The Undergraduate Research Forum is part of REACH (Research-Enriched Academic Challenge), a campus-wide program for undergraduates coordinated by the Office of Research Development and Administration. For more information, see www.siu.edu/reach.

The forum is being held in conjunction with the 2003 Research Day (sponsored by Phi Delta Kappa, Phi Kappa Phi, Sigma Xi, and the Society for Neuroscience) and the Illinois Junior Science and Humanities Symposium.
Undergraduate Research Forum
March 24, 2003
Southern Illinois University Carbondale

Program
Judging of posters: 8:30 - noon
Poster session: 1:00 - 3:30 p.m.
Award presentations: 3:30 p.m.

Organizers
Karen Renzaglia, ORDA
Dena Stogsdill, ORDA

Sponsors
Office of the Provost
Office of Research Development and Administration (ORDA)

Poster Judges
Jim Allen, Dept. of History
John Bozolla, IMAGE Facility/Dept. of Plant Biology
Peter Chametzky, School of Art & Design
Mark Dixon, Rehabilitation Institute
Regina Foley, Dept. of Educational Psychology & Special Education
Scott Hodgson, Dept. of Radio/TV
Jodi Huggenvik, Dept. of Physiology
Karen Jones, Dept. of Animal Science, Food & Nutrition
Terry Owens, Dept. of Architecture & Interior Design
Walter Sundberg, Dept. of Plant Biology
Jeff Underwood, Dept. of Geography

Special Thanks
Prudence M. Rice, Linda Martin, Kyle Perkins, John Dunn, and Marilyn Davis
Dawn A. White
Dept. of Architecture and Interior Design

Celestial Geometry

This studio furniture, mixed medium cabinet was conceptualized, designed, and constructed as part of an Honors Program Senior Thesis. The “Celestial Geometry” cabinet is an abstraction of the universe and relies on basic evolving geometries to achieve that essence. Its title refers to the designer’s abstraction process, the evolution of simple geometries, and the journey they must take together to become a metaphor for the evolution of the universe. This influenced manipulation of design elements, materials, and techniques.

Objects in the universe (the glass circles on the cabinet) evolved from explosive elements in the universe (the torching techniques applied to stainless steel doors) in the vast black void of the universe (the arc doors on the black cabinet). The materials and finishes selected also contribute to the concept in that the stark nature of the lacquered wood against torched steel and the textured fragile glass provide a sharp juxtaposition on the mundane domestic nature of a cabinet. The ordinary domestic service items likely found in the cabinet make this juxtaposition of elements of the universe on daily life quite profound. The stainless steel doors have been heated to the point of revealing evolving patterns in shades of gold, green, red, and blue that echo the artistic process as well as the evolving universe. The colored and embossed pieces of fragile glass give reference to the fragility and infinite variety among objects in the universe.

I learned many things from this physically and mentally demanding design process. Lacquer finishes must be applied in a clean environment; finished edges must be worked to a fine detail; selecting the right gauge of steel is critical to withstanding the torching process while maintaining its shape over time; and the rewards of a rigorous design process are artistic and personal growth.
Marie Asao, Deborah O. Jung, Laurie A. Achenbach, and Michael T. Madigan
Dept. of Microbiology

Characterization of an Alkaliphilic Phototrophic Heliobacterium from the Wadi Natroun, Egypt, Heliorestis sp. strain HH.

Heliobacteria are anoxygenic phototrophic bacteria containing bacteriochlorophyll a and are phylogenetically classified within the low GC Gram-positive bacteria. The formation of endospores, the extremely heat- and radiation-resistant structures, is thought to be a universal process among heliobacteria and is unique among phototrophic bacteria. Three strains of alkaliphilic heliobacteria have been isolated from the soda lakes (pH > 10) around the world. In the present study, the physiology of an alkaliphilic heliobacterium from a soda lake in the Wadi Natroun, Egypt, Heliorestis sp. strain HH, has been analyzed; its characteristics are compared with its closest known relative, Heliorestis daurensis (>97% 16S rRNA sequence homology), isolated from a Siberian soda lake. By both phase-contrast and electron microscopy, cells of strain HH showed a coiled morphology. In contrast, H. daurensis has a filamentous morphology.

