



**A Celebration of Student Achievement**

**May 1, 1997**

**Wellesley College**

**Conference Proceedings**



## **The Ruhlman Conference**

It gives us great pleasure to welcome you to the inaugural Ruhlman Conference. Made possible by the Barbara Peterson Ruhlman Fund for Interdisciplinary Study, the Ruhlman Conference was established to foster collaboration among students and faculty across the disciplines and to enhance the intellectual life of Wellesley College. This event provides an opportunity for students, faculty, staff, friends, family, and alumnae to come together in celebration of student achievement.

The Conference celebrates intellectual life by sponsoring a communal, public event where students have the opportunity to present their work to an unusually wide audience. By providing an opportunity for public presentation of what is often a private, isolated activity, the conference demonstrates that academic inquiry is part of an ongoing conversation within a community of scholars.

Attentive to the diversity of student interest and accomplishment, the Ruhlman Conference includes a variety of formats for the presentation of student work: talks, colloquia, panels, poster sessions, exhibitions, musical and theatrical performances, and readings of original work. Representing the work of over 150 Wellesley students, this year's conference is organized around five major themes – Crosscultural Issues and Interactions; Social Institutions, Practices, and Theory; Technology and Communication; Gender Studies; and Studying Wellesley: work that directly focuses on some aspect of the College community. We encourage you to experience the diversity and richness of student achievement of the Conference, and wish to express our thanks and congratulations to all students participating in this special event.

## Thematic Overview

### Border Crossings: Crosscultural Issues and Interactions

Prejudice, Stereotypes, and Power	3:00	Jewett 372
Crossing Genres	3:00	Pendleton West 105
Crosscultural Readings and Interpretations	4:25	Jewett 372
Religion in Crosscultural Perspective	5:50	Jewett 450

### Social Institutions, Practices, and Theory

Defining and Responding to Social Problems	3:00	Davis Museum
Responding to Crime	3:00	Jewett 106
Schools and Educational Practice	4:25	Jewett 452
Politics at Home and Abroad	4:25	Pendleton East 105
Economic Change and Its Effects	5:50	Jewett 372

### Technology and Communication

Student Reactions to Instructional Technology	3:00	Pendleton East 206
Multimedia Applications in the Social Sciences	4:25	Jewett Auditorium
Multimedia Applications in Science	4:25	Pendleton West 105
Multimedia Applications in Art and Science	5:50	Jewett 453
Robotic Design Exhibition	5:50	Jewett Sculpture Court
Language and Communication	5:50	Pendleton West 105

### Gender Studies

Gender Studies in Psychology	4:25	Pendleton East 206
Gender Studies in Literature	5:50	Pendleton East 105

### Studying Wellesley

Students as Editors	3:00	Jewett 452
Wellesley's Natural Environment I	4:25	Pendleton East G04
The First-Year Experience at Wellesley	4:25	Pendleton East G18
Art at the Davis Museum	5:50	Davis Museum
Research at the Child Study Center	5:50	Pendleton East 206

### Poster Sessions

Poster Session I (Astronomy, Biology)	4:25	Jewett Lobby
Poster Session II (Chemistry, Geology, Physics, Psychology)	5:50	Jewett Lobby

### Performances/Readings

Music	3:00	Pendleton West Salon
	8:00	Houghton Memorial Chapel
Fiction and Screenplay	3:00	Davis Museum
	5:50	Jewett Auditorium
Theatre	4:25	Davis Museum

### Exhibitions

Photography		Jewett Sculpture Court
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## Conference Schedule

3:00 – 4:10

### Border Crossings: Crosscultural Issues and Interactions

#### Prejudice, Stereotypes, and Power *Jewett 372*

Aimee Jabro-Young, "Eliminating Stereotypes, Identifying Confounding Social Variables"

Inna Kantor, "The Art of Hatred: The Representation of Jewish and Irish Immigrants in Nineteenth-Century American Political Cartoons"

Ingrid Moen, "The Problems of, and Possibilities for, Norwegian-Jewish Identity"

Allyson W. Paflas, "Memorials of African-American Slavery: From the Faithful Slave to the Amistad Rebellion"

*Margaret Davidson, Presiding*

#### Crossing Genres *Pendleton West 105*

Alexandra Parsons, "'King Lear' Through Film: Brook and Kozintsev"

Elizabeth Reich, "The Grotesque Nature of Paradise in Milton's *Paradise Lost*"

### Social Institutions, Practices, and Theory

#### Defining and Responding to Social Problems *Davis Museum*

Jane Sydney Foster, "Welfare Reform as Moral Panic"

Samantha Kirby, "Terror and Theriac: Popular and Medical Responses to the Plague in Northern Italy"

Jana Montgomery, "Save Our Babies: The Healthy Start Initiative as a Means of Infant Mortality Reduction"

Shana Whitehead, "Contradictions in the Delivery of Social Services"

*Zoe Rossing, Presiding*

#### Responding to Crime *Jewett 106*

Erin Collins, "The Architecture of Prisons"

Annic Kim, "Battered Woman's Syndrome as a Legal Defense"

Lynn Marsella, "Shaming as Punishment"

*Shana Connor, Presiding*

### Technology and Communication

#### Student Reactions to Instructional Technology *Pendleton East 206*

Lara Kipperman and Esther Andrews (with Wendy Knox, Virginia Lee, Aditi Rao, and Nancy Ward), "Technology at Wellesley: Students' Perspectives"

### Studying Wellesley

#### Students as Editors *Jewett 452*

Laura Diao and Jing Li, "The Chinese Literary Magazine at Wellesley"

### Performances/Readings

#### Music *Pendleton West Salon*

Rebecca Y. Kim, "John Cage (1912-1992): Music for Prepared Piano and Dance"

**Fiction** *Davis Museum*

Holly Uyemoto, "A Hunger So Wide and So Deep"

Stephanie Lane, "The Color White"

Agnes Araba Graves, "In the Interest of the Village"

**4:10 – 4:25 Break***Refreshments available in Jewett (Lobby and Student Gallery), Pendleton West (opposite Room 105) and Pendleton East (Political Science Lounge)***4:25 – 5:35****Border Crossings: Crosscultural Issues and Interactions****Crosscultural Readings and Interpretations** *Jewett 372*

Elizabeth Boatright, "Elements of Shamanism in an Altaic Earth-Diver Creation Myth"

Alyson Nakamura, "Hamlet in Asian America: Younghill Kang and the Creation of Identity"

Kavitha Nair and Vandana Radhakrishnan, "The Presences of Nair Women in the Political and Literary World"

*Erin Wilkinson, Presiding***Social Institutions, Practices, and Theory****Schools and Educational Practice** *Jewett 452*

The Students of Education 300: Amy Picard, Leslie Glinoga, JulieAnn Villa, and Stacy Schlutsmeyer, "Science Education Today: Perspectives from Wellesley College Student Teachers"

**Politics at Home and Abroad** *Pendleton East 105*

Allison F. Gardner, "Victims' Rights: Normative, Constitutional, and Federalism Issues Raised by Victim Impact Statements"

Kristin Neubauer, "Evaluating the Role of Independent Journalists in Latin America: A Case Study of Mexico"

Carissa Gonzales and Karen Weir, "Madame Chiang Kai-Shek: The Madeleine Albright of the 1930s"

*Audra Lewton, Presiding***Technology and Communication****Multimedia Applications in the Social Sciences** *Jewett Auditorium*

Brandice Burton and Angela Dougan-Akuoku, "The New Face of Technology Integration: The Culmination of Technology, Film, and Writing"

Emily Harrold and Kimberly Judge, "A Multimedia Exhibition: The Re-Socialization of R.P. MacMurphy in 'One Flew Over the Cuckoo's Nest'"

**Multimedia Applications in Science** *Pendleton West 105*

Kirsten Stadler, "Theoretical Investigations of Benzynes: A Chemical Halfway House"

Kelley Yan and Heather M. Molleur, "A Tale of Two Sites: Calculating the Molecular Properties of Cyclohexenone"

## Gender Studies

### Gender Studies in Psychology *Pendleton East 206*

- Wendy Fung, "Gender Differences in the Prisoner's Dilemma Game: A Meta-Analysis"  
 Kelley Anne Porter, "Body Image and Acculturation in Korean-American College Women"  
 Jasmine H. Williams, "The Portrayal of Black Women Models in Mainstream Fashion  
 Magazines Versus Black Fashion Magazines"  
 Evelyn Alfonso, Dana Lau, and Allison Werner, "The Effects of Sex Composition  
 of Groups on Children's Self-Evaluation"

*Liz Louik, Presiding*

## Studying Wellesley

### Wellesley's Natural Environment I *Pendleton East G04*

- Colleen A. Brownell, Denise S. Gallagher, Helen J. Kang, Elise L. Kibler, and Tien T. Thach,  
 "Leaf Senescence in the Sugar Maple Tree"

### The First-Year Experience at Wellesley *Pendleton East G18*

- Rachael Lerner and Carrie Ruppap, "The Insider's Guide to Your First Month at Wellesley"

## Poster Session I *Jewett Lobby*

### Astronomy

- Kathleen Sewall, "The History of Astronomy at Wellesley College"

### Biology

- Akhila Balasubramanian, "Calcium Starvation and Characterization of Calcium-Binding  
 Protein(s) in *Synechocystis* sp. PCC 6308"  
 Ting Bao and Greg Hyde, "The Cyanobacterium *Synechocystis*: Investigation of Optimum  
 Phosphate Concentration, Exopolyphosphatases, and Separation of Periplasm and  
 Cytoplasm"  
 Alexa L. Bontrager, "The Effects of Lipoygenase Inhibitors on Root Hair Development  
 in *Arabidopsis thaliana*"  
 Erica A. Kruger, "Adjustable Allocation: A Strategy for Maximizing Reproductive  
 Success in *Clarkia gracilis*"  
 Elena McKee, "The Effects of Pollination of Early Flowers in *Antirrhinum majus*"  
 Katrina Van Dellen, "Spatial Memory Deficits in Ovariectomized Flag APP-C100 Mice"  
 Keren L. Witkin, "Isolation of Phycobilisomes from *Synechocystis* sp. PCC 6308"

### Wellesley's Natural Environment II

- Holly Alpert, "Trees, Weeds, and Exotic Species: The Fate of the Wellesley College  
 Landscape"  
 Ann Rondeau Westra, "Wellesley College Forest Patches: Past, Present, and Future"

## Performances/Presentations

### Theatre *Davis Museum*

- Maria Almond, Jowhara Alsaud, Alison Barker, Emily Card, Keisha Champagnie,  
 Laura Chen, Akuba Dolphyne, Marietta Fried, Daisy Gardner, Lesley Halperin, Meghan  
 Hinchey, Alicia Kahn, Faith Kakulu, Esther Llanos, Katherine McIntosh, Darcy Penick,  
 Sasha Pfau, Kim Wilson, and Pauline Yasuda, "Raise Your Voice"

5:35 – 5:50 Break

Refreshments available in Jewett (Lobby and Student Gallery), Pendleton West (opposite Room 105) and Pendleton East (Political Science Lounge)

5:50 – 7:00

### Border Crossings: Crosscultural Issues and Interactions

#### Religion in Crosscultural Perspective Jewett 450

Gloria Chyou, "Child-Parent Relationships Among Chinese-Americans: Does Confucianism Matter?"

