

Undergraduate Research and Creative Works Symposium



Program and Abstracts of Papers
Volume III

March 23, 2002
F.W. Olin Building



Southwestern University
Georgetown, Texas

March 23, 2002

Members of the Southwestern Community,

On behalf of the symposium committee, I would like to welcome you to the 3rd annual Southwestern University Undergraduate Research and Creative Works Symposium. It is an honor and privilege to have you attend this event.

The Delta Alpha Chapter of the Beta Beta Beta Biology Honor Society organized the first symposium in the spring of 2000. Since then, formalization of the symposium and a separation from the Biology department has emphasized the multidisciplinary aspect of the event. Participation from all academic departments has been emphasized this year, in order to support Southwestern University's core values.

The Undergraduate Research and Creative Works Symposium provides the community with an opportunity to view students' work in many different disciplines; it is a true showcase of Southwestern University's unique liberal arts education. The Symposium also provides the students of Southwestern University a chance to present their work in a collegial conference setting.

Future plans for the Symposium include forming a Symposium Planning Committee, which will allow for permanent funding and long-range planning; and inviting keynote speakers. In order to make these goals a reality, we need the support of students, faculty, and staff. I believe that research and other "hands-on" experiences are essential to the academic development of all students. As you can ascertain from the diversity and number of presentations in this year's symposium, research and other similar experiences are alive and well at Southwestern. Unfortunately, this fact often leads people to take for granted the tremendous opportunity a Southwestern student has. The types of research experiences you will hear about today are virtually *unheard of* at the undergraduate level at most institutions of higher learning.

Undergraduate research experiences not only give students a tremendous advantage but also often make significant contributions to the field of inquiry and to the academic growth of the students. Let us all make a commitment to support and foster undergraduate research at Southwestern University and continue to give students the immeasurable gift of knowledge.

We think you will find the symposium enlightening. In a true liberal arts fashion, the symposium features over 15 disciplines and the accomplishments of more than 25 students. The disciplines were intentionally mixed within each session to display the diversity of interests represented by the Southwestern University student body.

We hope you enjoy the symposium.

Sincerely,

Amanda M. Ackermann

Program Chair, Undergraduate Research and Creative Works Symposium

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Program Chair

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Undergraduate Research and Creative Works Symposium Online

Please visit <http://www.southwestern.edu/academic/symposia/SUURCWS/>

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2002 PROGRAM AGENDA

— MORNING —

Session I

Location: F.W. Olin Building, Room 105

Moderator: Amanda Ackermann

- 10:00 a.m. 1. **The Chinese Presence in Havana, Cuba: History and Traditions.**
Celestine Kan, Department of Modern Languages & Literatures,
Southwestern University.
- 10:15 a.m. 2. **Preparation of Acridine N-oxides as Potential Bioreductive Agents.**
Jason Schaefer, Departments of Biology and Chemistry, Southwestern
University.
- 10:30 a.m. 3. **Literary Perceptions and Misconceptions about the Chinese
Culture in Havana, Cuba: The Case of the Short Story Titled
"La Desgrada de Lao-Chao".**
Denise Frazier, Department of Modern Languages & Literatures,
Southwestern University.
- 10:45 a.m. 4. **Clothes of Memory.**
Rebekah Thedford, Department of Art, Southwestern University.
- 11:00 a.m. 5. **Assimilation in Identity in Contemporary Mexican-American Culture.**
Ryan Suarez, Departments of Communication and Psychology,
Southwestern University.
- 11:15 a.m. 6. **Do Assessments of "Personality" and Measurements of Behavior
Correlate for Groups of Captive Chimpanzees (*Pan troglodytes*).**
Audrey Dickey, Animal Behavior Program, Southwestern University.
- 11:30 a.m. 7. **"Queer Family" in the Middle Ages: Exploring Beguine
Communities in Medieval Europe.**
Jenny Carlson, International Studies Program, Southwestern University.
- 11:45 a.m. 8. **Acid-Base Reaction Chemistry Within a Reverse Micelle System
Formed in Supercritical CO₂.**
Krystyn Alter, Department of Chemistry, Southwestern University.

