeare's plays like *The Tempest* and set them to Elizabethan-style music fused with rhythmically and melodically challenging contemporary settings. Arianne Abela also interviewed Jane Bryden, who premiered this song cycle at Carnegie Hall, and proceeded to explain her own experience learning this difficult music and making it her own.

Laila Plamondon '08

Women Activists in Jazz Music: A Recital

Music performance deriving from class work with Jane Bryden, Iva Dee Hiatt Professor of Music, and Clifton J. Noble, piano

Throughout history and in every corner of the world, musicians have harnessed the power of music to incite social change, bringing the pain of injustice and inequity to the public sphere. Blues and jazz singers pioneered this trend in the United States. Through her class work with Jane Bryden, Laila Plamondon explored the relationship between activism and jazz music by performing pieces focusing on feminism and racism, such as Bessie Smith's "I Want a Little Sugar in My Bowl," Billie Holiday's personal protest song "Strange Fruit," and Nina Simone's "Four Women," a song about stereotypes of African Americans. The songs were composed over a span of 80 years by six artists and in five different styles, representing the breadth of activism in jazz. She presented the songs in their original context and in relation to the world today, hoping to provoke reflection and discussion.

Philosophy

Jessica Champagne '09J

Morality and Human Flourishing—A Very Concise Look at *Being and Time* by Martin Heidegger

Paper presentation deriving from special studies with Susan Levin, associate professor of philosophy

Jessica Champagne's analyzed Martin Heidegger's 1927 magnum opus work, *Being and Time*, in which Heidegger outlines the human way of Being. Although Heidegger never explicitly wrote about ethics or morality, Cham-

pagne argued that Heidegger's conception of authenticity, the pinnacle of human flourishing, presupposes a moral ethic. She explored the ways that Heidegger's conceptions of leaping-in and leaping-ahead as modes of Being-with-Others, assume that we are required to refrain from acting in ways that would limit another human's pursuit of his or her own authenticity.

Harper Gernet-Girard '08 and Elyse Waite '10

Grammatical Evidentiality and Epistemic Modality: How do Tibetan- and English-Speaking Children Talk About What They Know and How They Know It?

PowerPoint presentation deriving from thesis with Jay Garfield, Doris Silbert Professor of Philosophy

Lilith Dornhuber deBellesiles '08

Virgin Wife and Liberated Householder: Active Contemplation in Two Philosophies

Paper presentation deriving from thesis with John Connolly, professor of philosophy

Erin Stathis AC

Becoming Amoral: Nietzsche's Critique of Morality

Paper presentation deriving from special studies with Nalini Bhushan, professor of philosophy

Physics

Diana Jaunzeikare '11 and Anna Boehle '11

Setup for Precise Determination of Photomultiplier Linearity and Sensitivity to Single Photons

Science poster session deriving from research assistantship with Piotr Decowski, professor of physics

Diana Jaunzeikare and Anna Boehle had built setup for testing photomultipliers that will be used as a part of detectors for the PREx experiment at JLab in Virginia. The goal of this planned in the near future experiment is to measure with a very high precision the thickness of the "neutron skin" surrounding the ^{208}Pb nucleus. The results will have impact on the theory of nuclear interactions in general as well as on models describing neutron stars. The setup allowed us to adjust remotely light reaching the photomultiplier in a broad range of intensities, single photons included, using a set of optical filters, the position of which was controlled by the LabVIEW software. Pulses from the photomultiplier were sorted according to their content of charge by an analog to digital converter (ADC). The response to single photoelectrons could be easily extracted, allowing for a precise determination of the photomultiplier gain.

Katie Su '11 and Shorena Kalandarishvili '11

Design, Construction and Performance of Cherenkov Detectors for PREx Experiment at the TJNAF in Virginia

Science poster session deriving from research assistantship with Piotr Decowski, professor of physics

Two prototypes of detectors for the PREx experiment at the Thomas Jefferson National Accelerator Facility (JLab) in Virginia were designed, machined and assembled at Smith College. The aim of the PREx experiment is a measurement of the "neutron skin" in the ^{208}Pb nucleus with a very high precision. It is expected that the result of this measurement will have far-reaching consequences, among others on models of neutron stars. The design of the detectors was based on extensive computer simulations. The prototypes were tested in January 2008 using the high energy beam of electrons from the CEBAF accelerator in JLab. The tests confirmed that the concept of detectors was correct and the detectors comply with the requirements for the PREx experiment.