Asma Gull Hasan, "Unity and Diversity Among American Muslims"

Catherine Hudak, "A Neo-Confucian Analysis of Contemporary China"

Amy Kruetzman, "What is American Transcendentalism?"

*Monti Llorens, Presiding*

### Social Institutions, Practices, and Theory

#### Economic Change and Its Effects Jewett 372

Anne Kohler, "The Organizational Dynamics of Mergers and Acquisitions"

Zoe Robbins, "Surviving the 'Special Period': Market Reforms in the Cuban Context"

Ling-Yun Tang, "State-Controlled Tourism in the People's Republic of China:

The Construction of Chinese Nationhood"

*Sylvana Sinha, Presiding*

### Technology and Communication

#### Multimedia Applications in Art and Science Jewett 453

Alta Lee and Lila Kanner, "The Fractal Factory"

Eva Pedersen and Coleen Baik, "The Deluxe Hotel"

Janet Lee and Katy Ong, "Language Diversity at Wellesley"

Lisa Hinrichsen and Gina Wilson, "Wellesley Art Department"

Aditi Rao and Rebecca Bargoot, "Souls' Midnight"

Deema Hassan and Myna Joseph, "Summerbridge"

Susan Wasseluk and Olivia Cortina, "Science Center Underground"

Jill Bonina, "Aleph Sphere"

#### Robotic Design Exhibition Jewett Sculpture Court

Jennifer Gillcrist, "Bumphries the Bombastic Bridgelayer"

Tiina Vuorenmaa, "Chimera"

Natalie Douglas, "Gigi in the Box"

Elena Konstantinova, "Handroid"

Rebecca Lippmann, "Rowbot" and "Xylophone Player"

Jennifer Ng, "sBOTina"

#### Language and Communication Pendleton West 105

Susan Archambault, "Enhancing Variability Detection Through Atypical Social Group Exemplars"

Sarah McKenzie, "The Interaction of Prosody and Verb Argument Structure in the Processing of Ambiguous Sentences"

**Gender Studies****Gender Studies in Literature** *Pendleton East 105*

Alina Kantor, "Economy of Words: A Woman's Route to Power in *Pride and Prejudice*"

Inna Kantor, "The Female Patriarch: Mademoiselle Reisz's Role in Denying Female Liberation in *The Awakening*"

Christina J. Kastros, "The Female Author/Arranger and the Myth of the 'Comfortable Home' in Wilkie Collins's *Armada*"

Sarah Wall, "Playing the Virago: Cross-Dressing Women in the Renaissance"

*Nicole Flynn, Presiding*

**Studying Wellesley****Art at the Davis Museum** *Davis Museum*

The Students of Analytical Chemistry 261: Karen Atkinson, Katherine Doerr, Ellyn Heimlich, Lara Kipperman, Emily Milsovic, Rayane Moreira, Hyoun Park, Eileen Rhee, Amy Roy, and Jenny Wang, "Chemistry and Art: Determining the Chemical Composition of Pigments in Selected Art Objects in the Davis Museum"

**Research at the Child Study Center** *Pendleton East 206*

Meredith Gunlicks and Kimberly Davidson, "Gender Differences in Preschoolers' Use of Care and Justice Responses to Moral Dilemmas"

Marivic Dizon and Gwen Stead, "The Reflection of Gender Stereotypes in Children's Human Figure Drawings with Stereotypically Male-Appropriate and Female-Appropriate Toys"

Rebecca Kropf, Kathryn Hughes, and Melissa DiPetrillo, "The Relationship Between Empathy and Birth Order"

Anne Hwang and Gloria Chyou, "Effects of Birth Order on Need for Affiliation and Risk-Taking Behavior in Preschool Children"

**Poster Session II** *Jewett Lobby***Chemistry**

Ji-Young Kim, "Studies of the Synthesis of the Novel Adenosine Analog"

Rebecca Landsberg, "The Synthesis of 100% Anti Adenosine Analogs"

Heather M. Molleur, "Silicon-29 NMR and Theoretical Studies of Diisopropylsilanes"

Vijayalakshmi Natarajan, "Synthetic Strategies for a Novel Inosine Nucleoside Analog"

Zhou' Qian, "Production of Mouse Ribonucleotide Reductase R1 Subunit Using Baculovirus Expression System and Ribonucleoside Diphosphate Reductase Assay"

Kelley Yan, "Application of  $^1\text{H}$ - $^{13}\text{C}$  Nuclear Overhauser Enhancement NMR Spectroscopy to the Analysis of Nucleoside Conformation"

**Geology**

Liane Stevens, "Detrital Zircon Geochronology of Neoproterozoic Westboro Quartzite, Saugus, Massachusetts"

**Physics**

Dahlene Fusco, "The Uses of Polymer Gels"

**Psychology**

Frances Chao, "Adult Attachment Style and Autobiographical Memory"

Theresa Lo, "Multiple Roles in Traditionally-Aged College Women and Their Effects on Well-Being and Psychological Distress"

Liz Schnitzer, "Collaborating with a Friend on Artistic Products"

**Performances/Readings****Fiction and Screenplay** *Jewett Auditorium*

Elaine He, "Roman Fever"

Lillian Shuey, "A Vegan's Baklava Dreams"

Pamela Buck, "Backseat Driver"

Bo Young Lee, "Searching For My Face"

**Exhibition****Photography** *Jewett Sculpture Court*

Allison Davis, Susana Reisman, and Amanda Bladt, "People/Space: A Documentary of People and Place"

**8:00 – 9:30****Performances/Presentations****Music** *Houghton Memorial Chapel*

The Wellesley College Collegium Musicum, Claire Fontijn, Director, in collaboration with the Tufts University Early Music Ensemble, "Resounding Women's Music of the Past: A Selection of Composers from the Sixteenth and Seventeenth Centuries"



## Abstracts

3:00 – 4:00

## Border Crossings: Crosscultural Issues and Interactions

### Prejudice, Stereotypes, and Power

#### Eliminating Stereotypes, Identifying Confounding Social Variables

*Aimee Jabro-Young '98*

ADVISOR: *Paul Wink, Psychology*

This study compared differences in political behavior and attitudes among over 200 Chinese-American and Euro-American students at the University of California at Berkeley. Preliminary analyses revealed that Chinese-American students rated themselves as less politically active, less knowledgeable about political events in the United States, and less involved in political campus activities than Euro-American students. These differences disappeared, however, once length of residence in the United States and other social variables were controlled. In addition, Chinese-American students described their parents as less politically involved and as playing a less active role in transmitting political values to their children. These differences between Chinese-American and Euro-American students persisted after controlling for social variables other than ethnicity. The meaning of these findings for political behavior among Chinese-Americans will be discussed.

#### The Art of Hatred: The Representation of Jewish and Irish Immigrants in Nineteenth-Century American Political Cartoons

*Inna Kantor '97*

ADVISOR: *Frances Malino, Jewish Studies*

During much of the nineteenth century, European immigrants to the United States served as subject matter for political cartoonists and caricaturists. The generally antagonistic climate of the times gave rise to a number of caricaturists who depicted the foreigner on American soil in pejorative terms. The foreigner soon became the flag of

corruption, flying high for all to see in the magazines, periodicals and newspapers of the time. Since cartoons represent collaborations between the artists' personal beliefs and those of their audience, the political cartoons of nineteenth-century America were not seen merely as isolated examples of anti-Jewish and anti-Irish sentiments, but as representations of the prevailing disposition of Americans towards Jewish and Irish immigrants. The ridicule of immigrants in political cartoons suggests an American attempt to subdue and thus to make inferior those who, in reality, were feared.

#### The Problems of, and Possibilities for, Norwegian-Jewish Identity

*Ingrid Moen '97*

ADVISOR: *Barbara Geller, Religion*

The goal of my talk is to outline the ways in which Jews have been transformed upon their arrival in Norway, and the ways in which Norwegians have re-evaluated their own understandings of what it means to belong in their society. I have focused on several critical junctures in Norwegian-Jewish history: the time period surrounding the adoption of the Norwegian constitution, the World War II era, and the contemporary period. I will also contrast the status of Norwegian Jews to that of American Jews, in order to illuminate the particular difficulties involved in asserting minority identity within an ultra-homogenous society.

#### Memorials of African-American Slavery: From the Faithful Slave to the Amistad Rebellion

*Allyson W. Paflas '97*

ADVISOR: *Rebecca Bedell, Art*

In a 1989 interview, Toni Morrison said, "There is no place you or I can go to think about, to summon the presences of, or recollect the absences of slaves; nothing that reminds us of the ones who made the journey and those who did not make it." Slavery has been a defining national phenomenon, which has shaped American economics, thought, and culture. Why then,

has it been largely ignored as a subject of public architecture? Where and how can Americans remember slavery? In this presentation I will discuss certain monuments, dating from the end of the Civil War to the 1990s, that do deal with slavery.

### Crossing Genres

#### "King Lear" Through Film: Brook and Kozintsev

Alexandra Parsons '97

ADVISOR: Yu Jin Ko, *English*

The final scene of Shakespeare's "King Lear" provides a multitude of interpretive possibilities, while film offers a unique medium that is open to diverse interpretations and emphases. Peter Brook's film "King Lear" (1970) unwaveringly depicts man's meaningless struggle with an unfor-giving universe; rather than affirming life, Brook's vision of Lear's world is dark and cold. By contrast, the denouement of Grigori Kozintsev's "Korol Lir" (1970) ultimately leaves the viewer with a feeling of redemption and renewal in a universe that is not entirely devoid of love and compassion, and in which much of humanity shares a common bond through the affirmation of life. These differences notwithstanding, each production is a legitimate interpretation that realizes one of the myriad performative possibilities inherent in a rich and flexible theatrical work.

#### The Grotesque Nature of Paradise in Milton's *Paradise Lost*

Elizabeth Reich '97

ADVISOR: Jody Mikalachki, *English*

In *The Interpretation of Dreams* Freud writes that when dreamers attempt to draw the landscapes in their dreams, they prove to represent "the human body, the genitals, etc., and only then do the dreams become intelligible." If one attempts to construct a diagram based on Milton's description of the Mount of Paradise in Book IV of *Paradise Lost*, one is confronted with a representation of the female genitalia. Milton's diction and imagery point clearly in this direction: "rural mound," "enclosure green," "champaign head," and ultimately, "hairy sides." In fact,

his descriptive metaphors actually anticipate Freud's clinical practice in their reliance on a discourse of drawing, mapping, and artistic representation: the grotesque, theaters, and "lantskips" are all included in Milton's representation of Paradise. My presentation will use Freud as a point of departure to focus on the connections between Milton's sexualized topography of Paradise and his reliance on artistic metaphors, especially the grotesque, to suggest the subversive potential of that landscape.