Session II

Location: F.W. Olin Building, Room 110

Moderator: Janel Owens

- 10:00 a.m. 9. **Relating Culture and Structure: Revolution and Counterrevolution in Iran and Afghanistan.**
Ashleigh DeSoto, Departments of History and Political Science, Southwestern University.
- 10:15 a.m. 10. **Handedness in Chimpanzees (*Pan troglodytes*).**
Stephanie Braccini, Department of Psychology, Southwestern University.
- 10:30 a.m. 11. **The Archer.**
Matthew Dannelley, Department of Art, Southwestern University.
- 10:45 a.m. 12. **Possible Interaction Between IGFBP-2 and EGF Pathways in Regulating *in vitro* Proliferation of DU145 Human Prostate Cancer Cells.**
Kim Chau, Department of Biology, Southwestern University.
- 11:00 a.m. 13. **Role of the Metaboreceptor Reflex in Arteriovenous Anastomotic Function During Isometric Exercise.**
Robert Jay Widmer, Department of Kinesiology, Southwestern University.
- 11:15 a.m. 14. **The Chinese/Cuban Experience from a North American Perspective: Cultural Elements that Produce Conflict when Translating in a Multicultural Context.**
Luis Cuellar, Departments of Communication and Modern Languages & Literatures, Southwestern University.
- 11:30 a.m. 15. **A Comparative Study of Revolutions in Haiti and Vietnam.**
Rachel Wallis, Departments of Modern Languages & Literatures and Political Science, Southwestern University.
- 11:45 a.m. 16. **A Contradiction in Virtue: Images of Prostitutes, Mistresses, and Adulteresses in Victorian British Painting.**
Bonnie Casson, Department of Art, Southwestern University.

2002 PROGRAM AGENDA

— AFTERNOON —

Break for Posters and Refreshments

Musical Performance: Denise Frazier, violin

Location: F.W. Olin Building, Lobby

Noon–1:00 p.m.

- A. Tandem Mass Spectrometry as a Rapid Technique for Determination of the Pungency of Hot Foods.
Ana Alcaraz, Department of Chemistry, Southwestern University.
- B. Costume Design & Research in Preparation for *Los Vendidos* by Luis Valdez.
Yessenia Garcia, Departments of Communication and Theatre, Southwestern University.
- C. Exploring the Experience of African-American Students on a Predominately White Campus: Focusing on Racial Identity Attitudes, Mental Well-Being, and School Involvement.
Crystal Guillory, Department of Psychology, Southwestern University.
- D. A Study of Optimal Color Combinations for Web-based Interfaces.
Leigh Lambert, Department of Mathematics & Computer Science, Southwestern University.
- E. Pottery of Choma.
Amy Tims, Classics Program & Department of History, Southwestern University.
- F. Designing Illusions: The Creation of Characters.
Laura Wilson, Department of Theatre, Southwestern University.

Session III

Location: F.W. Olin Building, Room 105

Moderator: Amanda Ackermann

- 1:00 p.m. 17. **The Secularization of the Holy Land: American Perspectives of Israel, 1945–1978.**
Mandy Brown, Department of History, Southwestern University.
- 1:15 p.m. 18. **Chemical Analysis of Water Pollution Within a Boder *Colonia*.**
Janel Owens, Department of Chemistry, Southwestern University.
- 1:30 p.m. 19. **The Plight and Possibilities of the Roma Peoples in Central and Eastern Europe.**
Jenny Carlson, International Studies Program, Southwestern University.
- 1:45 p.m. 20. **Conflicting Notions of Peace: India, the U.S., and the Tarapur Controversy.**
Joy Myers, Departments of History and Religion & Philosophy, Southwestern University.

PRESENTATION ABSTRACTS

1. The Chinese Presence in Havana, Cuba: History and Traditions.

Celestine Kan, Department of Modern Languages & Literatures,
Southwestern University

Mentors: Dr. Jingyu Gu and Dr. Damian Hinojosa; Southwestern University.

Deep within the heart of Havana lies a community whose history runs over a century old, when trade ships brought their ancestors over to Cuba. Originating from China, these people have become an integral part of society. Although much of their cultural history has been lost over the years, they have maintained and developed a new culture based on their Chinese heritage and their Cuban influences. Through the efforts of community leaders and the support of the Cuban government, the Chinese descendants of Cuba have become a thriving community with much more promise in store.

Culturally, these people have retained very little of their original ancestry. Only the original immigrants still know Cantonese, their regional Chinese dialect, and some have not spoken the language in many years. This study demonstrates the type of research undertaken by a group of students and two language professors whose intention focused on understanding the importance of a minority culture, the Cuban-Chinese, within a larger cultural context, mainly that of Havana, Cuba, in the 21st century. China's increased interest in Cuba has created greater opportunities for the Chinese descendants to renew their ties to China, and allowed many families to rediscover their Chinese roots. This study aims to illustrate which Chinese cultural traditions remain in practice today among the descendants of Chinese immigrants who arrived in Havana, Cuba, over one hundred fifty years ago. Special attention is given to those cultural elements which remain important to the descendants of the Chinese, especially in areas of the martial arts, language, food, clothing, and architecture. Secondary emphasis is given to reasons explaining why other Chinese traditions are no longer practiced among this special group of people.

2. Preparation of Acridine N-oxides as Potential Bioreductive Agents.

Jason Schaefer, Departments of Biology and Chemistry, Southwestern University.

Mentors: Dr. Frank Guziec and Dr. Lynn Guziec; Southwestern University.

Substituted 9-aminoacridines have been shown to be excellent DNA-intercalating agents. This interaction with DNA has proven to be very important in studying both DNA structure and interactions. A number of 9-aminoacridines have also proven to be useful in drug therapy. In contrast to the large body of work on 9-aminoacridines, to date very little work has been done on the corresponding oxidized derivatives—substituted 9-aminoacridine N-oxides. These N-oxide derivatives themselves should not readily intercalate with DNA, but could potentially be activated toward intercalation by enzymatic bioreduction. Successful methods for the synthesis and purification of substituted 9-aminoacridines and 9-aminoacridine N-oxides will be presented.