Kelsey Hattam '09, Aimee Shore '10, Catherine McGuinness '10 and Adrienne Wilson-Muenchow '10

Mapping the Velocity Field in Granular Flow

Science poster session deriving from special studies with Nalini Easwar, professor of physics

Aimee Shore, Adrienne Wilson-Muenchow, Catherine McGuinness and Kelsey Hattam presented their special studies research with Professor Nalini Easwar on the gravity-driven flow of granular materials in a two-dimensional hopper. This research was done in collaboration with N. Menon of the University of Massachusetts at Amherst. They discussed the differences between granular and fluid flow. The project aimed at measuring the velocity profile of the granular flow across the hopper. The flow was imaged by using a fast camera recording at 500 frames per second. They explained that the measured velocity profile demonstrated the existence of shear zones and the plug-flow nature of granular flow. Lastly, they outlined details of their future research to determine the factors that produce and affect the nature of the velocity profile of the flow.

Kelsey Hattam '09 and Alisa Stratulat '09

Spatial Force Correlations in 3D Granular Flow

Science poster session deriving from special studies with Nalini Easwar, professor of physics

Kelsey Hattam and Alisa Stratulat presented their special studies research with professor Nalini Easwar on the gravity-driven flow of granular materials in a three-dimensional hopper. This research was done in collaboration with N. Menon of the University of Massachusetts at Amherst. They discussed the evidence of linear force chains, which have only been directly seen in static granular materials. Hattam and Stratulat used forces recorded by transducers at the boundary of the flow and found a weak but definite correlation implying that although force chains exist in flow, they are short lived or infrequent. They also discovered that force information travels in the opposite direction of the flow at a much higher velocity than the bulk flow.

Psychology

Jessica Quiroz AC '08

Mother–Child Interactions and Theory of Mind

Science poster session deriving from Praxis internship with Jill de Villiers, professor of philosophy and Sophia and Austin Smith Professor of Psychology; and Peter de Villiers, Sophia and Austin Smith Professor of Psychology

Claire Denton–Spalding '10

Acquisition of Noun Class Markers in Xhosa

Science poster session deriving from STRIDE research with Jill de Villiers, professor of philosophy and Sophia and Austin Smith Professor of Psychology; and Peter de Villiers, Sophia and Austin Smith Professor of Psychology

Claire Denton-Spalding studied children's acquisition of the South African language Xhosa under the guidance of her STRIDE professor, Peter de Villiers. She researched class markers on the nouns, different question forms, negative forms, and early vocabulary of nouns and verbs. The work on noun class markers explored children's sensitivity to the grammar and function of these forms. In March 2008, her research with Peter de Villiers and Sandile Gxilishe was published in the Proceedings of the Boston University Conference on Child Language Development. In January 2008 Denton-Spalding was able to attend the first South African Conference on the Acquisition of African Languages at the University of Stellenbosch.

Yi Lin '09

Verbal Shadowing = Interfact in False Belief Reasoning?

Science poster session deriving from research assistance with Jill de Villiers, professor of philosophy and Sophia and Austin Smith Professor of Psychology; Kathryn Hobbs, research assistant in psychology; and Peter de Villiers, Sophia and Austin Smith Professor of Psychology

In addition to being a means of communication, language also plays an important role in theory of mind (ToM). However, whether language is necessary for both the acquisition and utilization of ToM, or only needed for acquisition, is unclear. The lab team of Professor Jill de Villiers extended Newton & de Villiers (2006) study on the role of language in false belief reasoning, which found significant disruption in adults' false belief reasoning abilities under verbal shadowing task only. The current study aimed to examine the effect of shadowing a language unknown or unfamiliar to the subjects. As the data collected from 50 female college students show, both English and Swahili, a language unfamiliar to all subjects, disrupted the subjects abilities to monitor false beliefs. This finding suggests the importance of language in engaging in false belief reasoning even after its acquisition.

Jesslyn Mullett AC '09J, Shahista Karim '08 and María Rendón '08J

The Relationship Between Perfectionism, Parental Criticism and Perceived Social Support

Science poster session deriving from class work with Patricia DiBartolo, associate professor of psychology

Stacy Diaz '10 and Suleica Anziani '10

The Comparison in the Use of Mental State Talk Amongst Latino Children Whose Mothers are Spanish Dominant and Those Whose Parents are English Dominant

Science poster session deriving from UUSS research assistant work with Kathryn Hobbs, research assistant in psychology; Jill de Villiers, professor of philosophy and Sophia and Austin Smith Professor of Psychology; and Peter de Villiers, Sophia and Austin Smith Professor of Psychology

Suleica Anziani and Stacy Diaz as part of Professors Jill and Peter de Villiers' research team, working through the Union of Underrepresented Students in the Sciences, assisted in transcribing tapes of approximately 100 Latino parents living under conditions of poverty whose children are enrolled in preschools located in Texas and Florida. They coded for words parents used to describe their children in relevance to cognition, desire and emotion. They hypothesized that the English-speaking parents would use more cognition, desire and emotional references when describing their child. They concluded that the Spanish-speaking parents also used more cognitive references about their children than the English-speaking parents. On the other hand, the English-speaking parents used more references of emotion than the Spanish-speaking parents. They will continue to follow these children for two more years to see how their theory of mind develops with age.