The physiological characterization of both organisms is under active study. The results from recent experiments have indicated that both strain HH and H. daurensis have no vitamin requirements. This is unlike all other species of heliobacteria, which require biotin as a growth factor. Of 34 carbon sources tested, strain HH is able to utilize only pyruvate, acetate, and propionate as carbon sources when grown phototrophically. Unlike other heliobacteria, strain HH is incapable of dark growth using fermentation metabolism. Although the presence of endospores in strain HH cultures has been suggested by the resistance of cultures to a heat shock, endospores have not yet been observed microscopically. Additional experiments in progress on the physiological characterization of strain HH and H. daurensis include nitrogen source requirements and sulfide tolerance. The significance of the physiological characterizations of these unique alkaliphilic heliobacteria lies in a deeper understanding of the biodiversity of phototrophic organisms in alkaline soda lakes, some of the most extreme environments on the Earth.

Rachel Webb, Lee Buchsbaum, and Connie Shanahan
Dept. of History

Southern Illinois Coal Cultures: Celtic Traditions

The researcher collected oral histories from several miners and their families of Scottish, Welsh, or Irish origin who came to the southern Illinois region to work in the coal mines. The purpose of the project is to document the experiences of these miners and their families and to present this information to the public in order to create awareness of their contributions to the region. The participants involved in this project have a great interest in preserving their stories, like one family from Ziegler who has had three generations work in the coal mines. This family with an Irish background worked in the local coal mines from the early 1900s to the late 1980s.

In cooperation with the Southern Illinois Irish Festival and the “Working in the Seams” Project (Cinema & Photography, Coal Research Center), we will present photographs of several of the individuals interviewed as well as biographical information about each interviewee and a summary of the oral histories. The information collected will add to the awareness about the diverse group of individuals who were employed as coal miners in the region, and will contribute to a greater awareness of the diverse ethnic backgrounds of the people who settled in Southern Illinois. The research will lay the groundwork for future research and can be used in possible educational programs in the future.
Litterfall interception is a poorly understood component of the water balance of forested ecosystems. Although some studies have been conducted on litterfall interception from needles of coniferous tree species, no known research has been conducted on the interception of sweetgum seed capsules. Because *L. styraciflua* has a biogeographic range extending throughout the southeastern United States, including southern Illinois, its seed capsules may have a significant impact on the hydrology of the region’s forests, potentially impacting water quantity and quality. The aim of the present study is to quantify the litterfall interception from sweetgum seed capsules.

Interception data are collected at our field site located at the Touch of Nature Environmental Center on a daily basis. The experimental set-up consists of a continuously recording meteorological station, including a heated tipping-bucket snow gauge, temperature and relative humidity sensors, an anemometer and wind vane, and a pyranometer. Preliminary results indicate that sweetgum seed capsules can intercept over 200% of their initial dry weight. Seed capsules intercept a greater quantity of water than coniferous species. The duration of the antecedent dry period between precipitation events has a detectable influence on litter interception. These results demonstrate the need for water resource managers to document the species composition of forests under their jurisdiction when modeling water demand. The results of this study will be published in the *Hydrological Sciences Journal*.

---

Dopamine is a very important neurotransmitter in the brain. Imbalances of dopamine and dopamine receptors have been linked to a variety of psychological disorders, such as attention-deficit hyperactivity disorder (ADHD), schizophrenia, and depression. Previous research has primarily focused on the correlation of dopamine receptor 4 (DRD4) genotypes with ADHD diagnosis. This study will focus on the potential correlation of dopamine receptor 2 (DRD2) genotype and cognitive abilities that are believed to be disturbed in ADHD, but in normal children in order to determine whether this genotype-phenotype relation is consistent across a broader spectrum of children. First, buccal samples were collected from a number of preschool children participants, and DNA was isolated. The DNA was subjected to polymerase chain reaction (PCR) in order to amplify a specific region of the DRD2 gene. The PCR product was digested with Taq restriction enzyme to determine the genotype of each sample. Differences on cognitive tasks measuring inhibitory control and behavioral regulation were compared between the differing genotype groups. Results are discussed in light of the genetic contributions to behavior and cognition and the nature of psychiatric diagnosis.
Kyle Lynn Toth
Depts. of Theater and Philosophy

**Theatrical Expressionism as External Manifestations of Internal Phenomena**

Theatrical expressionism as a production style focuses on conceptual ideas such as abandonment of realism/naturalism, the importance of the world we see being presented through the eyes of a central character, and the dehumanization of peoples by advancements in technology and corporate power (as well as other oppressive forces) and tends to be episodic in nature. It is much like the fragmented, reconstructed visuals of a dream.