3. **Literary Perceptions and Misconceptions about the Chinese Culture in Havana, Cuba: The Case of the Short Story titled "La Desgrada de Lao-Chao".**
Denise Frazier, Department of Modern Languages & Literatures,
Southwestern University.

"La Desgrada de Lao-Chao" is a problematic short story since it was written in Spanish by a Cuban author who attempts to present from the perspective of a Chinese narrator the experience of mystery and love. Due to a series of inconsistencies in the literary presentation of this short story, it remains difficult to ascertain if this story was truly an original creation or merely an adaptation of an early Chinese fable or myth. Although the author, E. Morales de Acevedo could have been of Chinese descent, there is no evidence that supports or denies it. An analysis of the short story found in an issue of the literary journal *Figaro*, dated 1911, demonstrates the attempt to present in the early part of the twentieth century the mystery of the oriental culture. This study presents an analysis of the genre of the short story with regard to style, character development, plot development, and literary technique. This study also deciphers the meaning of the illustrations that accompany the story which unsuccessfully attempt to represent elements of the Chinese culture. Erroneously, these illustrations represent instead specific elements of Japanese culture and dress. In addition, this study demonstrates how this short story in a larger historical perspective documents the Spanish speaking Cuban perception of the Chinese culture in 19th century Havana.

4. **Clothes of Memory.**
Rebekah Thedford, Department of Art, Southwestern University.
Mentor: Ms. Victoria Varner, Southwestern University.

The exhibition, "Clothes of Memory," is comprised of my recent series of paintings that explore the intersections of the history of abstract art of the 20th century, my personal family history, and the development of memory and the act of memory retrieval. To create the 12 paintings in the series, I chose 12 pieces of clothing that are important in my life as the basis for my development of each image. Each of the 12 paintings represents an abundance of artistic, familial, and pedagogical influences, which together influence each distinct image formed on the canvas. Though actually influenced by many movements during the 20th century, my work is most easily associated with the Pattern and Decoration Movement in art during the 1970s because of the use of fabric as the obvious source of imagery. The large, abstract nature of my work is also reminiscent of the art of early 20th century painters such as Wassily Kandinsky. However, my work is distinct in its conceptual basis, placing emphasis on the development and influence of my personal memories, as opposed to the often political intent of the Pattern and Decoration artists or the artistic and social implications of the early abstractionists. Each piece of clothing represents a memory, each of which is not a single entity or idea but a short story, or narrative, within the framework of the overall story of my life. The paintings then represent those memories, and more specifically who and what they stand for.

Consequently, the paintings function according to an observation by Berin Golonu that "Sometimes all it takes is a sensory clue to send these forgotten memories reeling forward, and we are often astonished at their swift arrival along with their ability to re-situate us so perfectly in the past."

5. **Assimilation in Identity in Contemporary Mexican-American Culture.**

Ryan Suarez, Departments of Communication and Psychology,
Southwestern University.

Mentors: Dr. Julie Thompson, Southwestern University.

Assimilation is often defined as "to take in, fit into, become similar." In the context of intercultural communication studies, the concept is also defined as individuals accepting and adopting the host culture's norms, values, and behaviors in order to be accepted and valued. Assimilation is expected for individuals seeking membership or citizenship in the dominant culture. Assimilation is a survival mechanism for many immigrants in the host society. Through assimilation, one adopts the host culture's language, attitudes, value system, beliefs, and personality. One's cultural identity is often shaped through both private and public interactions. My project examines the assimilation process through an auto-ethnographical account of my life as a Mexican-American man. I will argue that assimilation is negotiated through the community, family, and language practices.

Scholarly literature regarding assimilation and identity often fails to reflect or describe accurately the actual lived experiences of ethnic or racial minorities. Social scientific research on Mexican-Americans often reproduces stereotypes. A shift in consciousness in literature of Mexican-American assimilation is needed to garner a better understanding of assimilation and identity.

I will also argue that theoretical treatments of identity formation will influence how we understand assimilation. This project will highlight the struggle for acceptance, identity, and language in Mexican-American families. It will also highlight the assimilation struggles that middle-class Mexican-Americans face in their communities, their homes, and their society.

Using an auto-ethnographical rhetorical analysis, my speech uncovers the hidden crisis of Mexican-American adolescents growing up in America today. It will open up a new understanding of the assimilation process and identity formation. More importantly, it acknowledges and helps us understand how we all shape our identities through family systems, interpersonal and intercultural communication, and public discourse.

6. **Do Assessments of "Personality" and Measurements of Behavior Correlate for Groups of Captive Chimpanzees (*Pan troglodytes*)?**

Audrey Dickey, Animal Behavior Program, Southwestern University.

Mentor: Dr. Steven Schapiro, The University of Texas M.D. Anderson Cancer Center.