Britta Bell '08, Sarah Levine '08 and Alexandra Selbo–Bruns '08

The Role of Child Temperament in the Development of Perfectionism

Science poster session deriving from class work with Patricia DiBartolo, associate professor of psychology

Perfectionism has been characterized by the tendency to set excessively high standards and engage in excessive self-criticism (Frost, Marten, Lahart & Rosenblate, 1990). The present research aims to identify key childhood temperament characteristics related to the development of perfectionism. Kobori, Yamagata and Kijima (2005) suggested that behavioral avoidance and persistence may be two such traits. The hypotheses were that positive achievement striving (PAS) would be positively associated with persistence (PS), and negatively associated with behavioral inhibition (RSRI). Conversely, it was expected that maladaptive evaluative concerns (MEC) would have no association with PS and a positive association with RSRI. An online survey consisting of the Persistence Scale for Children (PS), the Retrospective Self-Report Scale of Inhibition (RSRI) and the Frost Multidimensional Perfec-

tionism Scale (FMPS) was administered to 355 undergraduate students. The analyses showed that PAS was positively correlated with both PS and RSRI. The MEC was positively correlated with RSRI and had no significant association with PS. Further analysis demonstrated that the relationship between behavioral inhibition and PAS resulted from the overlap between PAS and MEC. Suggestions for further research are discussed.

Catherine Cho '08, Tracy Pearson AC '08 and Alla Pekareva-Kochergina '09

The Relationship Between Perceived Parenting Style and the Two Dimensions of Perfectionism

Science poster session deriving from class work with Patricia DiBartolo, associate professor of psychology

Researchers have identified two dimensions of perfectionism: positive achievement strivings (PAS), an adaptive dimension of perfectionism, and maladaptive evaluative concerns (MEC), a maladaptive dimension. Past research on perfectionism has examined parenting factors in the development of perfectionism. Although researchers have generally found strong relationships between parenting styles and the development of perfectionism, they have reached somewhat inconclusive findings about which parenting factors are associated with which dimensions of perfectionism. A total of 358 female undergraduate students completed a survey analyzing their perfectionism scores and perceived parenting factors. Results revealed that MEC was positively correlated with parental control and expectations and negatively correlated with warmth. Furthermore, PAS was not significantly correlated with any parental factors with the exception of expectations, for which there was a positive correlation. Considering both maternal and paternal parenting dimensions simultaneously, only maternal parenting style was predictive of participants' MEC scores. We recommend future directions for research in further elucidating the pathogenesis of perfectionism's two dimensions.

Brenda Candelario '10

Spiral Road to Better Eating

PowerPoint presentation deriving from class work with Benita Jackson, assistant professor of psychology

Zephafif Schumacher '08

Psychology of the Working Class: Implications for Health

PowerPoint presentation deriving from special studies with Benita Jackson, assistant professor of psychology

Zephafif Schumacher examined the culture of individual responsibility and how perceptions of social status affect health. Narratives about status in America—the Protestant work ethic, belief in a just world and social mobility—dismiss structural barriers, stating that the individual alone determines success in life. Schumacher explained that stress from internalized blame can result in long-term psychological and physiological damage that tends to follow a gradient: as one descends the social status ladder, general health deteriorates. The most convenient strategy for coping with self-blame, however, is engaging in the aforementioned narratives, as often it is more stressful to challenge social and economic inequalities the lower one's social location. Schumacher concluded with her analysis of the cyclical nature by which these narratives reinforce the structural inequalities with which individuals must cope.

Sara Bolduc '08

Medical Technologies and Patient Care: The Psychology Behind the Procedure

PowerPoint presentation deriving from special studies with Benita Jackson, assistant professor of psychology

In her special studies, Sara Bolduc examined the patient experience during medical procedures involving one of three advanced medical technologies: an open bore Magnetic Resonance Imaging (MRI), Stereotactic Radiosurgery, and Robotic Surgery. Bolduc researched not only the biological advantages but also the psychological benefits these emerging technologies provide to patients. In conjunction with her special studies, Sara also interned at Mercy Medical Center in Springfield, Mass. Through her internship, Bolduc was further able to explore first-hand how patient care is influenced and affected by the technologies used to evaluate and treat them. She interviewed doctors working in the emergency room, intensive care unit, cancer center, diagnostic imaging center, and surgical unit to gain their attitudes toward technology and its use and purpose in their work.

Mary Kathleen Munroe '08

Brief Cognitive Restructuring and Mindfulness-Based Interventions for Perfectionism: Is One More Effective Than the Other?