Essentially, my theory suggests that expression as a production style depends upon the practitioners’ abilities to materialize external elements of scenery, costume, lighting and language which offer a representation of occurrences that happen within a central character. In order to do this, the designer must enter the world of the character, and manifest it, from the inside out. The steps involve a psychological analysis of the character from whose perspective the world is seen, to better understand the nature of said character’s perceptions and subsequent reaction, a translation of abstract emotional response into a visually stimulating, while communicative language.

This poster will show the process of this external manifestation as I applied it to the theatrical lighting design for the expressionist playwright Sophie Treadwell's *Machinal*. The poster will communicate the steps of the process, as well as offer visual reference to the results of the process. It is my hope that this poster will elicit feedback on the methodology, its effectiveness, and its aesthetic potential.

Aaron Call and Marc Riedel
Administration of Justice Program

**Latino Homicide**

As frequently stated by Ramiro Martinez, Hispanics in the United States are a greatly under-researched group, in part due to the difficulty of obtaining accurate and specific information for them. The term “Hispanic” identifies a group that encompasses more than a dozen nationalities and according to recent research, each frequently identifies itself independently from the others (i.e., a Puerto Rican might be offended to be thought of as Mexican, although both are typically considered Hispanic). It is also typical for police reports to include only information based upon outward appearance. This leads to many people of Latin origin being labeled as either black or white, as well as Hispanic. Part of this problem has been overcome on a small scale through the creation of the California Linked Homicide File (CLH), which has matched files from California Policing agencies to those of the California Health Department. The CLH includes every reported homicide in California from 1990 through 1999. Of the files that were successfully matched between 1994 and 1999, 6,378 were of varying Hispanic origin. The research was only inclusive of these years, as 1994 was the first year in which the California Demographic Unit differentiated between immigrants and native born Hispanics.

Homicide rates have been run comparing the immigrant population to the native born population for each of the six years that a total population was available. This information was then broken down into rates for age ranges. I have found that not only did the Latino immigrants from Mexico (Mexicans) in California have a higher homicide rate than the U.S.-born Latinos (Natives), but the age at which Mexicans’ rates peak is approximately five to seven years older than the Natives. The trends show that the difference between the rates of Mexicans and Natives decreased from 1994 to 1999. I have also found more data to reinforce prior research done by Riedel, indicating that the rates of both the Mexicans as well as the Natives are gender-dependent. My findings show that the males typically have high rates closer to those of black American males, while the women have rates very similar to those of white females.
Laura Dersch and Lorri Swanson
Biological Sciences Program; Dept. of History

Teacher Education and Moral Agency

The objective of our project was to study different approaches used among a sample of collegiate teacher education programs. The project analyzed the ways in which teacher education programs prepare educators for the social, political, ethical, and reflective aspects of the profession. In addition, we researched how teacher education programs incorporate their mission statements and ideals into actual methodological and practical instruction. Through the course of the study we contacted 20 schools asking about their programs’ goals and course information. From those data, and the data we collected from schools’ webpages, we chose three representative schools to visit. During the visit, we met with the directors of the teacher education programs, and more importantly, we met with focus groups of students. By developing and conducting this comparative analysis of different teacher education programs in the state, we have a better understanding of how future teachers are being shaped, either as moral agents or technicians of the effects on social change from the challenging students to consider and act on moral issues in a democratic society.

Joseph J. Toler, David J. Gibson, and Stephen D. Ebbs
Dept. of Plant Biology

Allelopathic Effects of an Exotic Perennial, Lespedeza cuneata, on Plants in a Successional Old Field

The last century of agriculture and government projects has brought a plague of exotic species that has interrupted the natural succession of prairies and meadows. Many exotic species tend to displace native species by out-competing, predation, and disease. We looked at how Lespedeza cuneata affects the plants in a successional old field and the possible role that allelopathic chemicals play. Canopy cover was estimated for all the species found in the test plots at Touch of Nature Long Term Research Area. Examination of the canopy cover data showed that an increase in the canopy cover of Lespedeza cuneata produced a drop in the canopy cover of the other species. Species richness was compared to the canopy cover of Lespedeza cuneata. This comparison revealed that as the cover of Lespedeza cuneata increased the number of species decreased. Five different concentrations (1g/100ml to 20g/100ml) of an aqueous extract were made from Lespedeza cuneata to look for allelopathic activity. Seed germination assays were performed on Lactuca sativa (lettuce) seeds using the extract. There was a substantial decline in germination at all five concentration levels. Extract at 20g/100ml was applied to soil samples to see if there is an allelopathic effect on the seed bank. There was a reduction in the number of above-ground sprouts when extract was applied to the soil samples. The aqueous extract produced from Lespedeza cuneata yielded a considerable effect, probably due to allelopathic chemicals. Overall the data revealed that Lespedeza cuneata produces significant effects on the plants in a successional old field.
Christopher Tice  
School of Art and Design