Only a handful of studies have researched personality variables in chimpanzees. Few have attempted to correlate chimpanzee behavior with personality ratings. The purpose

of the current research was to aid in the search for correlations between chimpanzee behavior and personality variables. Observational sampling of chimpanzee behavior occurred four times weekly for six months from October 2001 through March 2002. Personality adjective checklists for each chimpanzee included in the study were given to and completed by four persons familiar with the chimpanzees (other than the observers). One possible implication of this study is a greater understanding of the relationship between behavior and personality variables in both humans and chimpanzees. Future behavior can be predicted if correlations between personality variables and behavior are established. A better understanding of personality and behavior interactions and the ability to predict behavior would also increase the likelihood of better care for chimpanzees in captivity.

7. **“Queer Family” in the Middle Ages: Exploring Beguine Communities in Medieval Europe.**

Jenny Carlson, International Studies Program, Southwestern University.

Mentor: Dr. Laura Hobgood-Oster, Southwestern University.

The Beguine movement of medieval Europe is often described as a spontaneous emergence of Christian female separatists committed to celibacy and experiencing radical visions. It is my conviction that this phenomenon can be more usefully explored as a somewhat subversive movement challenging Roman Catholic authority to the extent that many of its members were deemed heretical. Exploring the origins and development of this movement provide a lens to present-day spiritual transformation as well as adding new voices to medieval historical narrative. One of the most intriguing facets of this movement is that it provided a space for female community atypical of the patriarchally-coded constructs of the Middle Ages. Using scholarly discussions of queer culture in a medieval context as a point of departure, I endeavor to illuminate ways in which the Beguines of the 13th and 14th century created alternative kinship systems with a spiritually-charged intimacy threatening to gender and socioeconomic norms of the era. Analytical underpinnings of this exploration involve social movement theory, including Turner’s theory of liminality, combined with gender analyses and other feminist theoretical frameworks.

8. **Acid-Base Reaction Chemistry within a Reverse Micelle System Formed in Supercritical CO₂.**

Krystyn Alter, Department of Chemistry, Southwestern University.

Mentor: Dr. Emily Niemeyer, Southwestern University.

A basic understanding of simple reaction chemistries within reverse micelle systems is important for the development of new applications. For example, reverse micelles formed in supercritical CO₂ (scCO₂) have potential as environmentally-friendly organic solvents but their reactivity is not yet well understood.

We have used the indicator Neutral Red (NR) in order to determine the characteristics of the water core within the perfluoropolyether (PFPE) reverse micelle system formed in

supercritical CO₂. This indicator was chosen because of its spectrally distinct acid and base forms. A peak-fitting program was used to quantify the forms of NR within the reverse micelles under varying conditions. NR was also studied in reverse micelles formed from dioctyl sulfosuccinate in n-heptane as a model liquid system for comparison.

This presentation will focus on the environment within the water core of the PFPE reverse micelle system with varying pH, CO₂ pressure, and micelle water loading.

9. Relating Culture and Structure: Revolution and Counterrevolution in Iran and Afghanistan.

Ashleigh DeSoto, Departments of History and Political Science, Southwestern University.
Mentor: Dr. Eric Selbin, Southwestern University.

The study of revolution, especially those that have occurred in "Third World" countries, is full of contention concerning the theoretical approaches most appropriate to represent the causal mechanisms and explain with accuracy the processes through which revolution is most likely to arise and consolidate. Structuralists emphasize the importance of social, political, and economic structures in theorizing revolutions (Skocpol 1979, Wickham-Crowley 1997, Goodwin 1997). This orientation is characterized by the idea that revolutions have and will occur when certain structural and/or institutional conditions are present. Culturalists frame the study of revolution around the concepts of culture, social psychology, and human agency, insisting that revolutions and collective action in general cannot be explained by the examination of structures alone (Foran 1997, Selbin 1993 and 1997). In this project, I hope to synthesize cultural and structural considerations by focusing on their relational context, examining the Iranian Revolution and the Taliban counterrevolution. It may seem obvious to link structures and culture, relating each of them in their contextual intricacies. However, it has often been the case that the neglected connections between culture and structure obscure the complex realities of revolution and counterrevolution.

Relationships between and among people and institutions are especially important to the inception and outcome of revolutionary situations; placing a counterrevolution (the Taliban movement in Afghanistan) among traditional social revolutionary discourse (exemplified in the Iranian case) should yield valuable conclusions about the interactive matrices people and structures compose.

10. Handedness in Chimpanzees (*Pan troglodytes*).

Stephanie Braccini, Department of Psychology, Southwestern University.
Mentor: Dr. Steven Schapiro, The University of Texas M.D. Anderson Cancer Center.