PowerPoint presentation deriving from thesis with Patricia DiBartolo, associate professor of psychology

Danielle Guild '08

The Effects of Cytokines on Circadian Rhythms

Science poster session deriving from thesis with Mary Harrington, Tippit Professor in the Life Sciences (Psychology)

For her thesis research, Danielle studied the effects of peripheral cytokines on circadian rhythms of activity in hamsters. Circadian rhythms, generated by the brain, are physiological cycles of approximately 24 hours in length. A family of soluble proteins called cytokines are released in excess by tumors and may be involved in the circadian regulation of activity. The "cytokine hypothesis" proposes that fatigue, weakness, loss of appetite and other symptoms common to cancer patients are caused by cytokines produced by tumors. Presumably, these peptides enter the brain and mimic output signals of the central clock, thereby affecting circadian rhythms. Working in the lab of Dr. Mary Harrington, Danielle chronically administered the cytokine neuregulin-1-β1 to Syrian hamsters (n=20) and measured changes in their locomotor activity. She found

that the cytokine significantly suppressed wheel-running behavior in these animals. These results imply that the high circulating levels of cytokines observed in cancer patients may lead to disrupted circadian rhythmicity and feelings of fatigue.

Natalie Strokes '08

Serotonin's Effect on Per2 Expression in the Choroid Plexus

Science poster session deriving from special studies with Mary Harrington, Tippit Professor in the Life Sciences (Psychology)

For her special studies, Natalie Strokes investigated whether the choroid plexus was rhythmic and if serotonin affects it. Circadian rhythms are endogenously generated rhythms that maintain 24-hour periods. There is evidence that the master circadian pacemaker, the suprachiasmatic nucleus, acts not only through electrical signals, but also through release of soluble chemical signals, such as serotonin. Period genes (*Per1* and *Per2*) are controlled by the SCN. The choroid plexus lines the ventricular system and its primary function is to secrete cerebrospinal fluid, which circulates through the brain in a manner that enables chemical information to easily be carried. Expression of the serotonin receptor 5-HT2C was strongly labeled throughout the choroid plexus. Four samples of the choroid plexus from the lateral ventricle were treated. The period of the control group was significantly longer than the three serotonin treatment groups. The phase of the control group was also significantly later than the phases of the serotonin treatment groups. This suggests that the cerebrospinal fluid is not just a drainage system and should be investigated as a possible widespread signaling pathway.

Lindsey MacNabb '08

What Time Tells: Linking Circadian Clocks to Cancer

Science poster session deriving from special studies with Mary Harrington, Tippit Professor in the Life Sciences (Psychology)

Endogenous clocks generate rhythms in the body, otherwise known as circadian rhythms that have a period of about 24 hours. At a molecular level, circadian rhythms are controlled by an extensive network of oscillating circadian clock genes. Existing models link the circadian clock to the cell cycle and more specifically, current studies are linking circadian clock disturbances to cancer growth and regulation. In her special studies work with Professor Mary Harrington, Lindsey MacNabb studied several key clock genes and their corresponding effects on other genes, as well as on abnormal cell proliferation. In addition to suggested interactions resulting from gene manipulations in mice, studies have shown a direct link between *Period1* (Per1), a core clock gene and checkpoint kinase 2 (Chk2), a supposed tumor suppressor. Other studies use knowledge of circadian rhythms to modify times of drug administration to cancer patients for potentially more effective treatment.

Rebecca Carlson '10 and Catherine Castillo '10

Reentrainment of the Suprachiasmatic Nucleus and Peripheral Organs Following a Twelve-Hour Phase-Advance

Science poster session deriving from work with Mary Harrington, Tippit Professor in the Life Sciences

Jennifer Chain '09 and Tiffany Anne Tseng '11

Profiling Personal Drawing Styles: Do Children's Styles Persist Over Early Development and Independent of What They Draw?

Science poster session deriving from STRIDE research with Peter Pufall, professor emeritus of psychology

The purpose of Jennifer Chain (research fellow), Tiffany Tseng (STRIDE) and Professor Peter Pufall's research is to continue to investigate children's Personal Drawing Style (PDS) as a distinctive graphic tendency to communicate experience (Gardner 1980) or make meaning (Golomb 2000). They developed a coding system within which PDS is scaled. In this research, they focused on the PDS dimensions of narrative, movement and orientation to reality in their longitudinal analyses of drawings of three children (Carl, Evan and Alex) completed during grade school years at a New England private school. Their findings show that the each child exhibited a distinctive PDS profile, that the profile tends to stabilize with age and that the children differ from each other in the way their profiles stabilize over time. Next they will investigate the relationship between a child's PDS profile and her preferences to draw certain themes and contents.

Ally Einbinder '10, Michelle Steiner '11 and Sandy Yu '08

The Developmental Paradox of Individuality and Commonality: Why Do Suzie's Drawings Simultaneously Look Different From (individuality) and the Same as Her Peers' (commonality)?