### Social Institutions, Practices, and Theory

#### Defining and Responding to Social Problems

##### Welfare Reform as Moral Panic

Jane Sydney Foster '97

ADVISORS: Thomas Cushman and Susan Silbey, *Sociology*

The contemporary debate over welfare can be viewed as moral panic. A moral panic occurs when the representation of and public reaction to threat is disproportionate to the empirical phenomenon. The spectre of an increasingly large population of unproductive citizens is presented in the media as a moral and economic threat to the health and stability of the nation. This threat is constructed in such a way as to locate it in a definable sector of society, namely the black underclass, despite statistical evidence that indicates otherwise. Media coverage of the welfare debate exaggerates the facts: how many persons are on welfare, what proportion of the national budget is devoted to welfare, how many of the recipients stay on welfare for their entire lives. This paper examines the strategies of representation that are used by the media to construct a moral panic by locating diverse issues and possible threats (e.g. African-American entitlements, work productivity, and moral turpitude) in the single issue of welfare.

### **Terror and Theriac: Popular and Medical Responses to the Plague in Northern Italy**

*Samantha Kirby '97*

ADVISOR: *Katharine Park, History*

For two hundred years following the Black Death (1348-1351), the plague remained a grave threat to public health. It was also the subject of numerous medical treatises. Since there was no cure for the disease, anyone who had anything to say about plague prevention or treatment was guaranteed an audience. Although theories regarding the origins of plague evolved substantially between the fourteenth and sixteenth centuries, treatments remained essentially unchanged. A 1576 collection of four vernacular plague "counsels," written in 1362, 1456, 1480, and 1521, reflects the dichotomy between medical theory and practice where plague was concerned.

### **Save Our Babies: The Healthy Start Initiative as a Means of Infant Mortality Reduction**

*Jana Montgomery '97*

ADVISOR: *Susan Reverby, Women's Studies*

The Healthy Start Initiative was developed under the Bush administration to combat infant mortality in 15 demonstration areas in the US where mortality was greater than 150% above the national average. The implementation of this community-based program in Boston, Massachusetts, and the Florida Panhandle will be examined in this presentation. Because these two areas used federal funds differently, the models of implementation will be compared and evaluated. Additionally, the Healthy Start Initiative will be compared to the Sheppard-Towner Act of the 1920s, the first grant-in-aid act to the states for maternal and child health. The methodology of performance evaluation will be used to understand the variables that intervene between goals and outcomes. The presentation will conclude with a plan for future programs.

### **Contradictions in the Delivery of Social Services**

*Shana Whitehead '97*

ADVISOR: *Thomas Cushman, Sociology*

Having noted the high turnover rates for social service workers in the nonprofit sector, I undertook an exploratory, qualitative study of workplace experiences among this group. I propose that because such workers place a far higher premium on interpersonal relationships than do workers in other sectors, they are more easily frustrated by the conflicts inherent in all organizations. A significant portion of social service workers' job satisfaction is tied to successful, unproblematic relationships with their clients and co-workers, whereas workers in other sectors find a greater portion of their job satisfaction in wages and upward career mobility. Contradicting Karl Marx's theory that alienation and worker autonomy are inversely related, workers in nonprofit social service agencies experience increased alienation as their autonomy increases: their product (clientele) and their means of production (co-workers) cannot be controlled.

### **Responding to Crime**

#### **The Architecture of Prisons**

*Erin Collins '99*

ADVISOR: *Susan Silbey, Sociology*

In this paper I follow the history of prison design in the United States from the Colonial period to the present. Although the legitimacy of the prison system is seldom challenged, the question of the legitimacy of private prison companies, which have emerged in the last twenty years, inspires debate. Much of this debate has centered around the purposes private prisons serve, with the assumption that these will differ from the purposes the public prisons serve. As companies designed to provide a service for a profit, private prisons have an interest in creating a new supply of prisoners, and detaining the present supply in order to fill the space. Viewing architecture as a concrete representation of the purpose of a prison, this presentation examines how

modern private prisons differ in design from public prisons built during the same time. The fact that the architecture of private prisons is almost exactly the same as the architecture of public prisons suggests that private prisons are designed with the purpose of appropriating the legitimacy of the public prison for the private.

### **Battered Woman's Syndrome as a Legal Defense**

*Annice Kim '97*

ADVISOR: *Susan Silbey, Sociology*

Since the term was coined in 1979 to describe the post-traumatic stress of women physically beaten by their husbands, Battered Women's Syndrome (BWS) has been used by increasing numbers of women as a mitigating factor in criminal prosecutions for the killing of abusing husbands. If BWS is eventually accepted as a legitimate defense, what are the implications for individual cases and the larger society? As society acknowledges the collective harm, where will the legal system locate responsibility: in the individual women who take action to protect themselves or with the criminal justice system that has failed to defend abused women? As BWS becomes a more common defense, the logic has been expanded into other areas, such as Battered Children's Syndrome and Black Male Rage. Does this appropriation diminish the claims of women victims? Or, does a criminal defense of BWS victimize the women twice, first by the batterer and then by the patriarchal legal system? The paper will discuss these questions in order to understand how crime can be a means of social control.

### **Shaming as Punishment**

*Lynn Marsella '97*

ADVISOR: *Susan Silbey, Sociology*

Frustrated with the ineffectiveness of traditional criminal penalties (e.g., fines, imprisonment, and restitution) to either curb crime or rehabilitate offenders, some criminologists have urged judges to sentence convicted criminals to various forms of public shaming. Instead of serving time in jail, or paying financial penalties, some convicted felons have been asked to keep

large billboards on their property warning passersby that a thief lives there; others have been required to stand before their victims, announce their guilt, and ask how they might make amends. Rather than separate the criminal defendant from the world – both metaphorically and physically – the shaming process insists that defendants remain connected to the persons and situations that their crimes disrupted and injured. By this connection, some criminologists claim, there is a greater possibility for true remorse and rehabilitation. This paper explores the emergence, variations, and consequences of these new forms of social control as well as the continuities with premodern criminal punishment.

## **Technology and Communication**

### **Student Reactions to Instructional Technology**

#### **Technology at Wellesley: Students' Perspectives**

*Esther Andrews '98 and Lara Kipperman '97*

Panelists: *Wendy Knox '99, Virginia Lee '99,*

*Aditi Rao '99, Nancy Ward D3*

ADVISOR: *Lee Cuba, Sociology*

Instructional technology is becoming increasingly important in higher education. Given costly expansions of computer facilities and the growing interest in pedagogical uses of technology, students' perspectives deserve to be examined. The data, collected from 449 questionnaires about instructional technology administered to Wellesley students in the Fall of 1996, suggest that electronic mail enhances communication between professors and students, yet does not replace traditional office hours. Overall, students agree that professors' perceptions of their computer literacy are accurate. However, students must spend time learning new technologies – in addition to completing the required assignment – when professors' assumptions are incorrect. Furthermore, half of the respondents agree that limited access to technical equipment hinders their learning.

## Studying Wellesley

## Students as Editors

**The Chinese Literary Magazine at Wellesley***Laura Diao '98 and Jing Li '98*ADVISOR: *Sherry Mou, Chinese*

In journal entries, essays, and creative pieces, members of this session will present a selection of works that are representative of the diverse topics and genres that students have covered in writing for a new Chinese literary magazine at Wellesley. The magazine provides a forum for all interested students to express their thoughts and opinions in Chinese. The work presented here will be read in both Chinese and English. Students who have worked on the magazine will also describe their experience in editing and assembling it, and will talk about the range of work in this year's first three issues.

## Performance/Readings

## Music

**John Cage (1912-1992): Music for Prepared Piano and Dance***Rebecca Y. Kim '97*ADVISOR: *Martin Brody, Music*

In 1940, John Cage was asked to provide music for a dance performance. Though he at first intended to use percussion instruments, he found that the performance space did not offer sufficient room for a percussion ensemble. He therefore decided to insert bolts, screws, weatherstripping, and other materials between the strings of a piano, utterly transforming the sounds it generated when played. Inspired by the constraints of space, John Cage thus created the "prepared" piano. Several of Cage's ground-breaking works for prepared piano, dating from the 1940s, will be performed in this presentation. A discussion of Cage's aesthetics and the nature of the collaborative process will be offered as well.

## Fiction

**Readings in Fiction  
by Wellesley College Authors***Holly Uyemoto, "A Hunger So Wide and Deep"**Stephanie Lane, "The Color White"**Agnes Araba Graves, "In the Interest of the Village"*ADVISOR: *Marilyn Sides, English*

4:25 – 5:35

### Border Crossings: Crosscultural Issues and Interactions

#### Crosscultural Readings and Interpretations

##### Elements of Shamanism in an Altaic Earth-Diver Creation Myth

Elizabeth Boatright '97

ADVISOR: Stephen Marini, Religion

This exegetical study of an Earth-Diver creation myth of the Altai of Southern Siberia will suggest how the metaphors of the creation myth shed light on the practices of the Altaic shaman. The successful discovery and subsequent translation of this creation myth, taken from a nineteenth-century text (unavailable in English), illustrate how later variants of the Altaic cosmogony understate the influence of shamanism. This presentation will examine the richly diverse social and religious structure of the Altai, as well as other texts from their oral tradition involving shamanist elements. In addition, a critique of Mircea Eliade's non-reductionist theories of "archaic" peoples and the prestige of the cosmogony will be offered. The myth chosen for this intensive study will be provided to the audience, as it is a revolutionary text that illuminates the practice of shamanism in the Altaic society perhaps more than the creation of the world itself.

##### Hamlet in Asian America: Younghill Kang and the Creation of Identity

Alyson Nakamura '97

ADVISOR: Yoon Sun Lee, English

The Korean author Younghill Kang arrived in America armed only with four dollars and a suitcase full of Shakespeare's writings. Throughout his autobiography, *East Goes West*, Kang repeatedly alludes to significant scenes and lines from "Hamlet." This paper will attempt to explore the complex, perplexing relationship between Kang and

his beloved Hamlet, and how this relationship manifests itself in Kang's own continual struggle to define his identity in the midst of chaos.