It is commonly known that humans are handed: either right, left or ambidextrous. What about nonhuman primates? Strong data exist showing that nonhuman primates may indeed be handed as well. In addition to providing more information about primate species, studies of handedness provide important insights into issues relating to brain specializations and hemispheric asymmetries, since it is known that handedness is

indicative of hemispheric lateralization. Data examining handedness were collected using a bimanual task requiring chimpanzees to extract peanut butter from a tube device with one hand while holding the tube in the other hand. This task was administered to over 90 chimpanzees ranging in age from 5 years to over 40. All chimpanzees were tested while living socially at The University of Texas M.D. Anderson Cancer Center. The vast majority of individual subjects exhibited handedness, but unlike humans, no population bias toward right-handedness was observed. Chimpanzees commonly used the dominant hand to extract the peanut butter, even when the tube device was initially administered to the nonpreferred hand. The origin of handedness is currently unresolved; previous studies have correlated handedness with difficulties endured during pregnancy, while other work hypothesizes that handedness could be an inherited trait. The data from the present and related studies are important in investigating how human brain specializations have evolved.

11. The Archer.

Matthew Dannelley, Department of Art, Southwestern University.

"The Archer" is a large-scale figurative sculpture that explores contemporary issues first approached by Ron Mueck in his "Crouching Boy." Although Mueck has used fiberglass instead of traditional materials, he explores the form and content of early Greek sculptures. "Crouching Boy" is a well-known marble sculpture by Michelangelo. Mueck attempts to recreate the composition explored by Michelangelo in using a common everyday pose. However, he increases the scale and stylizes the features in a Disneyesque form. I wanted to explore this concept and take it further by observing the figure one finds in contemporary culture, such as computer games and comic books, and giving it a classical look with a contemporary stylization of the musculature. I have exaggerated the mass and foreshortened the parts of the body that I want to carry more emphasis.

12. Possible Interaction Between IGFBP-2 and EGF Pathways in Regulating *in vitro* Proliferation of DU145 Human Prostate Cancer Cells.

Kim Chau, Department of Biology, Southwestern University.

Mentors: Dr. Eun-Sung Park and Dr. Shilla Chakrabarty, The University of Texas Medical Branch.

Insulin-like growth factor binding protein-2 (IGFBP-2), which is overexpressed in human prostate cancer cell lines, is a mitogen for androgen-independent DU145 cells, working only partially through the IGF-I receptor (IGF-IR). This study examined possible utilization of the epidermal growth factor (EGF) pathway by IGFBP-2 to promote growth since elevated levels of EGF and EGF receptor (EGFR) have been demonstrated in DU145 cells. Effects of IGFBP-2 and EGF on *in vitro* proliferation of DU145 cells were examined by blocking EGFR or IGF-IR with their specific antibodies. Cells were seeded (8,700 cells/well) in 96-well microplates and treated with 50 ng/ml of EGF, anti-EGFR, IGFBP-2 and/or anti-IGF-IR for 24 to 48 hours. Cell growth was

significantly ($p < 0.05$) stimulated by IGFBP-2 following EGFR blockage of 24 hours. However, cell growth was significantly ($p < 0.05$) inhibited in both EGF and IGFBP-2 treated cultures following EGFR blockage of 40 hours. IGF-IR blockage did not produce any significant effects. To understand if EGFR blockage affects EGF or IGF system components at the transcriptional and/or translational level, DU145 cells were cultured and administered appropriate treatments for up to 48 hours. At term, RNA was extracted from the cells and conditioned media was collected from the dishes. RNA analysis of various EGF and IGF system components by RT-PCR showed that IGF-IR expression was decreased by IGFBP-2. Northern hybridization studies found that IGFBP-2 expression increased after 30 minutes and after two hours of treatment with combinations of EGF, anti-EGFR, and IGFBP-2. Results of these studies suggest IGFBP-2 partially utilizes the EGF pathway to regulate *in vitro* proliferation of DU145 human prostate cancer cells.

13. Role of the Metaboreceptor Reflex in Arteriovenous Anastomotic Function During Isometric Exercise.

Robert Jay Widmer, Department of Kinesiology, Southwestern University.

Mentors: Dr. Jimmy Smith, Southwestern University; Dr. Dan Stephens and Dr. John Johnson, The University of Texas Health Science Center at San Antonio.

Isometric handgrip exercise (IHE) causes increases in mean arterial pressure (MAP), heart rate (HR), skin sympathetic nervous activity, and palmar sweat rate (SR) on glabrous skin. Conversely, IHE causes a reduction in skin blood flow (SkBF) to glabrous skin. In normothermia, glabrous SkBF fluctuates due to the opening and closing of arteriovenous anastomoses (AVAs), but the origin of this control during IHE is not clear. Ten individuals participated in this study and each completed three protocols in a randomized order: 1) IHE (30% MVC) for two minutes followed by two minutes of post exercise ischemia (PEI), 2) IHE without PEI, and 3) occlusion without IHE. Cutaneous vascular conductance (CVC), SR, HR, and MAP were measured continuously during each session. AVA function, characterized by the standard deviation of CVC measures, were significantly reduced by IHE ($p < 0.001$) and PEI ($p = 0.002$). Palmar SR increased during IHE ($p = 0.07$) and PEI ($p = 0.03$), and increases in MAP ($p < 0.0001$) occurred in both IHE ($p = 0.002$) and PEI ($p = 0.001$). HR increased only during IHE ($p = 0.003$). These data suggest the control of AVA function during IHE and PEI includes the metaboreceptor reflex; however, the additional influence of central command cannot be ruled out.