Science poster session deriving from STRIDE and volunteer research with Peter Pufall, professor emeritus of psychology

This research examined the general psychological paradox that individuals are different and yet share a normative similarity with respect to the extent to which formal drawing style (FDS) is both an invariant quality of an individual child's drawings as well as a shared quality of drawing of her developmental cohort. FDS is reflected in the skillful creation of line, forms and the composition. Four-, five-, six-, eight- and ten-year-old children did pencil drawings of a child, a child playing ball, and a child pushing a wagon. Similarity in FDS was evident within an individual child's drawings as well as across the drawings of her age cohorts. However, at each developmental level, adults perceived children's individual FDS as significantly higher than it was within development. Hence, while children share fundamental drawing skills, they tend to use them differently in creating their own works.

Shari Moore '08 and Elizabeth Snide '08
Dose-Dependent NAN-190 Properties for Potentiating Circadian Responses to Light
Science poster session deriving from special studies and lab assistant work with Mary Harrington, Tippit Professor in the Life Sciences (Psychology)

Rachel Dorset '10 and Courtney Fields '08
Mapping the Relation Between Parents' and Children's Views of the 2004 Presidential Election: Evidence of Global Concordance of Political Views
Science poster session deriving from STRIDE research and volunteer research fellowship with Peter Pufall, professor emeritus of psychology
This research examined third- and sixth-grade children's awareness of social-political issues in the 2004 presidential election and the extent to which their views mapped those of their parents. Children and adults offered more political issues justifying a vote for their presidential choice than for their opponent; conversely, they offered more reasons to not support the candidate they opposed, and less for the candidate they supported. Both parents and children expect voter's choice to be based on "shared beliefs and ideas" and, in the case of the 2004 elections, the candidates' position on Iraq. However, their answers to individual questions infrequently revealed child-parent concordance on specific political issues, and no greater concordance than random child-adult parings. These findings are more consistent with a hypothesis that political socialization yields a global, rather than specific, concordance of social-political views between children and parents.

Patricia Svrckova '08, Stephanie Del Tufo '08, Rachel Lackert '10 and Alyssa Zachariah '10
Sex and Drugs: Effects of Anti-Epileptic Drugs on Hormonally Mediated Behaviors
Science poster session deriving from thesis with Madeline Rhodes, visiting assistant professor of psychology

Elizabeth Ankudowich '08
Can Playing Video Games Make You Smarter?
Science poster session deriving from thesis with Maryjane Wraga, associate professor of psychology
Does video game playing have cognitive benefits? To investigate the potential high and low-level cognitive effects of video game playing for her thesis work, Elizabeth Ankudowich tested non–video game players (NVGPs) and video game players (VGPs) on three tasks that utilize both low and high-level cognition. To explore low-level cognitive benefits, she chose a task known to measure attention capacity. To investigate higher-order cognition, she chose a spatial reasoning task, and a problem-solving task. Her results showed trends that supported previous research for some tasks, whereas others did not. VGPs were not shown to have better attention skills, nor did they outperform NVGPs on the spatial reasoning task. However, for the problem-solving task, results showed a trend favoring VGPs who had fewer excess moves. Ankudowich's findings were promising in that they suggested a possible influence of video game playing on high-level cognition. However, other cognitive advantages for VGPs may be weaker than previously had been thought.

Smithipedia

Emma Forrest '11, Rachel Hanlon '10 and Lauren Arthur '10
Smithipedia
Panel presentation deriving from STRIDE research with Carol Christ, president, and Nanci Young, college archivist

Sociology

Flor Guevara '08, Kimberly Kufel '09, Elisabeth Pixley-Fink '08, Emily Steelhammer '08, Mae Cooper MHC '09, Dana Finkelstein HC '08 and Hannah Jacobson-Hardy UMass '10
Talking Trash: Doing Sociology for H.O.P.E. (Holyoke Organized to Protect the Environment)
Panel presentation deriving from class work with Ginetta Candelario, associate professor of sociology
For the seminar SOC 315 Practicum in Community-Based Research, Professor Ginetta Candelario's students looked at the current proposal for a transfer station in Holyoke, Mass., and conducted research on what it would mean for the residents. They looked at the political process in which the proposal took place, the trash landscape in Holyoke and Massachusetts, and environmental justice issues to produce quantitative data for this research. In this project they learned how the inequalities and economic and racial segregation of Holyoke, Mass., manifested themselves in a transfer station proposal. They sponsored a public community forum for the residents and other stakeholders in Holyoke so that their findings could be shared with the community.

Emily Yen '09
How Inter-agency Collaboration Affects Child Abuse Prevention Agencies in a Community
PowerPoint presentation deriving from special studies and Mellon Mays Undergraduate Fellowship with Nancy Whittier, professor of sociology

Jenna Zelenetz '09, Allyson Marks '10 and Eliza Warren '10
The Festival City: Presentation and Branding at the Newport Folk Festival
PowerPoint presentation deriving from work with Jonathan Wynn, lecturer in sociology

As a part of a three-city, multi-method analysis of how festivals operate to form the identity or "brand" of a city, this research team focused on Newport, Rhode Island's Dunkin' Donuts Folk Festival. Festivals like Austin's South By Southwest, Nashville's Country Music Association Festival, and Newport's Folk gathering provide tourists, local residents, performers, event planners and music industry personnel with an opportunity to formulate collective definitions of particular cities and regions. Three researchers — Jenna Zelenetz, Allyson Marks and Dr. Jonathan Wynn—traveled to Newport in the summer 2007 to administer an open- and closed-ended questionnaire to 70 festival participants and local residents. A fourth member of the research team, Eliza Warren, assisted in the data collection and analysis afterwards. All three student researchers presented their work at Collaborations by creating a 10-minute movie on the process and findings of the study.