##### The Presences of Nair Women in the Political and Literary World

Kavitha Nair '99 and Vandana Radhakrishnan '99

ADVISOR: Jody Mikalachki, English

The focal point of this presentation is the Nair community in the South Indian state of Kerala. The Nair community practiced a system of matrilineal living and inheritance until the system's dissolution by the British in 1810. This talk will include a discussion of gender as a source of empowerment for Nair women, sexual freedom in the Nair community, especially for Nair women, and the legacy of matrilineage for today's women in Kerala. Kavitha Nair will consider Milton's depiction (in *Paradise Lost*) of Nair women as the symbol of sexuality in a fallen world, and will also offer evidence that Romantic poet Percy Bysshe Shelley's views on free love were influenced by the Nair matrilineal system. Vandana Radhakrishnan will discuss the political nature of the Nair community and the matrilineal system, the role of British colonial law in changing Indian conceptions of the Nair, and the culture of Nair women and its meaning for feminine, social, and political development in Kerala. Finally, she will speculate on whether Kerala's model of development for women can be replicated in other parts of India.

## Social Institutions, Practices, and Theory

### Schools and Educational Practice

#### Science Education Today: Perspectives from Wellesley College Student Teachers

*The Students of Education 300: Amy Picard '97, Leslie Glinoga PC, JulieAnn Villa PC, Stacy Schlutsmeyer PC*

ADVISOR: Kenneth Hawes, Education

We are a group of students who have now fulfilled our academic degree requirements at Wellesley and MIT, as well as our pre-practicum fieldwork. This semester we are full-time student teachers in middle and high school science classrooms. As we have reflected upon our teaching, we have realized that many urgent issues and questions underlie science education today, and carry important implications for our children's and our country's future. For example, how do teachers decide what is important for students to learn? How much technology should we be using in the classroom? Are students mathematically prepared for science classes? How can we change the way we evaluate student learning? We hope that discussion of these topics among educators and community members will help propel science education into the twenty-first century.

### Politics at Home and Abroad

#### Victims' Rights: Normative, Constitutional, and Federalism Issues Raised by Victim Impact Statements

*Allison F. Gardner '97*

ADVISOR: Thomas Burke, Political Science

There is currently a growing movement for allowing victims greater participation in the criminal justice process (including, for example, their involvement at sentencing proceedings). The impetus to encourage the courts to acknowledge victims' rights began at the local level and moved on to state legislatures. The issue has also been addressed in federal legislation, and some members of Congress have proposed a Constitutional Victims' Rights Amendment.

In my senior honors thesis, I consider such questions as whether the admission of victim impact statements in trials is fair to both defendant and victim, and whether the United States Constitution precludes the use of victim impact statements by courts in determining sentences. I will discuss the current status of impact statements, and address some of the more challenging questions facing the criminal justice system on the issue of victims' rights.

#### Evaluating the Role of Independent Journalists in Latin America: A Case Study of Mexico

*Kristin Neubauer '97*

ADVISOR: Joy Renjilian-Burgy, Spanish

Independent journalists in Latin America have rarely enjoyed open relationships with the governments of the countries in which they have worked. Using the situation of the Mexican press as a case study, this talk will focus on the obstacles faced by independent journalists and will examine the motivations that impel them to take up such demanding work. The discussion will also examine charges made by the Mexican Government that independent coverage is irresponsible, and will evaluate the influence that the independent press has had on democracy in Mexico.

#### Madame Chiang Kai-Shek: The Madeleine Albright of the 1930s

*Carissa Gonzales '97 and Karen Weir '97*

ADVISOR: Sherry Mou, Chinese

Madame Chiang Kai-Shek (Soong Meiling) was a Wellesley graduate (Class of 1917) who played an active political role in the 1930s, one that changed the way the United States regarded China. She wrote a number of books, essays, and letters expressing her concerns regarding the state of affairs in her country. Through these writings, and through her diplomatic role as the wife and personal translator of Chiang Kai-shek, she encouraged the United States to support the Kuomintang economically in the fight against communism. This talk examines the role Madame Chiang Kai-Shek played in Sino-American relations during the 1930s and 1940s.

## Technology and Communication

### Multimedia Applications in the Social Sciences

#### The New Face of Technology Integration: The Culmination of Technology, Film, and Writing

*Brandice Burton '00 and Angela Dougan-Akuoku '99*

ADVISOR: *Thomas Cushman, Sociology*

This presentation will demonstrate the importance of technology in education. Technology facilitates learning in two ways: by providing students with a hands-on experience with computers and by fostering a deeper understanding of course materials in innovative ways. Our presentation uses the film "One Flew Over the Cuckoo's Nest" to illustrate these themes in the context of learning basic concepts in sociology.

#### A Multimedia Exhibition: The Re-Socialization of R.P. MacMurphy in "One Flew Over the Cuckoo's Nest"

*Emily Harrold '99 and Kimberly Judge '00*  
advisor: *Thomas Cushman, Sociology*

Is insanity – or mental illness more generally – a social phenomenon? Do the salient characteristics that lead to diagnoses reside in the patients themselves or in the environments and contexts in which observers find them? Mixing text, imagery, and sociological theory, this exhibition will delve into these questions through a critical examination of the 1975 film version of the Ken Kesey novel *One Flew Over the Cuckoo's Nest*.

### Multimedia Applications in Science

#### Theoretical Investigations of Benzyne: A Chemical Halfway House

*Kirsten Stadler '97*

ADVISOR: *Christopher Arumainayagam, Chemistry*

Techniques of computational chemistry, the theoretical study of chemical reactions and chemical properties of molecules, will be used to characterize the benzyne intermediate formed during the reaction of chlorobenzene with potassiumamide to give aniline.

A reaction intermediate is a product of one elementary step and a reactant in a subsequent elementary step of a multistep reaction mechanism. Often reaction intermediates are very labile species, making them difficult to study using experimental tools. For this particular reaction, however, the benzyne intermediate has recently been isolated, providing a basis for comparison between experimental results and theoretical calculations. Graphical tools will be used to demonstrate the geometrical, electronic, and vibrational properties of benzyne. Theoretical studies such as these may yield better mechanistic models of chemical reactions, a major goal of chemistry throughout its development.

#### A Tale of Two Sites: Calculating the Molecular Properties of Cyclohexenone

*Kelley Yan '97 and Heather M. Molleur '97*

ADVISOR: *Christopher Arumainayagam, Chemistry*

Computational chemistry is the application of computer-based molecular modeling to the simulation of chemical processes and the computation of chemical properties. These theoretical methods can be used in situations where experimental investigations are either impractical or dangerous, and serve as an important complement to experimental chemistry. Several different computational methods based on quantum mechanics will be introduced. The capabilities of two computational chemistry programs, MacSpartan and Hyperchem, will be demonstrated through investigations of the molecular properties of cyclohexenone. Emphasis will be placed on graphical representations of these properties.

## Gender Studies

### Gender Studies in Psychology

#### Gender Differences in the Prisoner's Dilemma Game: A Meta-Analysis

Wendy Fung '98

ADVISOR: Linda Carli, Psychology

A meta-analytic review of 117 studies to test whether there are gender differences in competition in the Prisoner's Dilemma Game conducted on 13,566 subjects revealed no overall differences. Women, however, showed higher levels of cooperation relative to men: 1) when there was a higher percentage of authors who were female; 2) when subjects were able to communicate with the other party; 3) when subjects played against a simulated partner rather than a real opponent; 4) as the number of people on their team increased.

#### Body Image and Acculturation in Korean-American College Women

Kelley Anne Porter '97

ADVISOR: Elissa Koff, Psychology

The purpose of this study is to explore whether acculturation affects body image in Korean-American women. Acculturation is defined in this study as the degree to which the values of the current culture have been adopted by individuals from another culture. Very few cross-cultural studies on body image and acculturation have been conducted, and even fewer appear to have involved Korean-American women. One of the major goals of this study is to address this gap in the literature. The study considers whether acculturation affects a variety of body image variables, including social attitudes, personal perceptions, eating attitudes, and self-concept.

#### The Portrayal of Black Women Models in Mainstream Fashion Magazines Versus Black Fashion Magazines

Jasmine H. Williams '97

ADVISOR: Robin Akert, Psychology

The purpose of this content-analysis is to explore the difference in the portrayal of black women in mainstream (white) fashion

magazines versus their portrayal in black fashion magazines. I hypothesized that black women in mainstream magazines would appear lighter in skin color than the black women in black magazines and that the black women in white magazines would be more Eurocentric in appearance (narrower nose, thinner lips, straighter hair) than black women in black magazines. The models studied were coded for skin color, hair texture, facial measurements, and context of the photograph.

#### The Effects of Sex Composition of Groups on Children's Self-Evaluation

Evelyn Alfonso '98, Dana Lau '97, Allison Werner '98

ADVISOR: Linda Carli, Psychology

The purpose of this study, which involved preschoolers, was to test how early in childhood tendencies of gendered interaction styles develop. We hypothesized that the findings of this study would be similar to comparable research on adults, which found that men in mixed-sex pairs rated their performances higher than when in same-sex pairs, while women in mixed-sex pairs rated themselves lower than in same-sex pairs—even though there were no differences in their actual performances. Our results found that both genders in same-sex pairings rated themselves similarly in self-evaluation scores. In their performance scores girls performed better in the same-sex pairs than did boys. Interestingly, however, the self-evaluation scores of the male subjects showed differences between mixed-sex and same-sex scores. When controlling for actual performance, boys' self-evaluation scores were significantly higher than their actual performances.

## Studying Wellesley

### Wellesley's Natural Environment I

#### Leaf Senescence in the Sugar Maple Tree

Colleen A. Brownell '97, Denise S. Gallagher '97, Helen J. Kang '98, Elise L. Kibler '97, Tien T. Thach '97

ADVISOR: Gary Harris, Biological Sciences

In September and October of 1996, a field study was conducted on the Wellesley College campus to monitor the molecular and physiological changes associated with leaf senescence in the sugar maple (*Acer saccharum*). The results revealed that: 1) several leaf minerals decreased markedly during the month preceding leaf abscission (October), while other minerals were unchanged and some appeared to increase; 2) chlorophyll was lost rapidly during October, and carotenoids decreased at a relatively slow and constant rate; 3) total leaf protein and rubisco were maintained at a relatively constant level throughout the Fall, then decreased rapidly during the last two weeks of October; 4) in some leaves, the maximum photosynthetic rates were sustained at a relatively high level into October. There was a rapid increase in the CO<sup>2</sup> compensation point and decreases in the quantum yield for CO<sup>2</sup> assimilation and carboxylation efficiency during October. The chlorophyll fluorescence yield was maintained at a relatively constant level during the period of rapid chlorophyll degradation.

### The First-Year Experience at Wellesley

#### "The Insider's Guide to Your First Month at Wellesley"

*Rachael Lerner '00 and Carrie Ruppert '00*  
 ADVISOR: *Voncile White, Class Deans Office*

"The Insider's Guide to Your First Month at Wellesley" is a computerized presentation, prepared using Hypercard. The guide gives incoming Wellesley students information that they might not necessarily find in course catalogs and viewbooks. It discusses adjustment problems among roommates and how to get through them, explains various aspects of academic life at Wellesley, including add/drop and credit/noncredit policies, presents maps and bus schedules to help guide first-years around Boston, as well as offering summaries of interesting places to visit. The guide also discusses social options for first-years, including on- and off-campus parties.