**Auditory Immersive Installation**

My goal was to construct a device that immerses the participant in an auditory illusion using tactile sound and dimensional stereo recording techniques. This auditory illusion was joined with visual stimuli designed to create a greater auditory focus. Conceptually the issues of man’s interconnectedness with technology and divergence from nature have been addressed by using pre-recorded natural sounds, mixed with low-frequency computer generated tones.

Creating a convincing illusion is the goal of current research into immersive virtual reality systems. Auditory information can be used as either a subtle stimulus or as an overbearing focus. The human ear is always informing the listener while the eyes may be averted. This work produces frequencies that are far below the human range. The result is a more complete “sound picture.” Further study into the use of hardware and software to create dimensional aural landscapes and tactile sound experiences will one day bring us technologies only dreamed of by science fiction authors. This piece was created to perform under high traffic situations. It was constructed to meet or exceed currently accepted construction standards. The exploration of these technologies brings us closer to a union with machines that must be addressed prior to its mass consumption by the public. This piece conceptually addresses current issues relative to our technological and social environment. This installation has allowed me to continue my investigation of sound as a sculptural medium and technology as an art form.

Elizabeth A. Dille, Karen L. Jones, and Sheryl S. King

Dept. of Animal Science, Food and Nutrition

**Evidence for a Dopaminergic Mechanism Regulating Progesterone Secretion in the Bovine Corpus Luteum**

Fescue toxicosis has an annual $600 million impact on the beef industry due to reproductive loss and decreased weight gains. The exact cause of the reproductive loss is not fully understood, but may be due to decreased progesterone (P₄) secretion by the corpus luteum (CL). Tall fescue secretes a toxin called ergovaline that is a dopamine (DA) agonist. The goal of this experiment was to determine if a dopaminergic mechanism at the local level of the CL regulates P₄ production. Luteal tissue samples were cultured in the presence of DA, domperidone (DOM), a dopamine antagonist, and in combination (DA + DOM) at 10⁻⁴ M, 10⁻⁶ M, or 10⁻⁸ M. Progesterone concentrations of media harvested after timed incubations were measured by radioimmunoassay. The data were analyzed by ANOVA and LSD post hoc testing using SPSS software. Dopamine did not alter P₄ concentrations at any concentration tested (p > 0.05). Domperidone increased P₄ at 10⁻⁸ M (p < 0.05) but not at 10⁻⁴ M or 10⁻⁶ M (p > 0.05). Domperidone in the presence of DA significantly increased P₄ concentration at all concentrations tested (p < 0.05). This suggests that DA and DOM may have a synergistic effect on P₄ secretion in the bovine ovary, and provides evidence that a dopaminergic mechanism regulates P₄ secretion.
Derek Freand
Dept. of Architecture and Interior Design

Civil War Gunboats at Mound City, Illinois

The purpose of this research is to make the public aware of important aspects about the Civil War in Mound City, Illinois. Ironclad gunboats were built at the Mound City Marine Ways. The marine ways was a shipyard that constructed ironclads for the Union. Because of this, the Mound City Marine Ways was a major contributor during the Civil War. Without the gunboats that the marine ways produced, the result of the war might have been different. Not only were ironclad gunboats built in Mound City, but many other boats stopped there to get repaired. The first hospital ship called the Red Rover was built at the marine ways in Mound City as well. Mr. Swenson teaches a Historical Preservation class during the summers that focuses on this type of research. I took Mr. Swenson’s class during the summer of 2002 and was instantly hooked on finding all the information that I could on the Mound City Marine Ways. With the undergraduate assistantship program I am able to continue my research of the Red Rover Hospital ship while gaining knowledge about the history of Southern Illinois.