Spanish and Portuguese Studies

Amelia Mitchell '11

The Relationship Between Transnational Trade and Cooperation Agreements, National Legislation and Film Production in Latin America

PowerPoint presentation deriving from STRIDE research with Maria Helena Rueda, assistant professor of Spanish and Portuguese

For her STRIDE project, Amelia Mitchell researched the effects of transnational cooperation agreements and national audiovisual legislation on film production, since the 1990s, in Mexico, Colombia and Argentina. In this context, the idea of a film's national identity was explored, posing questions such as: What defines a "national film" in today's world of globalization? Why is this important? And what is involved in making a "national film" in the age of free-trade agreements and deregulation?

Ashleigh Rich '08

Women, Identity, Work and Creative Resistance in the México-U.S./U.S.-México Borderlands

PowerPoint presentation deriving from special studies with Michelle Joffroy, associate professor of Spanish and Portuguese

Ashleigh Rich presented "Femicide and *El silencio que la voz de todas quiebra,*" exploring questions related to women, identity, work and creative resistance in the México-U.S./U.S.-México borderlands. Since 1993 the bodies of mostly young, poor migrant women have been found in the borderlands between the two countries near urban centers. Most of the women worked in the *maquiladoras*—foreign-owned deregulated sweatshops that employ low-wage, unskilled women workers in bad conditions and export the majority of their products directly to the United States for consumption. Rich analyzed the text *El silencio que la voz de todas quiebra,* which humanized the cold facts of the newspaper reports of seven of the murders. She demonstrated that the narrative of individual lived experience that the text told made the lives and deaths of the victims identifiable and thus accessible to their communities and to the readers themselves, creating a space for responsibility and change.

Marja van der Loo '08

Deconstructing 17th-Century Dutch Paintings of Brazil

PowerPoint presentation deriving from special studies with Marguerite Itamar Harrison, assistant professor of Spanish and Portuguese

Blood, entrails and dinner plates are not usual images included in a tranquil 17th-century Dutch landscape painting. These grotesque and vivid images become a provocative method in which Brazilian artist Adriana Varejão refreshes the viewer's memory of Brazil's painful history. One such painting by Varejão is the reconstruction of the *Ruins of the Carmo Convent in Olinda* by 17th-century Dutch painter Frans Post. Varejão's destruction of the painting offers a commentary on Brazilian history to the viewer, while Post's image is simply documenting Brazilian landscape. His paintings are transformed into a historical narrative through Varejão's manipulation that is absent or perhaps better explained as avoided in their original form. This special studies course investigated the intersections between Adriana Varejão's contemporary Brazilian artworks and her sources in 17th-century Dutch paintings.

American Studies Diploma Program Theses

Berna Balci GR

Cross-cultural Differences Between Request and Apology Production of American and Turkish Speakers of English

Poster presentation deriving from thesis with Margaret Speas, professor of linguistics, University of Massachusetts Amherst

When humans use language to communicate, knowledge of language goes hand-in-hand with knowledge of the principles of successful communication. To be able to communicate successfully in a foreign language, language learners should develop pragmatic competence in the target language. Pragmatic competence includes the knowledge of speech acts and speech functions. In this study, Berna Balci focused on two speech acts: "requests" and "apologies." To collect the data, Balci gave a questionnaire to forty 14- and 15-year-old American and Turkish speakers of English. After collecting the data, she identified and compared the requesting and apologizing

strategies used by 14- and 15-year-old American and Turkish speakers of English. The results of her study showed that young American and Turkish speakers of English use different structures and politeness strategies when requesting something or apologizing for something. These differences were found out to be a result of either the negative transfer from the first language (Turkish) to the target language (English) or the differences between American and Turkish cultures. The findings of Balci's study supports the idea that EFL (English as a foreign language) teachers should be giving more explicit teaching about pragmatic strategies.