## Poster Session I

### Astronomy

#### The History of Astronomy at Wellesley College

*Kathleen Sewall '97*

ADVISOR: *Priscilla Benson, Astronomy*

Long before women were truly accepted as professional scientists, the Astronomy Department at Wellesley College made important contributions to the field. The Whitin Observatory at Wellesley has a rich history as well, which has not yet been fully recorded. My project has focused both on the history of the people involved with astronomy at Wellesley and on the scientific instruments that have been employed in astronomical research here.

### Biology

#### Calcium Starvation and Characterization of Calcium-Binding Protein(s) in *Synechocystis* sp. PCC 6308

*Akhila Balasubramanian '99*

ADVISOR: *Mary Allen, Biological Sciences*

Calcium starvation was induced in *Synechocystis* sp. PCC 6308 by growing cultures in media containing the calcium chelator EGTA (ethylene diamine tetraacetic acid). Cell growth was found to decrease in inverse proportion to EGTA concentration, for concentrations greater than 0.22mM. Calcium-binding protein(s) were investigated using SDS-PAGE and immunoblotting techniques. Polyclonal rabbit antibodies to spinach calmodulin, followed by goat antibody-horseradish peroxidase conjugate and its substrate, were used in the immunoblotting. A protein of molecular weight 54KD was identified in normal, EGTA-containing and calcium-starved samples. In another experiment, the luminescent lanthanide, terbium, was used for the specific staining of the calcium-binding protein. One band in each of two lanes (containing normal crude extract and crude extract of calcium-starved cells) displayed luminescence, with greater intensity in the latter.

**The Cyanobacterium *Synechocystis*:  
Investigations of Optimum Phosphate  
Concentration, Exopolyphosphatases, and  
Separation of Periplasm and Cytoplasm**

Ting Bao '98 and Greg Hyde

ADVISOR: Mary Allen, Biological Sciences

Phosphate concentration is a limiting growth factor for *Synechocystis* sp. PCC 6308. By using growth curves and NMR spectroscopy, the optimum concentration of phosphate in the growth medium was found to be 78 mg of  $K_2PO_4$  per liter of growth medium. Polyphosphate has been found in a variety of bacteria, including the cyanobacterium *Synechocystis* sp. PCC 6308. The activity of exopolyphosphatases, which hydrolyze polyphosphate to inorganic phosphate, was determined in this cyanobacterium using a colorimetric assay that measures the presence of inorganic phosphate. An elevation of the assay temperature from 30° to 37° C produced a significant increase in the enzyme activity. The enzyme activity has been found to vary during different periods and conditions of cellular growth. Enzyme activity in crude extracts of exponentially growing cells is higher than that of cells in stationary phase. The enzyme's specific activities in crude extracts of cells grown in different phosphate concentration were different. The cells grown in 78 mg of  $K_2PO_4$  per liter showed higher exopolyphosphatase activity than cells grown in 39 mg of  $K_2PO_4$  per liter. There are two compartments in *Synechocystis* sp. PCC 6308, periplasm and cytoplasm, which had previously been separated by using EDTA, lysozyme, sorbitol and HEPES (pH = 8 ). It was found that by changing the buffer from HEPES to PIPES (pH = 6), the periplasm was more thoroughly separated from the cytoplasm.

**The Effects of Lipoxigenase Inhibitors  
on Root Hair Development in *Arabidopsis  
thaliana***

Alexa L. Bontrager '97

ADVISOR: Kaye Peterman, Biological Sciences

Root hair development is a complex phenomenon involving such processes as cell fate determination, cell differentiation, and tip growth. The lipoxigenase inhibitor

phenidone results in a dose-dependent suppression of root hair development in *Arabidopsis*. The goal of this research is to determine the stage in the developmental pathway at which phenidone acts. Seeds were grown on vertically placed solid agar plates, and the plants were examined after four days of growth. Phenidone-treated seedlings consistently showed shorter root and root hair lengths than did the controls. The short hair lengths suggest that phenidone inhibits tip growth in hair cells. Although it appeared initially that root hair number was also reduced in the presence of phenidone, new microscopic techniques indicated that this may not be the case. Confirmation that root hair number is not affected by phenidone would provide evidence that the inhibitor does not interfere with root hair initiation. The effect of phenidone on the position of root hair formation with respect to the underlying cortical cells will be determined. In addition, the hypothesis that phenidone inhibits tip growth will be tested directly by measuring root hair growth rates using time-lapsed microscopy.

**Adjustable Allocation: A Strategy  
for Maximizing Reproductive Success  
in *Clarkia gracilis***

Erica A. Kruger '97

ADVISOR: Kristina Jones, Biological Sciences

Maximizing reproductive success requires efficient use of energy and nutrients on the part of a plant. Resources must be utilized for the production of pollinator-attraction characteristics (e.g., large, showy petals), as well as for reproduction activities (e.g., maturation of seeds and fruits). One strategy for maximizing fitness could involve a shift in relative allocation of resources from pollinator-attraction (for early flowers) to reproduction (for later flowers), over the blooming season of an individual plant. This study introduces the exciting possibility that plants can actively alter the relative proportions of resources utilized for attraction and reproduction functions. Evidence of this pattern was noted in the annual *Clarkia gracilis* in a previous field study. At the present time, I am testing whether this plant

can adjust the timing of such a resource shift, given differing pollination success of early flowers. Preliminary observations suggest that pollination of early *Clarkia* flowers may affect such pollinator-attraction characteristics as floral longevity and petal length of later-blooming flowers within an individual plant.

### **The Effects of Pollination of Early Flowers of *Antirrhinum majus***

Elena McKee '98

ADVISOR: Kristina Jones, Biological Sciences

The showy flowers of *Antirrhinum majus* attract bees for pollination. The resources used to produce petal tissue and to maintain the flower on the pedicle (longevity) represent energy that could alternatively be used to develop more ovaries and nourish increased numbers of seeds. Flowers have two roles: advertising and reproducing. The relative amount of energy spent on both expenses, however, changes over the lifetime of a flower. To maximize efficiency, one strategy would be to continue allocating energy for advertising until pollination, but then to transfer resources to reproduction after – and only after – pollination. This project addresses the hypothesis that snapdragon plants can respond to pollination by changing the distribution of resources from advertising to reproduction.

### **Spatial Memory Deficits in Ovariectomized Flag APP-C100 Mice**

Katrina Van Dellen '97

ADVISOR: Joanne Berger-Sweeney, Biological Sciences

The Flag-APP-C100 mouse is a transgenic model for Alzheimer's disease. A previous study of twelve-month-old Flag-APP-C100 mice found that female transgene-positive mice showed more severe spatial memory deficits than did male transgene-positive mice and controls of both sexes. The purpose of the present study was to determine what effects female hormones have on spatial memory in the Flag-APP-C100 mouse. Female transgenics, approximately six-months in age, were first ovariectomized to decrease their circulating hormone levels. Four weeks later, their memory was tested

using a passive-avoidance paradigm and swim maze navigation tasks (including spatial, spatial reversal, and cued versions) to determine if the altered hormone levels affected the severity of their memory deficit. Four groups of mice were included in the study: intact, transgene-negative; ovariectomized, transgene-negative; intact, transgene-positive; and ovariectomized, transgene-positive. Results show that ovariectomized animals perform more poorly than intact animals and transgene positive animals perform more poorly than transgene-negative animals in the spatial task.

### **Isolation of Phycobilisomes from *Synechocystis* sp. PCC 6308**

Keren L. Witkin '98

ADVISOR: Mary Allen, Biological Sciences

Phycobilisomes are part of the photosynthetic machinery of cyanobacteria. They are composed of three pigmented phycobiliproteins held together by linker peptides, and they serve both as accessory pigments and as nitrogen storage. Phycobilisome isolation was performed from *Synechocystis* sp. PCC 6308 in order to elucidate intact phycobilisome structure, and to allow comparison of phycobilisomes isolated from cyanobacteria grown under various environmental and nutritional stresses. By attempting isolation under variable conditions, it was shown that phycobilisomes best maintain their integrity when isolated under a modification of Gantt's conditions. After preliminary phycobilisome isolation by slight variations of Gantt's protocol, extracts were subjected to centrifugation at 199,000xg for various time intervals, and the resulting pellets were resuspended. One-tenth dilutions of whole phycobilisomes and heavily diluted samples of the pellets were subjected to negative staining. Samples were then observed and photographed using transmission electron microscopy. The structure of the phycobilisomes obtained represents an improvement over phycobilisomes isolated in this lab in the past, allowing for further research into the effect of environmental stress on the morphology and metabolism of cyanobacteria.

## Wellesley's Natural Environment II

### Trees, Weeds, and Exotic Species: The Fate of the Wellesley College Landscape

Holly Alpert '97

ADVISOR: Nicholas Rodenhouse,  
Biological Sciences

Wellesley College is known throughout the nation for having an unusually beautiful campus. This beauty is a result of a carefully considered plan that dates back to the early days of the College. It is now imperative that we maintain the vision of this plan by preserving the landscape. In order to accomplish this goal, we must understand the function of Wellesley's forest patches in the matrix of the landscape. I accordingly studied the structure and composition of representative forest patches from three disturbance regimes. This experiment includes an investigation into the ability of canopy tree species to replace themselves given current management practices, as well as a compilation of a complete species list for comparative use in future studies. From this study, it will be possible to deduce future management practices appropriate to preserving the ecology of Wellesley's landscape.

### Wellesley College Forest Patches: Past, Present, and Future

Ann Rondeau Westra '97

ADVISOR: Nicholas Rodenhouse,  
Biological Sciences

"Second only to the quality of education which it offers, Wellesley deserves renown for the beauty of its campus" (Wellesley College President Margaret Clapp, 1958). In the early part of the twentieth century, Frederick Law Olmsted, Jr. shaped the beauty of the Wellesley College landscape by posing the regularity of the buildings against the irregularity of the surrounding trees. Since Olmsted's time, the emphasis on and pride in campus beauty has continued

to increase, yet appreciation and understanding of the role that trees and small forest patches play in this beauty has waned. My research, therefore, examines tree population dynamics in the small forest patches that dot the Wellesley College landscape. I compare those trees which existed in the 1920s with those present today and with those that can be expected to exist in the future. Computer simulation modeling is used to assess the current tree populations and to predict the future of the Wellesley College forests.