Leanne Tague, Martha Vasquez, and Paul Bates
Dept. of Educational Psychology and Special Education

Teaching Self-Determination Through Student-Directed Individual Educational Planning (IEP) Meetings

It is required by law that all children with disabilities have the right to receive a free and appropriate public education (Education for All Handicapped Children’s Act, P.L. 94-142, 1975). Parental involvement has always been required at Individual Educational Plan (IEP) meetings. More recently, students have been encouraged to do the same, thus making students an important part of their own planning meetings and their education.

In this project, we are training high school students with disabilities how to be more actively involved in their own program planning by teaching them how to self-direct their own IEP planning meetings. Research strongly supports the importance of self-determination and self-advocacy skills as essential to a student’s post-school success.

The remainder of this year we will be instituting educational and training programs at area high schools. We will eventually implement a program where learning disabled and emotionally disturbed students will learn the skills needed to make choices and play a role in their education and their futures. Significant activities associated with this project are: (1) assess self-determination skills of high school age students with disabilities; (2) conduct self-awareness activities of student strengths, needs, and concerns; (3) identify post-school goals and needed transition services; (4) teach students the self-advocacy skills needed to self-direct their IEP meetings; and (5) evaluate student performance during their IEP meetings.

Results of this project will be presented at professional conferences and workshops. The faculty mentor and undergraduate assistants will also co-author a manuscript summary of this project that will be submitted for publication in a professional journal. A unique feature of this project is that the two undergraduate students working on the program (Martha Vasquez and Leanne Tague) have learning disabilities themselves and have learned firsthand the importance of self-advocacy.
Matthew P. Swanson, Mike Barth, Andy Knowlton, and Jean Mangun
Dept. of Forestry

How Demographics Affect People’s Opinions on Natural Resource Agencies

An understanding of public knowledge and perception of state and federal land management agencies is important for natural resource managers. The purpose of this study was to examine the relationship between a person’s sociodemographic background variables (e.g., age, education level) and satisfaction with various natural resource agencies. A survey research project was conducted during the fall-winter of 2002-2003. A questionnaire was designed and distributed to 70 residents of Jackson County using a convenience/intercept sampling method. Data were entered and analyzed with the SPSS statistical software package. Univariate frequency distribution and Chi-square analyses (α = 0.1) were computed. Preliminary results indicate that age was the most significant variable influencing a person’s satisfaction with agency performance. Older individuals were less likely to report high levels of agency satisfaction. Also of note, low overall recognition levels of agency names indicated that natural resource agencies could better communicate their function and mission to the public. Natural resource managers must understand public perception of their agency in order to improve how different target groups are served and informed. As communication between agencies and the public is improved, public misconceptions should decrease.

James Gaddis and P. Hvos
Dept. of Biochemistry and Molecular Biology; Dept. of Chemistry and Biochemistry

A 500 bp Sequence Is a Source of Insertion-Deletion Polymorphism at Two Separate Locations in the Genome of Tetrahymena thermophila

The focus of our work is rearrangements of genes and genomes, a process occurring in both normal development and in disease. We use the developmental DNA deletion system of Tetrahymena thermophila as a model. In this organism the development of the macronucleus from a zygotic micronucleus includes the programmed deletion of DNA fragments (Internally Eliminated Sequences, IESs, or deletion elements) at many different locations in the genome. To understand the function of the deletion process and the origins of the developmentally eliminated sequences, we are studying the variability of IES-containing regions among strains of T. thermophila.

We detected a polymorphism between two strains of T. thermophila that is due to the presence or absence of a 1800 bp stretch of DNA referred to as the ‘G indel’, inside the ‘H1 histone’ IES. Part of this DNA is moderately repeated in the genome and shows about 75% similarity to a 500 bp stretch in another deletion element, the ‘calmodulin’ IES. Further studies on this repeat family will give an opportunity to examine how IESs are generated, and how their sequence content influences their developmental elimination.
Rosendo Galvez

Dept. of Foreign Languages and Literatures

Ulysses S. Grant and Matias Romero: Notes on a Mexican Debt to the Rothschilds of Europe

The goal of this project is to examine the historical period of the late 19th century regarding the relationship between the United States and Mexico. By conducting research pertaining to a document existing in the Ulysses S. Grant Archives at the Ulysses S. Grant Association, SIUC Morris Library, the ultimate product of this project will be to write an academic paper which would serve as a companion to the document, thus contributing to the clarification of some uncertain aspects of its content. The outcome of the project will become part of the Ulysses S. Grant Association.