Laura de Bruijne GR

"All the News That Fits?" Comparing *New York Times* Coverage of Vietnam and Iraq

Poster presentation deriving from thesis with Marc Lendler, associate professor of government

Sonia Garcia Ruiz GR

A Hollywood Image of Postwar New York: Revealing Gender Roles Through City Spaces

Poster presentation deriving from thesis with Alexandra Keller, associate professor of film studies

Anida Hadžic GR

Nothing to Be Done?: Susan Sontag and Art as Activism in Sarajevo

Poster presentation deriving from thesis with Jim Hicks, director, American Studies Diploma Program

The thesis "Waiting for Godot in Sarajevo" focuses on the staging of Samuel Beckett's infamous play in besieged Sarajevo in 1993. The play was directed by Susan Sontag, who saw this as the only way in which she, as an intellectual, could help the people of Sarajevo. It aims at answering questions regarding the role of art in times of crisis and how and whether it can be used as defense. It also centers on the role of Western intellectuals today and how they can be of aid in such circumstances. The thesis begins with a chapter describing Sontag's life, works and political activism, to provide the reader with some insight into the mind and life of this brilliant woman, who came to represent the modern U.S. intellectual. Chapter two takes the reader to Sarajevo and some of the plays that were staged there during the siege. It discusses what these plays meant to the people there during the war, as well as their importance for future generations to understand what the siege meant to the Sarajevans and how they coped with it. The third chapter contains an analysis of "Waiting for Godot" and a description of the staging of the play. It also focuses on reactions to the play, above all of the people of Sarajevo and then of the local and foreign media. The final chapter is a summary and partly a conclusion to the thesis. Because the thesis is centered on questions that have no concrete answers, the final chapter cannot be called a conclusion in the ordinary sense of the word.

Magali Mel GR

Ethnicity, Race, Gender and Social Class in Barbara Neely's Detective Fiction

Poster presentation deriving from thesis with Daphne Lamothe, assistant professor of Afro-American studies

For her diploma thesis, Magali Mel chose to write about Barbara Neely's subversion of the detective fiction. Neely's revision of the classical detective fiction allows her to tackle social issues that are usually excluded from white male–centered detective fiction. Blanche White, the fierce main character and insightful investigator, becomes the witness to a climate of social tension, mainly between blacks and whites. Mel showed Neely's singularity, focusing on the intertextuality of her novels, *Blanche on the Lam* (1992), and *Blanche Among the Talented Tenth* (1994). Neely inscribes herself in a tradition of African American writers, using tropes common to African American literary tradition (the concern with invisibility, double-consciousness and the place of African Americans in American society, for example). Mel proved the richness of Neely's texts on different perspectives: how she subverts detective fiction and comments on it by the use of an ethnic dimension; how she uses the ethnic dimension as well as the gothic to replace the African American community at the center of concern, to show its richness, relevance and importance in American culture and history.

Segolen Perron GR

Writing as Painting: A Study of the Italian and American Landscapes and Gardens in the Novels of Edith Wharton

Poster presentation deriving from thesis with Carol Christ, president and professor of English language and literature

For her American Studies Diploma, Ségolen Perron wrote a thesis on the American landscapes and gardens in two of Edith Wharton's diptychs (*Ethan Frome* and *Summer*, *Hudson River Bracketed* and *The Gods Arrive*). She showed how the landscapes functioned not as merely beautiful backgrounds but as central elements to these narratives. She concentrated on what she called the "subjectivity of the landscape" and analysed the way most of Wharton's descriptions of New England landscapes were paired with the idea of struggle for expression. She also read into the "merging" of the characters into the landscape symptoms of nostalgia for an Edenic and pastoral ideal.

Annalisa Staffa GR

The Politics of Evaluation: Asserting U.S. National Interest in the Evaluation of International Development Programs

Poster presentation deriving from thesis with Rick Fantasia, director of Kahn Liberal Arts Institute and professor of sociology

Starting from questioning the role of the United States in the development field, Annalisa Staffa explored the international humanitarian system in which governmental evaluations take place. Evaluation of development

programs has to be considered as a nonclassical means to pursue the United States national interest in the fields of international humanitarian aid. After a field work study conducted through in-depth interviews with evaluators at the U.S. Government Accountability Office and at the United Nations, Staffa conjugated the everyday practice of the evaluators with the international context in which these evaluations take place. With the collaboration of Professor Fantasia, Staffa was able to illustrate the effects, the problems and the constraints inscribed in development evaluation. She concluded her American Studies Diploma thesis by describing possible correction to the actual humanitarian system.

Afanwi Niba GR
Swimming in the Mainstream: David Chappelle, Chris Rock and the Rise of African-American Comedy
Poster presentation deriving from thesis with Louis Wilson, professor of Afro-American studies

Una Tanovi GR
Bosnian Immigrant Writers in Contemporary American Fiction
Poster presentation deriving from thesis with Jim Hicks, Director, American Studies Diploma Program

Enoch Wambua GR
Press Freedom and State Control: A Study of the Relationship Between State and Media in Shaping Public Opinion
Poster presentation deriving from thesis with Donald Baumer, professor of government
The state and media relate in complex and yet inevitable ways. And in these relations, serious issues of conflict and co-operation arise. Is the State an irritant or a welcome partner in media operations? Is the media a custodian of the public right to know or a pretentious enterprise that has appropriated for itself the role of watching over every government move with the express intention to find fault and criticize? In his Diploma in American Studies thesis, Enoch Wambua examined how state and state agents seek to influence media content with the intent to manipulate public opinion. The case study for the thesis was on the relationship between the City Government of Northampton (representing state), Smith College (representing institutional interest) and the *Daily Hampshire Gazette* (representing media) in the controversies surrounding construction of the engineering and molecular sciences building.