14. The Chinese/Cuban Experience from a North American Perspective: Cultural Elements that Produce Conflict when Translating in a Multicultural Context.

Luis Cuellar, Departments of Communication and Modern Languages & Literatures, Southwestern University.

The task of translating between languages is difficult due to the exchange of ideas communicated between people of distinct cultures. The task of translating becomes even

more difficult when a translator must also communicate the cultural values beyond the words translated from one language to another. In addition, a conflict can result when one translates words without understanding the cultural values of the society in which the expressions are used.

On a recent research project involving students and professors from Southwestern University, two members of the research team served as translators among speakers of Spanish, English, and Mandarin Chinese. The task involved translating during a week in Havana, Cuba, from English into Spanish, from Spanish into English, from Mandarin into English and then into Spanish, and from Spanish into English and then into Mandarin. This study investigates the difficulties of translating between a diversity of languages when dealing with more than two cultures at one time or when translating more than two languages within one specific cultural context. Prior to our departure for Havana, the task of translating became a priority for the members of the research group; however, the group did not foresee the complexities of communicating in an attempt to research the culture and history of the Chinese descendants who presently live in Havana, Cuba. This study will also illustrate in its conclusion that the results of these conflicts are based on factors that deal with each person's cultural values. Within a translation or conversation between two distinct people of two different cultures, values such as honor, respect, and duty play an important role in molding a person's perspective when communicating ideas.

15. A Comparative Study of Revolutions in Haiti and Vietnam.

Rachel Wallis, Departments of Modern Languages & Literatures and Political Science, Southwestern University.

Mentors: Dr. Eric Selbin, Dr. Suzanne Chamier and Dr. Lisa Leff, Southwestern University.

The countries of Haiti and Vietnam have both experienced a series of revolutions, first for national liberation and later for the reconfiguration of social and political constructs within the countries. While the results of these struggles have led to distinctly differing political structures and environments in the countries, similarities can be found in the roots of both types of revolutions. I plan to study the aspects of political structure and development in Haiti and Vietnam by comparing the competing ideologies, the distinct political cultures, the role of the military, varying economic factors, and the roles of external actors in the conflicts in the context of revolutionary struggle for power.

With regard to anti-colonial revolutions, it is common among academics to attribute revolutionary movements solely to certain structural factors, such as the ideologies imported by the colonized peoples or the system of governing the colony. However, a cultural background that supports revolutionary concepts must be present to create an environment in which revolutions occur, making traditional and popular history equally important to the revolutionary process. In the study of revolutions, it is absolutely necessary to combine certain institutional elements with the culture being discussed to form a theory of revolution that accurately pinpoints the objectives and origins of revolutionary movements.

I hope in this project to explain the current political and social structures in both Haiti and Vietnam by comparing their pasts and the circumstances that have shaped their systems. I anticipate that results of this comparison will provide interesting information about political culture and history in Haiti and Vietnam and that it will have ramifications about the impact of revolutions on the aforementioned topics.

16. **A Contradiction in Virtue: Images of Prostitutes, Mistresses, and Adulteresses in Victorian British Painting.**
Bonnie Casson, Department of Art, Southwestern University.

The prostitute, mistress, and adulterous mother remain staples of Victorian British painting, particularly those of the Pre-Raphaelite Brotherhood. What remains curious about these images, however, are the decisions each artist made when placing brush to canvas. Women who entered the life of a prostitute or mistress are depicted as idealistically young and beautiful—seemingly contradictory to the Victorian puritanical mindset which emphasized feminine chastity above all else. What is even more confusing is the artist's relative ignorance of the adulterous mother, who when depicted is shown as animalistic, grotesque, and primal. My research explores this contradiction in virtue, highlighting aspects of Victorian socio-cultural history, as well as examples of images which illustrate opposing views of feminine sexuality.

17. **The Secularization of the Holy Land: American Perceptions of Israel, 1945–1978.**
Mandy Brown, Department of History, Southwestern University.
Mentors: Dr. Jan Dawson, Dr. Laura Hobgood-Oster and Dr. Lisa Leff,
Southwestern University.

The Holy Land has occupied an important space in the American cultural imagination as a key religious, literary, and historical entity, as well as a popular destination for 19th and 20th century pilgrims. With the establishment of Zionist communities in Palestine and the founding of the State of Israel in 1948, images of the Holy Land began to change dramatically in American popular culture. Now a political entity, Israel suddenly moved beyond its well-established place as a strictly religious, historical, literary, or cultural symbol in American commentary. The new images of the Holy Land testified, instead, to its increasing “secularization” in the American mind.