## Performances/Presentations

### Theatre

#### "Raise Your Voice"

Maria Almond '00, Jowhara Alsaud '00, Alison Barker '99, Emily Card '97, Keisha Champagnie '98, Laura Chen '00, Akuba Dolphyne '00, Marietta Fried '99, Daisy Gardner '97, Lesley Halperin '99, Meghan Hinchey '99, Alicia Kahn '98, Faith Kakulu '97, Esther Llanos '00, Katherine McIntosh '98, Darcy Penick '00, Sasha Pfau '99, Kim Wilson '99, Pauline Yasuda '00  
ADVISOR: Nora Hussey, Theatre Studies

Love, war, revenge, betrayal, and joy as expressed through the voices of women unite in this performance art piece. "Raise Your Voice" is a multimedia presentation featuring selections from this year's theatrical productions combined with music and movement exploring the lives of women from across the globe in such plays as "Never In My Lifetime," "The Duchess of Malfi," "Endgame," "Rosencrantz and Guildenstern are Dead," "Holding the Sky," "Elektra," "Daughters of the Mock," "Living On," "Illusions of Hope," and "On the Twentieth Century". We will arrive at the understanding that although the issues facing us are different, the stories women tell bring together the young, the old, the rich, the poor, and every culture imaginable. With the pounding rhythms of drums and handclaps as a backdrop, a rallying cry for women to make their stories known will rise from the walls of Wellesley College.

5:30 – 7:00

### Border Crossings: Crosscultural Issues and Interactions

#### Religion in Crosscultural Perspective

##### Child-Parent Relationships Among Chinese-Americans: Does Confucianism Matter?

*Gloria Chyou '98*

ADVISOR: *Paul Wink, Psychology*

This study reports on differences in self-descriptions of child-parent relations among a group of over 200 Chinese-American and Euro-American students at the University of California, Berkeley. Chinese-American students tended to describe themselves as less independent of their parents and to depict their family structure as more hierarchical than did Euro-American students. However, the differences in autonomy between the two groups were no longer significant after the family's socioeconomic status and generation (the participants' distance in descent from the point of immigration into the United States) were controlled. A greater emphasis on hierarchical family relations persisted among the Chinese-American participants, however, even after group differences on other social variables were controlled. The influence of Confucianism on family relations among Chinese-Americans will also be discussed.

##### Unity and Diversity Among American Muslims

*Asma Gull Hasan '97*

ADVISOR: *Louise Marlow, Religion*

Islam emphasizes the inherent equality of all Muslims before God, yet Islamic societies, like all societies, naturally face social tensions. Distinguishing American Muslims from world Muslims is their diversity. In addition to being ethnically diverse, the over five million American Muslims from roughly 65 different ethnic origins are also diverse in their opinions, in the amount of time they have lived in the United States, and in many

other matters. In the United States, Muslims face the challenge and ideal of Islamic egalitarianism as no other Muslims have. Are American Muslims working together? How do American ideas of egalitarianism influence American Islam? I will explore these questions as they relate to American Muslim involvement in American politics, in social issues such as education and women's rights, and in the media. Islam has always celebrated itself as a colorless and raceless religion; I will discuss how that proposition is tested – and often proven – in the United States.

##### A Neo-Confucian Analysis of Contemporary China

*Catherine Hudak '97*

ADVISOR: *James Kodera, Religion*

Neo-Confucian philosophers such as Chu Hsi postulated that the individual self and the society surrounding it are of equal importance and that a true balance between the desires and demands of the two must be met. This idea, founded in the belief that such a balance is possible, stands in sharp contrast to the conflict between self and society in contemporary China. During the ideological Mao era, society overcame the individual, while, in the more pragmatic Deng era, the demands of the individual are overwhelming the needs of society. In both cases, the problems created by social imbalance are dangerous to all. Using a Neo-Confucian lens that emphasizes the importance of balancing the singular with the plural, I will examine recent Chinese history and will discuss the merits of reaching back into history for solutions to current problems.

##### What is American Transcendentalism?

*Amy Kruetzman '97*

ADVISOR: *Michael Cooper, English*

What is American Transcendentalism? Is it a literary movement, a philosophical revolution, a means to activism? What constitutes this primarily New England phenomenon

that pervades nineteenth-century literature, politics, and even art? Why are its limits so difficult to define, its doctrine often so elusive that it becomes a task simply to understand it? Is this enigmatic philosophy merely living up to its name in its refusal to be defined? Through studying the private and public works of leading Transcendentalist thinkers – Ralph Waldo Emerson, Henry David Thoreau, Margaret Fuller, and Amos Bronson Alcott – I will investigate what American Transcendentalism was at its inception and explore the extent to which the primary thinkers of the movement were true to their philosophy in daily life. Let us “get to the whole and genuine meanness of it, and publish its meanness to the world; or if it were sublime, to know it by experience, and be able to give a true account of it” (Thoreau).

### Social Institutions, Practices, and Theory

#### Economic Change and Its Effects

##### The Organizational Dynamics of Mergers and Acquisitions

Anne Kohler '97

ADVISOR: Robin Akert, Psychology

Over the past fifty years, organizations and businesses have often utilized mergers and acquisitions in order to expand. A merger or acquisition, by definition, is not a simple business transaction, but rather the outgrowth of a complex series of analyses, financial calculations, and decisions.

Mergers not only affect the portfolio of an organization, but also the employees and executives of both firms involved. The goal of this project is to examine research on the psychology of mergers and acquisitions and to analyze the experiences of ten organizations involved in such transactions.

Organizational values, in particular, appear to drive the degree to which employee well-being is considered as a major variable in decision making.

##### Surviving the “Special Period”: Market Reforms in the Cuban Context

Zoe Robbins, '97

ADVISOR: Julie Matthaei, Economics

Cuba's central dilemma at present is how to balance the socialist ideals and achievements of the revolution with the need for economic growth and prosperity in the context of a capitalist world market. I focus on the crisis in the Cuban economy following the breakup of the Soviet Union, an era now known as Cuba's “Special Period.” I have examined the effects that market reforms—including the legalization of dollars, self-employment and farmers' markets, and the pursuit of tourism and foreign joint ventures—have had on the second economy and black market. My work also includes an analysis of the economic contradictions and complexities of the reforms as they relate to political and social structures. Finally, the question of the island's economic future is addressed in light of the Cuban government's plans, as well as in relation to theoretical models of alternative economic systems.

##### State-Controlled Tourism in the People's Republic of China: The Construction of Chinese Nationhood

Ling-Yun Tang '97

ADVISOR: Thomas Cushman, Sociology

The Chinese Communist Party's decision to restructure China's economy in 1978 launched a new era of economic, social, and cultural reform. International tourism, which barely existed prior to the Open Door Policy, has since become a leading economic activity; it is not only a source of foreign exchange but also a symbolic way for the PRC to promote its status in the world system, particularly in relation to the West. As the largest existing Communist nation in the world, the Chinese state continues to play a significant role in the way China presents itself to the outside world. This study considers how the Chinese government produces a cultural and national identity through tourism in five cities: Beijing, Shanghai, Xi'an, Guangzhou, and Shenzhen. An ethnographic content analysis

of tourism materials issued by the state (brochures, maps, advertisements, and guidebooks) will illuminate the rhetorical techniques used to construct a modern Chinese national identity.

## Technology and Communication

### Multimedia Applications in Art and Science

#### Interactive Multimedia Poster Presentation

*Students of Studio Art 215, Fall 1996*

ADVISORS: Naomi Ribner, Studio Art, and Takis Metaxas, Computer Science

In the Fall of 1996, a new experimental course entitled "The Art and Science of Multimedia" was offered at Wellesley. Pairs of students with complementary talents worked together on creative and challenging interactive multimedia projects with varying themes. This interactive poster presentation will give conference attendees the opportunity to learn about the creative and technical details of these projects. Short introductions to each project follow.

"The Fractal Factory" (Alta Lee '98 and Lila Kanner '99) is an interactive educational program concerned with fractals and their applications. The program allows the user to explore the science of fractals and their history, to create fractals, and to observe how they relate to daily life and our natural environment.

"The Deluxe Hotel" (Eva Pedersen '97 and Coleen Baik '99) is an exploration of lounge music and cocktail culture. Join the jet set and explore all four levels of this lounge lizard's paradise. Swing to all your lounge music favorites in hi-fi stereophonic sound! Cha Cha with Fernando at the Bali Bar or relax with a martini at Vik's Cigar Lounge. Your lounge experience is only a click away!

"Language Diversity at Wellesley" (Janet Lee '98 and Katy Ong '98) is an "edu-tainment" exploration of Wellesley's cultural diversity through written and oral linguistic samples and presentations.

"Wellesley Art Department" (Lisa Hinrichsen '99 and Gina Wilson '97) provides prospec-

tive and current students with textual and visual information about the study of both Art History and Studio Art at Wellesley College. The project includes interviews with professors, a tour of various classrooms and studios, and videos of students sharing their perspectives on their studies of art and studio techniques.

"Souls' Midnight" (Aditi Rao '99 and Rebecca Bargoot '99), as it appears in its beginning stages, is an interactive mystery/horror game directed toward an audience of 12-15 year old children.

"Summerbridge" (Deema Hassan '97 and Myna Joseph '98) is a nonprofit urban education organization that operates nearly 40 programs around the country. All of the classes and summer programs are taught and run by high school and college students. This is a promotional multimedia application for this organization, one that focuses on recruitment of potential staff members.

"Science Center Underground" (Susan Wasseluk '97 and Olivia Cortina '97) is a multimedia interactive exploration of the tunnels under the Science Center.

"Aleph Sphere" (Jill Bonina) is a multimedia bilingual presentation of a short story by the Argentinean writer Jorge Luis Borges, who describes his encounter with the source of a thousand lights.

#### Robotic Design Exhibition

In the Wintersession '97 Robotic Design course, students learned how to design, assemble, and program robots using LEGO parts, sensors, motors, and a palm-sized computer. These creative projects tied together aspects of a surprisingly wide range of disciplines, including computer science, physics, math, biology, psychology, engineering, and art. Students from the course will exhibit their creations in a "Robot Talent Show."

ADVISOR: Franklyn Turbak, Computer Science

"Bumphries the Bombastic Bridgelay" (Jennifer Gillcrist '00): a robot that spans a gap between two tables by laying a bridge and crossing over it.

“Chimera” (Tiina Vuorenmaa '98): an eight-footed creature with wings that purrs, sings, eats, walks, and seeks light.

“Gigi in the Box” (Natalie Douglas '00): a roving jack-in-the-box.

“Handroid” (Elena Konstantinova '98): a five-fingered hand that types characters on a keyboard.

“Rowbot” (Rebecca Lippmann '98): a sculler that rows in a pool of water.

“sBOTina” (Jennifer Ng '98): a puppy dog looking for its ball.

“Xylophone Player” (Rebecca Lippmann '98): a robot that can play a tune on a xylophone.