Hanna Woodhead GR
Salem on Trial: The Puritan Legal System as a Means of Female Subjugation
Poster presentation deriving from thesis with Neal Salisbury, Barbara Richmond 1940 Professor in the Social Sciences (history)
For her Diploma in American Studies thesis, Hanna Woodhead demonstrated how Puritan society used its legal system as a means to subjecting women during the witchcraft trials, with a specific focus on the Salem events of 1692. She first explored the particularities of the Puritan legal system and the crime of witchcraft, before describing the ambiguous position women had in Puritan society. She demonstrated that women were specifically targeted, as a defence response to the social and economic changes New England was experiencing at the time.

Kanako Yamana GR
Representations of Jewish Identity in Broadway Musicals, 1940–1970
Poster presentation deriving from thesis with Justin Cammy, assistant professor of Jewish studies

Kahn Institute: Sustainable Houses, Homes and Communities

Najia Ahmed '09; Ji Ying Zhao '09; Annie Parker AC '08; Nathanael Fortune, associate professor of physics; James Lowenthal, associate professor of astronomy; and Michele Wick, lecturer in psychology
Designing for Sustainability: Local and Global Visions: Kahn Institute
Panel presentation deriving from the Kahn Institute Project "Sustainable Houses, Homes and Communities"

Dana Gould '08
The Modern American "Wilderness" and Beyond: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Sustainable Houses, Homes and Communities"

Samantha Lyon '08
The Smith Activism Manual: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Sustainable Houses, Homes and Communities"
The Smith Activism Manual is a booklet mapping the way things work at Smith College. It addresses how to get funding, going to the right campus committees, getting events publicized, highlights important administrators to know, and presents case studies of student activism. It is a project of the "Sustainable Houses, Homes and Communities" Kahn Fellowship of 2007–08. Since change does not happen instantaneously, the only way to keep progressing is to know what came before. At a college where students are graduating every year, it is difficult to maintain a collective memory and history. The manual compiles some of the current knowledge and should serve to make student

activism more informed and contextualized in the future. Samantha Lyon presented a poster describing the how-to guide on getting involved in activism and social justice at Smith College with the hopes that other students will continue to update the manual and contribute their own experiences.

Piper Hanson '08
Viewing Heat Loss on Smith Campus Through Infrared: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Sustainable Houses, Homes and Communities"

Dharana Rijal '08
Energy Efficiency in a Carbon Trading Future: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Sustainable Houses, Homes and Communities"

Kahn Institute: Undergrounds Underworlds

Candace Clement AC '09, Elizabeth Williams '08 and Maura Donahue, teaching fellow in dance
Shifting Ground: Subverting Space in Physical, Digital and Performance Undergrounds: Kahn Institute
Panel presentation deriving from the Kahn Institute Project "Undergrounds Underworlds"

Andrea Gohl '08
Images From the Underground: A Geologist's View of Caves: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Undergrounds Underworlds"

Lauren Vollono '08
Cult of the Dead: Roman Columbaria and Death Ritual: Kahn Institute Core
Exhibit deriving from the Kahn Institute Project "Undergrounds Underworlds"
There exists a constant confusion of the spatial and spiritual boundaries between life and death. For Roman antiquity, this confusion was met with the architectural formation of communal burial grounds for cremated remains, *columbaria*, and the social formation of *The Cult of the Dead*. The Cult, mainly comprising slaves and freed-people, embodied the increasing fear and importance of a social network in life to preserve individuality and security in the afterlife. Lauren Vollono has spent the last year studying the social rituals, belief structures, literature and art of the Roman Underworld alongside the relationship of the underground architectural structure to its surface community.

Notice of Nondiscrimination
Smith College is committed to maintaining a diverse community in an atmosphere of mutual respect and appreciation of differences. Smith College does not discriminate in its educational and employment policies on the bases of race, color, creed, religion, national/ethnic origin, sex, sexual orientation, age, or with regard to the bases outlined in the Veterans Readjustment Act and the Americans with Disabilities Act. Smith's admission policies and practices are guided by the same principle, concerning women applying to the undergraduate program and all applicants to the graduate programs. For more information, contact the Office of Institutional Diversity, (413) 585-2141.

.9M4021–12/2008 DESIGN: JOHN EUE

Smith College
Northampton, Massachusetts 01063
(413) 584-2700
www.smith.edu/collaborations

SMITH COLLEGE

Save the Date

Celebrating Collaborations

April 18, 2009