After conducting half of my research, I have learned valuable information concerning the two neighboring countries. The United States of America, being the stronger of the two nations, was attempting to reach out and help the United States of Mexico. After both countries had experienced their own civil war (United States 1861-1865; Mexico 1855-1872), both countries underwent a period of reconstruction. While the United States was able to recuperate at a faster pace, Mexico was taken over by the French. The French Intervention posed an obstacle to the success of both countries. As a result, the United States itself intervened to rid the French from Mexico. Two important figures who played a key role in this are Ulysses S. Grant of the United States and Matias Romero of Mexico. Both respectable men worked together in many ventures, which resulted in the foundation of stable relations between the two countries.

I am currently on the second stage of my research. At this point, I am concentrating on the Rothschilds’ role in this ordeal. I will be traveling to London on February 17 to conduct the research needed to complete my project.

Richard Stuart

Dept. of History

From the Ground Up: The Soldier’s Perspective

If you think over the past year in the news, you will likely remember hearing a lot about World War II and its veterans—one might wonder why now, more than fifty years after the end of the war? What is truly important is that there is popular support and interest in this period, which can now encourage further the work and research that should have been done decades ago. We are losing thousands of these veterans each month, and with them dies the untold story of the individuals who were part of this “greatest generation.” It becomes quite urgent and necessary to secure their stories for posterity so that we will be able to continue creating a history from the bottom up as well as to provide material for new research on questions that have yet to be asked.

The purpose of this project was to secure oral histories of southern Illinois World War II veterans and to archive them permanently for the future use of other researchers. An equally important goal of this project was to make this information both accessible and useful to the communities and people of southern Illinois. To that end, I have constructed a web project that provides all the information gathered during this research process, including an extensive bibliography of primary and secondary sources; an analysis and overview of oral history methodology; digital images and audio, as well as transcriptions of interviews; and a series of links to other on-line resources for this topic. As a future high school teacher, I wanted this project to become a teaching resource for other educators, so I have created several teaching modules on the applicability of using oral history in the classroom. This project combines historical research with classroom applications intended to turn students into active learners and active historians.
Brandon A. Hale
Dept. of Anthropology

**Neopagan Festivals: A Growing Socio-Religious Movement on the American Landscape**

During the course of my research into the pagan festivals taking place across America, I attended events in the states of Colorado, Georgia, Illinois, Kentucky and Washington. At these festivals I conducted anthropological research in the form of direct interviews, recorded interviews using varied media, participant observation and informants. It was the purpose of this study to offer some insight into possible reasons that this social movement has gathered many participants and also to give evidence of certain social histories shared by festival attendees.

Through my research I was able to acquire significant data that shed light on the issues and questions surrounding the phenomenon of the neopagan movement in general, and pagan festivals in particular. Practitioners of witchcraft and other pagan religions have traditionally been viewed as gullible, perverse, uneducated and deviant. However, through my research it would seem that the majority of practicing neopagans are well-educated, law-abiding citizens. These findings are supported by many other researchers. Loretta Orion of Hofstra University shows in her book *Never Again the Burning Times* that 69.8% have at least 4 years of college education.

My research also showed that many neopagans who attend festivals do so in order to establish and widen a network of associates who share a similar belief system.

All of these findings and research have been analyzed and put together in the form of a research paper written to fulfill the requirements of an independent study in Anthropology.

---

Chris Sato
Dept. of Cinema and Photography

**“5th and Grand”**

I am making “5th and Grand” in order to further my understanding of clay animation. It is an ambitious clay animation documentary that reflects different viewpoints on today’s changing world. I recorded 5 interviews, 3 of which will make it in the final film. All the interviews were very rough and unscripted which will give the clay animation an unusual feeling of the natural awkwardness in which we talk. Another objective of mine in the animation is to create a sense of personal environment. Each character inhabits the exact same size apartment but each apartment seems worlds different from one another. This is done to externalize each character’s personality in a dynamic way.