Travel literature, weekly periodicals, and religious commentary in the American popular press, including such publications as *Time*, *Life*, *Holiday*, *Harper's*, and *Christian Century*, reveal an American struggle to redefine its understanding of and feelings toward the Holy Land-turned-state. Out of this struggle came new, decidedly secularized, cultural images of the Holy Land, such as the transformation of Israel from pioneering state to colonizing “empire,” as well as the changing role of the romanticized Israeli from survivor to leader to conqueror. This project examines to what extent the secularization of the Holy Land revealed itself in the commentary of mainstream American press, thus shedding light on the development of the long-standing relationship between the United States and Israel.

18. **Chemical Analysis of Water Pollution Within a Border *Colonia*.**

Janel Owens, Department of Chemistry, Southwestern University.

Mentor: Dr. Emily Niemeyer, Southwestern University.

Colonias populares along the U.S./Mexico border have experienced rapid growth as a result of the migration of rural workers led by the promise of jobs at *maquiladoras*. Under the third annex to the *La Paz* agreement (1983), these factories are required to return chemical wastes to the country of origin, but it is widely suspected that chemicals are dumped into open canals, sewer lines, and garbage dumps owing to loopholes found within the agreement. Water supplies are further polluted by absent or inadequate water treatment plants and harmful agricultural practices that introduce pesticides and increase salinity. In addition to the development of a public health crisis, these pollutants cause direct harm to dwindling supplies of surface and ground waters, threatening drinking water supplies and natural resources, eventually flowing into the Gulf of Mexico.

In response to the health concerns of inhabitants of *Colonia Humanos Derechos* of Matamoros, Mexico, we have collaborated with local activist groups to analyze water samples taken from an open canal that runs next to the community. Water samples were collected in duplicate from multiple sites along the inhabited banks of the canal and subsequently analyzed to quantify a series of conventional pollutants including pH, total dissolved solids, coliform bacteria, heavy metals, volatile organic compounds, and cationic and anionic water quality indicators.

19. **The Plight and Possibilities of the Roma Peoples in Central and Eastern Europe.**

Jenny Carlson, International Studies Program, Southwestern University.

Mentor: Dr. Florence Gould, Southwestern University.

The purpose of this study is to examine the possibilities for Roma political actualization on grassroots as well as supranational levels. Significant discrimination against the gypsy peoples of Central and Eastern Europe has reemerged since the withdrawal of Soviet forces from their former spheres of influence. Until recently, however, there has been little pressure on governments to enforce measures for Roma safety and employment. While looming EU integration holds much promise for the Roma of post-Soviet Europe, potential pitfalls remain, not only within the integration process itself, but also in the societal by-products of such an occurrence. The importance of grassroots activism and popular sentiment cannot be overlooked in this context as reforms institutionalized from the top down may be unable to transform biases formed over centuries of intercultural animosity. Although the Roma diaspora permeates virtually all states of Eastern and Western Europe, I have chosen to focus primarily on Slovakia, Hungary, and the Czech Republic—three countries currently on the “fast track” to EU accession.

Framing this exploration is an inquiry into the conceptualization of the Roma peoples as a nation. Current pan-European Roma rights groups are examined for their potential in mobilizing activism on local as well as international levels. It is the premise of this paper that without popular initiatives, attempts to establish peaceful and mutually beneficial relations between the Roma and their neighbors will fall short of necessary consolidation.

20. **Conflicting Notions of Peace: India, the U.S., and the Tarapur Controversy.**
Joy Myers, Departments of History and Religion & Philosophy, Southwestern University.
Mentors: Dr. Jan Dawson and Dr. Elizabeth Green Musselman; Southwestern University.

In the wake of September 11, issues of peace and security have been at the fore of international consciousness. Yet in those discussions, the political nature of “peace” and the deeper religious-cultural significance of the term itself are overlooked. Such oversight is embodied in the controversy over the Peaceful Nuclear Explosion (PNE) conducted by India in May 1974 and America’s response as a world leader. My research explores policy makers’ and legislators’ (primarily American but some Indian) responses as reflected in legislation, editorial works, and interviews. My analysis is framed as a cultural history and is informed by the framework developed by Andrew Rotter. Ultimately, the American response to the PNE reflects a deeply gendered sense of power, how policy makers envisioned a “peaceful” world order, how they imagined that world order would be attained, and which nations they thought were entitled to lead the quest.

POSTER & CREATIVE WORKS ABSTRACTS

A. Tandem Mass Spectrometry as a Rapid Technique for Determination of the Pungency of Hot Foods.

Ana Alcaraz, Department of Chemistry, Southwestern University.

Mentors: Dr. Athula Attygalle and Dr. Jarrold Meinwald, Cornell University.

The pungent properties of chili peppers are attributed to a group of compounds called capsaicinoids. These compounds are found mostly in the pepper's placenta, the white part inside the pepper to which the seeds are attached. The two major capsaicinoids are capsaicin (N-[(4-hydroxy-3-methoxyphenyl) methyl]-8-methyl-E-6-nonenamide) and dihydrocapsaicin (N-[(4-hydroxy-3-methoxyphenyl) methyl]-8-methyl-6-nonanamide). Capsaicinoids are not water-soluble but dissolve easily in oils, alcohols, and fats.