## Language and Communication

### Enhancing Variability Detection Through Atypical Social Group Exemplars

*Susan Archambault '97*

ADVISOR: *Nancy Genero, Psychology*

The purpose of this study is to reduce stereotypic thinking by teaching individuals to recognize the variability of group characteristics (“They are not all alike”). By manipulating visual images of an artistic social group (poets), we will attempt to foster more mindful judgments about other social groups in an unobtrusive way. Subjects will be randomly assigned to view either a set of traditional, homogenous images of poets or a set of both traditional and non-traditional images of poets. After exposure to the visual stimuli, subjects will learn about a fictitious community called the Akamba, and make judgments about individual cases based on what they learn. It is expected that subjects who view heterogeneous images will make mindful, non-stereotypic judgments. By contrast, narrow and stereotypic judgments are expected from subjects who view homogeneous images. The ability to prime individuals to think in a non-stereotypic way suggests a cognitive basis for diversity training.

### The Interaction of Prosody and Verb Argument Structure in the Processing of Ambiguous Sentences

*Sarah McKenzie '97*

ADVISOR: *Margery Lucas, Psychology*

My presentation focuses on the interaction of prosody (the intonational and rhythmic aspects of speech) and verb argument structure (the knowledge of which grammatical constructions typically follow particular verbs) during the processing of ambiguous sentences. If auditory processing is influenced by both prosodic and verb argument cues, and if these cues are misleading or distorted, then I hypothesized it should have an adverse effect on sentence comprehension, and result in longer comprehension time. My talk will center on the theoretical background of this work and on its results.

## Gender Studies

### Gender Studies in Literature

#### Economy of Words: A Woman's Route to Power in *Pride and Prejudice*

*Alina Kantor '97*

ADVISOR: *Susan Meyer, English*

In *Pride and Prejudice*, Jane Austen explores the dynamics of power in late eighteenth-century society. Suggesting that there is a direct link between economic status and power, she defines power as the ability to govern oneself, to make one's own decisions, and to control one's choices. Elizabeth Bennet notes that Mr. Darcy has “great power in the power of choice... the power of doing what he likes,” and Colonel Fitzwilliam adds that Darcy “has better means of having” power “than many others, because he is rich.” Wealth feeds Darcy's power, but is Austen implying that there are no other means to enjoy the power of choice? Although capital appears to be a dominant factor in determining one's position and authority in society, Austen suggests that the ability to manipulate and to control one's modes of self-expression is essential in maintaining a powerful position in society.

### **The Female Patriarch: Mademoiselle Reisz's Role in Denying Female Liberation in *The Awakening***

Inna Kantor '97

ADVISOR: William Cain, English

Kate Chopin's *The Awakening* explores various options for the emancipation of women. Mlle. Reisz, an outcast from established society, escapes her prescribed feminine role and is thereby free to pursue her professional desires. Possessing male traits, she attracts Edna Pontellier, who feels constrained by her own position and views Mlle. Reisz's masculine behavior as a means of liberation from the societal sphere of women. Yet the relationship of Mlle. Reisz and Edna assumes a male-female dynamic, which forces Edna to assume a subordinate position that corresponds to the societal status she is attempting to reject. Through Edna's disenchantment with Mlle. Reisz, Chopin suggests that since communities tend to institute a hierarchy in which feminine qualities guarantee an inferior position, the notion that a woman might find liberation within the company of other women ultimately proves impossible.

### **The Female Author/Arranger and the Myth of the "Comfortable Home" in Wilkie Collins's *Armada***

Christina J. Kastros '97

ADVISOR: Barbara Harman, English

Wilkie Collins, the friend and collaborator of Charles Dickens, was a best-selling Victorian writer mainly known for his "sensation novels," in which murder, bigamy, and illegitimacy occur within middle- and upper-class English homes. Underneath their sensational surfaces, his novels highlight characteristic Victorian anxieties regarding domesticity and the security of the home. In *Armada* (1866), Collins presents characters and readers alike with a maze of disordered houses. His fascinating anti-heroine Lydia Gwilt, who has been tried for murder and imprisoned for robbery, operates as an alternative author-figure in the novel; she undermines security by engineering a murderous vision of "ordered" domestic space in the extraordinary sanatorium in

which the novel's final scenes transpire. Collins ultimately suggests that we are not "fools . . . to leave our comfortable homes," as one of his characters declares, but rather fools for believing in the myth of domestic security.

### **Playing the Virago: Cross-Dressing Women in the Renaissance**

Sarah Wall '97

ADVISOR: Yu Jin Ko, English

Mary Frith (1584-1659?), also known as Moll or Mal Cutpurse, was a seventeenth-century London woman who dressed and to some degree lived as a man. She was also the most famous transvestite of her time. Orphaned in youth, Frith became a celebrated figure of the underworld, known as a pickpocket and/or madam. The subject of a modest literary subgenre, she appears in two extant plays, Middleton's and Dekker's 1611 "The Roaring Girl," and Nathaniel Field's 1618 "Amends for Ladies," and in a 1662 "autobiography," *The Life and Death of Mrs Mary Frith, Commonly Called Mal Cutpurse*. Frith is depicted differently in these works, but in each one she is called a "hermaphrodite." What did it mean for Frith, physically a woman, to be characterized in this way? Through reference to contemporary views of hermaphroditism, from French Renaissance gynecological theory to neo-Platonic idealism, this paper will examine the ways in which the idea of the hermaphrodite was used to celebrate and to censure Mary Frith in literature.

## Studying Wellesley

### **Art at the Davis Museum**

#### **Chemistry and Art: Determining the Chemical Composition of Pigments in Selected Art Objects in the Davis Museum**

*The Students of Analytical Chemistry 261: Karen Atkinson '97, Katherine Doerr '98, Ellyn Heimlich '97, Lara Kipperman '97, Emily Milsovic '98, Rayane Moreira '97, Hyoun Park (EX), Eileen Rhee '98, Amy Roy '98, and Jenny Wang '98*

ADVISORS: Margaret Merritt, Chemistry, and Melissa Katz, Davis Museum

In the Fall semester of 1996, Chemistry 261 students completed an interdisciplinary project. At the outset, each student in the course selected an object from the permanent collection of the Davis Museum. Under the guidance of Melissa Katz and Margaret Merritt, each student proposed analytical methods that would allow the unambiguous identification of the chemical composition of a particular pigment in each of these objects. This presentation will demonstrate how a combination of art-historical knowledge, pigment characterization, and modern analytical chemistry can be used to authenticate a particular piece of art. A poster in the lobby of the Davis Museum will showcase the project. Ongoing gallery tours will also be conducted, during which students will present talks in front of the particular objects they studied.

#### Research at the Child Study Center

Dolls, Boo-boos, and Winnie-the-Pooh: Reports from Class Projects in Psychology 207R, "Research Methods in Developmental Psychology," Fall 1996

ADVISOR: *Sheila Brachfeld-Child*

#### Gender Differences in Preschoolers' Use of Care and Justice Responses to Moral Dilemmas

*Meredith Gunlicks '98 and Kimberly Davidson '98,  
Presented by Meredith Gunlicks*

The purpose of this study was to determine whether there is a sex difference in preschoolers' use of care and justice orientations in response to moral dilemmas. Previous research has found that females are more likely to make moral decisions based on care and responsibility toward others. By comparison, males are more likely to make moral decisions that are rule-bound and respectful of authority. Children from the Wellesley College Child Study Center were asked to solve three moral dilemmas that were illustrated with dolls. It was expected that boys and girls would use both care and justice responses when solving moral dilemmas. It was hypothesized, however, that girls would give care-based solutions to moral vignettes more

often than boys. Results indicated that the relationship between gender and types of response given depended on the moral dilemma.

#### The Reflection of Gender Stereotypes in Children's Human Figure Drawings with Stereotypically Male-Appropriate and Female-Appropriate Toys

*Marivic Dizon '98 and Gwen Stead '98*

This study examined whether preschool children's human figure drawings (HFDs) could be used experimentally to measure children's adherence to gender stereotypes about toys. Nineteen preschool children were told a story about a same-sex character and asked to draw the character with a stereotypically male-appropriate (truck) or female-appropriate (doll) toy. Children could choose from four stereotypically male and four stereotypically female colors with which to draw. They were then asked to rate the amount of fun the story character was having in their two drawings. Results indicated that girls reported their figures having "a lot" of fun with the doll significantly more than boys did. Girls used significantly more female colors in their drawings, and boys used more male colors. Analyses showed that neither the time children spent drawing, the size and detail of their HFDs, nor the distance their figures were placed from the toys revealed significant differences due to gender stereotypes.

#### The Relationship Between Empathy and Birth Order

*Rebecca Kropf '97, Kathryn Hughes '97,  
Melissa DiPetrillo '97,  
Presented by Rebecca Kropf*

There is conflicting evidence regarding the role of birth order in children's empathic responses. In this study we examined the relationship between empathy and birth order in 27 preschool children between three and five years of age. Empathy was evaluated through verbal responses and facial expressions to four fictional stories. Each story was designed to elicit one of four emotions: happiness, anger, sadness, or fear. In addition to birth order differences, age and sex differences were also examined in

empathic responses. Results indicated that there were discrepancies between children's ability to display appropriate facial responses. Gender differences in empathic responses failed to reach significance. Analyses of birth order, however, categorized by care-giving responsibilities, indicated that youngest and only children differed from middle and oldest children in the focus of their responses.

#### **Effects of Birth Order on Need for Affiliation and Risk-Taking Behavior in Preschool Children**

*Anne Hwang '98 and Gloria Chyou '98,  
Presented by Anne Hwang*

Birth order effects on need for affiliation and risk-taking behavior were studied in children ages three to five years from the Wellesley College Child Study Center. Each child was shown a scene of a same-sex doll about to watch a scary movie and asked if the doll would like to watch with someone or by itself. The child was asked to place a doll representing either a family member or a friend on the couch with the original doll if the child said "with someone." The distance between the dolls was later measured. Each child also played a board game in which the child had to choose either high-risk or low-risk moves. No significant affiliation results were found. First-borns were significantly more likely to take risks. The results support the evolutionary psychology theory of birth order proposed by Frank Sulloway.

### **Poster Session II**

#### **Chemistry**

##### **Studies of the Synthesis of the Novel Adenosine Analog**

*Ji-Young Kim '97*

ADVISOR: *David Haines, Chemistry*

3-Amino-7- $\beta$ -D-ribofuranosyl-1,2,4-triazolo-(4,3-b)-triazole is an analog of adenosine. It was designed as a possible antitumor and antiviral agent. If the analog behaves as anticipated, it will be phosphorylated by adenosine kinase in tumor or viral cells, and as a result, become a toxic nucleoside. Since

the direct ribosidation of the triazolo triazole base produced the N-1 ribosidated analog, several new synthetic schemes have been proposed to achieve the ribosidation at N-7. One of the synthetic schemes is to ribosidate 3-hydrazino-1,2,4-triazole hydrochloride, the precursor of the base, after the protection of its exocyclic amine. After being subjected to further reactions, the successfully ribosidated product gives rise to the desired analog.