The traditional method of determining "hotness" of chili peppers and food preparations is by tasting. A panel of trained tasters test water-diluted hot sauces to determine the amount of dilution necessary to make the pungency undetectable. Pharmacist Wilbur Scoville assigned each hot sauce, or pepper, a number based on the dilution tests and expressed it as a scale called the Scoville Organoleptic Scale. The heat levels of the peppers vary widely, from 0 heat units for green bell peppers to about 500,000 heat units for the hottest habanero pepper known.

High Performance Liquid Chromatography (HPLC) has been employed as a more accurate method of determining pepper pungency. The capsaicinoids are extracted from a variety of peppers and food preparations, a process that takes about four hours, and then the extracts are analyzed by HPLC, which requires another one hour.

This project looks at Tandem Mass Spectrometry (MS/MS) as a more rapid and accurate technique for determining the pungency of different peppers. Although the extraction time remained the same, the analysis time could be reduced dramatically. Analysis by the MS/MS method requires only about two minutes per sample.

B. Costume Design & Research in Preparation for *Los Vendidos* by Luis Valdez.

Yesenia Garcia, Departments of Communication and Theatre,
Southwestern University.

Studying and understanding stereotypes was a must in preparation for *Los Vendidos*—"The Sellouts"—by Luis Valdez. In its brief sketch of Honest Sancho's Used Mexican Lot, the play dramatizes a range of stereotypes applied by Anglo Culture (represented by the Anglicized Mexican-American, Miss JIM-enez) to the Chicano experience: Farm Workers, Johnny Pachuco, the Revolucionario, and the "new Mexican-American" yuppie. Research consisted of collecting images and observing the culture, people, and physical environment of South Texas. This face-to-face contact helped to humanize the production, making the characters and story more tangible for audiences. The colors and images I used in constructing the costumes and set, as well as the direction given to the

actors, was crucial in creating a world that works at the border between two cultures, where stereotypes run rampant and appearances are not always what they seem.

C. Exploring the Experience of African-American Students on a Predominately White Campus: Focusing on Racial Identity Attitudes, Mental Well-Being, and School Involvement.

Crystal Guillory, Department of Psychology, Southwestern University.

Mentor: Dr. Jacqueline Muir-Broadus, Southwestern University.

My presentation will cover the experiences of African-American students on predominately white campuses, with a focus on mental well-being, racial identity attitudes, and school involvement. This presentation will explore how all of these items are interconnected and how this affects the African-American student while on a predominately white campus.

D. A Study of Optimal Color Combinations for Web-based Interfaces.

Leigh Lambert, Department of Mathematics & Computer Science,
Southwestern University.

Collaborator: Sarah Peterson, Southwestern University.

Mentor: Dr. Barbara Boucher Owens, Southwestern University.

Color combinations used to display textual information on web pages can affect user performance. To study these effects, participants were presented with a web-based reading comprehension task in 1 of 3 color combinations (blue background with white text, black background with magenta text, or grey background with black text) and their response times and accuracy rates were recorded. Participants were male and female volunteers from a small university campus. Results indicate that the differences in reading times approached significance, with the grey background and black text combination producing longer reading times. Also, the differences in accuracy levels approached significance, with the grey background and black text combination resulting in the fewest correct answers. Results from this study could be used to design web pages and products such as software targeted for specific age groups based on which color combinations are most effective for the group.

E. Pottery of Choma.

Amy Tims, Classics Program and Departments of History, Southwestern University.

“Pottery of Choma” is an examination of the pottery from the Choma excavation in Elmali, Turkey. During the 2001 season, Tims and Andersen catalogued and examined sherds from the current and previous excavations, with a focus on red and black bichrome wares. A preliminary relative chronology of the bichrome pottery at the excavation has been established. After the end of the excavation season, comparable pottery wares, *comparanda*, were sought from sites in western Turkey. However, the search was inconclusive, leading to the conclusion that ceramic influence came from the East.

F. **Designing *Illusions*: The Creation of Characters.**

Laura Wilson, Department of Theatre, Southwestern University.

In designing the costumes for the Theatre Department's production of *The Illusion*, an overriding sense of playfulness was essential. The characters in this play are each distinct in their desires and personalities, and I designed their costumes to reflect such nuances. Four of the actors in the cast played three different characters; in designing these characters, a thread of resemblance ran through the actors' three characters. The playwright, Tony Kushner, toys with the notions of metatheatre and timelessness throughout the play, therefore the costumes were subtly theatrical and basically true to the period(s) in which the play is set—but with delicate anachronistic touches.

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**Southwestern University's
Core Purpose**

Fostering a liberal arts community whose values and actions
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Fostering diverse perspectives.

Being true to one's self and others.

Respecting the worth and dignity of persons.

Encouraging activism in the pursuit of justice and the common good.