##### **The Synthesis of 100% Anti Adenosine Analogs**

*Rebecca Landsberg '97*

ADVISOR: *David Haines, Chemistry*

Adenosine and its analogs exist in an equilibrium between syn and anti conformations. To be able to predict on which side of the equilibrium a given nucleoside lies, it is necessary to create a known syn and a known anti analog of adenosine. 100% syn and 100% anti analogs can be analyzed by nuclear magnetic resonance (NMR) and used as models to predict the side of the anti-syn equilibrium on which a given analog lies. Currently I am attempting the synthesis of 8,5'-anhydro-8-oxoadenosine, which is the anti analog. The synthesis has been performed in three steps, with the last step being the most difficult. Previous attempts have employed a reagent (hydrochloric acid) that can cause partial degradation of the molecule. This past semester I have tried using a different reagent, boron trichloride. Analysis of the product of this reaction is currently under way. An alternative five-step method of synthesis is also being designed.

##### **Silicon-29 NMR and Theoretical Studies of Diisopropylsilanes**

*Heather M. Molleur '97*

ADVISOR: *Jean Stanley, Chemistry*

Although many organosilicon compounds have been shown to have important biological activities, the bonding characteristics and their modes of operation are not fully understood. There is considerable evidence that in certain bonds to silicon, notably from oxygen, nitrogen and fluorine, there is some double bond character, probably due to

(d-p) $\pi$  backbonding. It has been hypothesized that in the case of methylsilanes, the d-orbitals of the silicon gain electron density by overlapping with the C-H bonds of the methyl groups. This mechanism is known as hyperconjugation. The extent of alkyl group involvement is dependent on angular orientations, orbital symmetry, and the nature of the alkyl groups. We will report  $^{29}\text{Si}$  NMR chemical shifts and coupling constants for diisopropylsilanes of type:  $(\text{CH}_3)_2\text{CHSiHX}$ , X = (Group A): F, Cl, OR,  $\text{NR}_2$ , (Group B):  $\text{CF}_3$ , COR,  $\text{COCF}_3$ . These NMR data will be correlated with the electronegativity of the substituents. In Group A, the substituents are capable of back-bonding, while in Group B this possibility has been minimized. Data from theoretical, molecular mechanics, semi-empirical, and ab initio calculations will be presented to show the extent of both back-bonding and hyperconjugation in these diisopropylsilyl systems.

#### **Synthetic Strategies for a Novel Inosine Nucleoside Analog**

*Vijayalakshmi Natarajan '97*

ADVISOR: *David Haines, Chemistry*

This work deals with the attempted synthesis of the novel inosine nucleoside analog, 1- $\beta$ -D-ribofuranosylimidazo-[1,5-b][1,2,4]-triazol-5-one. By inhibiting Inosine Monophosphate Dehydrogenase, a critical enzyme in de novo purine biosynthesis, the analog may offer anti-viral and anti-tumor effects. Studies to date have shown the exocyclic nitrogen of aminomethyl-1,2,4-triazole, a successfully synthesized intermediate to the target compound, to be the most nucleophilic in attempts at ribosidation. Generation of the phthaloylated protected triazole renders the exocyclic nitrogen virtually unreactive, ensuring ribosidation on the triazole ring system. It is hoped that manipulation of solvent polarity will yield ribosidation at the desired nitrogen, after which elaboration of the nucleoside will yield closure of the second heterocyclic ring and formation of the desired analog.

#### **Production Of Mouse Ribonucleotide Reductase R1 Subunit Using Baculovirus Expression System and Ribonucleoside Diphosphate Reductase Assay**

*Zhou' Qian '98*

ADVISOR: *Sonja Hicks, Chemistry*

Ribonucleotide reductase functions in the conversion of ribonucleotides to deoxyribonucleotides, which is the first committed step in DNA synthesis. This enzyme is composed of R1 and R2 subunits. R1 unit was successfully expressed using baculovirus system and purified using affinity column. The R2 subunit was expressed in a pETM2 transformed E.coli strain BL21/DE3 through IPTG induction and subsequently purified using DEAE ion exchange column. To study the functional mouse ribonucleotide reductase, a ribonucleoside diphosphate reductase assay was performed using labeled CDP. Ribonucleotide reductase converts C14-labeled CDP to dCDP. After removing phosphate group from CDP/dCDP using alkaline phosphatase, the nucleoside can be separated by Dowex column and measured using a scintillation counter. Other aspects of ribonucleotide reductase, such as inhibition and biological ion source for apoR2, may also be investigated once an active enzyme is obtained.

#### **Application of $^1\text{H}$ - $^{13}\text{C}$ Nuclear Overhauser Enhancement NMR Spectroscopy to the Analysis of Nucleotide Conformation**

*Kelley Yan '97*

ADVISOR: *David Haines, Chemistry*

We have investigated the application of one-dimensional heteronuclear NOE to the study of equilibrium glycosidic conformations of purine nucleosides in solution. A program for collection  $^1\text{H}$ - $^{13}\text{C}$  NOE data on the Bruker 200 MHz NMR spectrometer was developed and refined. Our methodology for studying conformation includes the use of known internuclear distances to ascertain unknown distances within the molecule. Internuclear distances have been experimentally established through observation of nuclear relaxation phenomena. Internuclear distances from protons in the ribose moiety to carbon atoms in the purine base serve as

probes for glycosidic conformation. Nucleosides of restricted conformations have been analyzed to develop a quantitative model that relates NOE to glycosidic conformation in solution.

## Geology

### Detrital Zircon Geochronology of Neoproterozoic Westboro Quartzite, Saugus, Massachusetts

*Liane Stevens '97*

ADVISOR: *Margaret Thompson, Geology*

The Westboro Formation consists of approximately 1100 meters of marine quartzite and metasilstone occupying a northeast-trending belt north and west of Boston, Massachusetts. Quartzite for detrital zircon geochronology was sampled in Saugus, Massachusetts. The analysis of eleven single zircon crystals by conventional isotope dilution thermal ionization mass spectrometry yielded a  $^{207}\text{Pb}/^{206}\text{Pb}$  age of 1000 Ma for the youngest grain, establishing the first reliable maximum depositional age for the quartzite. The Westboro detrital suite includes Middle Proterozoic, Lower Proterozoic, and Archaean components. The Grenvillian and Archaean signatures resemble recently reported analyses from the Blackstone Group in Rhode Island. These results are consistent with regional linkage between these units as the oldest stratified sequence in the Southeastern New England Avalon Zone. Ages from the Westboro quartzite resemble ages found for quartzite clasts in the Squantum "Tillite" member of Boston's Roxbury Conglomerate, supporting a provenance relationship between the formations.

## Physics

### The Uses of Polymer Gels

*Dahlene Fusco '97*

ADVISOR: *Kanwal Singh, Physics*

Polymer gels have been developed that can detect and identify metal ions in solution. These gels undergo a phase transition when they reach critical temperature. When a charged gel is exposed to metal ions, the critical temperature of the gel changes.

With an understanding of how gel transition temperature is related to metal ion presence, it should be possible to identify ions in solution using a gel sensor. Such a sensor, called a chromatograph, will undergo a change in critical temperature upon exposure to ions. As the ions diffuse through the gel, the resulting ionic distribution will be reflected in a distribution of transition temperatures across the chromatograph. A monitor will measure the transition temperature profile of different parts of the gel as a function of time. This profile will be compared to a theoretical model of ionic effect on critical temperature and the ions in solution will be identified.

## Psychology

### Adult Attachment Style and Autobiographical Memory

*Frances Chao '97*

ADVISOR: *David Pillemer, Psychology*

The study of adult attachment has lately sparked the interest of many researchers. In the past, attachment has been approached both from behavioral and cognitive perspectives, including infant responses to separations from parents and adult romantic relationships. One aspect of attachment that has not been studied extensively, however, involves the role that it plays in the construction of autobiographical memory. A questionnaire that assesses both adult attachment status and memory for early childhood events was administered to 100 Wellesley College students. Participants were assigned to one of four attachment categories (secure, dismissing, preoccupied, or fearful). The attachment groups were expected to differ with respect to the age and the degree of specificity of the reported memories; securely attached adults should report earlier and more specific memories than their insecurely attached peers. The relationship between attachment status and memory should be strongest when participants are asked to provide memories that focus directly on early relationships with parents.

### **Multiple Roles in Traditionally-Aged College Women and Their Effects on Well-Being and Psychological Distress**

*Theresa Lo '97*

ADVISOR: *Linda Carli, Psychology*

Multiple roles in adult men and women have been found to correlate with higher levels of well-being and lower levels of psychological distress. This study applies the theory of multiple roles to traditionally-aged college women and will assess the ten roles of student, daughter, friend, partner, worker, sister, extracurricular member, athlete, volunteer, and roommate in 100 students from an all-women's college. The relationships between mental health (in terms of psychological distress and general well-being) and role occupancy, role quality, and the level of involvement in each role will be examined. Role quality is hypothesized as being most predictive of both measures of mental health. Moreover, the relationship between role quality and one's reported mental health is believed to be influenced both by the level of perceived social support and by one's employed coping strategy in managing multiple domains in life. Exploratory issues, such as the relationships between roles and which role is most predictive of better mental health, will also be investigated.

### **Collaborating with a Friend on Artistic Products**

*Liz Schnitzer '97*

ADVISOR: *Sheila Brachfeld-Child, Psychology*

The purpose of this study was to determine whether friends working together would produce a more creative product than acquaintances. Three- to five-year-old children were paired either with a friend or an acquaintance to perform a collage-making task. The children were videotaped, and task, verbal, and non-verbal behaviors were coded and rated. Results indicated that friends produced a more creative collage than acquaintances, though this difference only approached significance. Additionally, among five-year-olds, friends smiled and/or

laughed more and worked longer on the task than did acquaintances. Sex differences arose, indicating that girls created more technically good and likable products. Girls smiled significantly more than boys and were rated as more playful. Girls who were friends worked longer on the collage-making task than did boys.

## **Performance/Readings**

### **Fiction and Screenplay**

#### **Readings by Wellesley College Authors**

Elaine He '99, "Roman Fever"

Lillian Shuey '99, "A Vegan's Baklava Dreams"

Pamela Buck '97, "Backseat Driver"

Bo Young Lee '99, "Searching For My Face"

ADVISOR: *Marilyn Sides, English*

### **Exhibition**

#### **People/Space: A Documentary of People and Place**

*Allison Davis '97, Susana Reisman '99, and Amanda Bladt '97*

ADVISOR: *Judith Black, Studio Art*

No form accentuates and celebrates the unique relationships between people and places as immediately as photography. These black and white documentary photographs offer a view of peoples' relationships to their homes, work places, neighborhoods, and cities. The exhibit includes photographs taken in the United States and in Mexico during the 1996-97 academic year. Through this exhibit we hope to direct attention to and appreciation of the tension and/or comfort inherent in peoples' connections to space.

## **The Ruhlman Conference Committee**

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