I am currently still in production of “5th and Grand,” but have already learned a great deal. Through test animations, I developed a system to properly break down the interview into frames and match them to the character’s mouth movements. I’ve also learned a great deal on the complexity of personal habits when speaking. When people talk, they often naturally move their arms or hands to aid them in conversation. When I employed simple hand gestures and other little quirks into my character’s habits, they became more distinct and realistic in their action. Individualizing each character’s motion allowed people to associate a distinct personality with each character. So far the project is going very well, and the finished product is looking promising. Upon completion, the film will be sent to numerous film festivals for possible recognition.
Dawn K. St. Louis  
Dept. of Speech Communication  

*Label Me~Label You*

My objective for this creative project was to investigate the use of “labels” as a communicative tool—i.e., to research and explain how labels reflect, taint, hinder or sabotage social interaction and personal self-image. George Herbert Mead, in “Communication Theories in Action” is quoted, stating, “Humans gain personal identity through communication with others.” In the same text, author Julia T. Wood writes, “Many (speech communication) performance studies scholars today study how individuals and groups perform personal identities in everyday life and how they use … communicative practices to reflect, sustain and sometimes alter, social relations.” These ideas form the basis for my project.

The concept for this project germinated in the turbulent times following September 11. It was then I perceived happening what I call the tragedy after the tragedy. Labels were being used to unite, but to unite in order to divide. Labels began to be used to put a voice to fears and angers, which then turned to labels of hatred, and these voiced hatreds then begat violence. It became important for me then to undertake this project and to understand better the effects of labels on humanity as a whole, and on humans as individuals.

During the evolution of this project, the focus shifted to labels, and their effects on one’s self image. I had placed the label and definitions of “scholar” and “teacher” upon myself. I realize now that I had assumed a type of scholastic arrogance. I had assumed since I was creating and researching this project, I was the one with all the knowledge.

By the end of the process, and project, after writing the script and making visual and visceral the effects of labels for others to see, I found I was the one who gained the more concrete understanding. My definition for the label “scholar” had changed to mean the continuous evolution of understanding. This project exceeded my original comprehension of this concept and has led to a life-changing understanding of the formation of self-identity in accordance with real or perceived labels placed on us, and around us.

Joseph Hassert  
Dept. of Speech Communication  

*The Making of People’s Courting*

It was my objective when I began working on my creative project to construct a performance by generating and compiling material that would explore the importance and aesthetic value of the cultural act of courtting. It was my intention that the show would enable an audience to appreciate the cultural ritual of courtship as a performance played by individuals in order to function in our society. Ultimately, I believe my final project achieved these goals.

The writing, directing and performing I have done throughout the last year have taught me many valuable lessons about the process of creating an educational as well as entertaining performance piece. I gained experience with working with a cast through the rehearsal process, which helped me develop directorial skills to a level hard to achieve in the classroom. I learned so much about all the ingredients, (writing, directing, performing, rehearsing, technical work, publicity, etc…) that must go into a production.

In the end, I feel that I delivered a performance that was both intelligent and enjoyable—both communication theory and comedy. People’s Courting performed and analyzed some of the crazy things we do for romance. I was very happy with the final product.
One of the most famous experiments involving the perception of causality between objects is Michotte’s (1946/1963) “launching effect.” In this experiment one object labeled A (a colored square) moved across the screen until it came into contact with a second object labeled B (a different colored square), at which point the first object stopped and the second object began moving. People who see this demonstration perceive that object A caused object B to move. Michotte presented over 100 different studies examining the effects of time, space, speed etc., on people’s perception.

We began by performing a conceptual replication documenting the effect of temporal contiguity on people’s impressions of causality. Our basic launching movie involved the movement of a globe from the left side of the screen toward a stationary globe; upon contact, the second globe continued along the same path either immediately or after a 1 second delay. For the delay movies, the delay was sometimes filled with a constant, increasing, or decreasing tone. Participants viewed 75 videos (5 animations x 15 repetitions). Participants’ expectations concerning the second globe’s movement were assessed by either having them rate their degree of causal impression (Experiment 1) or by pressing the space bar precisely when the second globe began moving (Experiment 2). As expected, participants perceived the direct launching animation in both experiments to be the most causal, followed by the increasing tone animation. Interestingly, there were no statistically significant differences between the decreasing, constant and delay animations.

In a third experiment, we are using a more implicit measure of expectation: anticipatory eye movements. Given the high degree of individual differences and the small effect sizes that we observed in a pilot study, we are still in the process of collecting these data.

The values of African Americans in modern society will be examined from aspects of cultural history and customs. Values are accepted principles or standards of an individual or a group. Personal interviews with associates from Southern Illinois University Carbondale and the Carbondale community are also integrated from this perspective viewpoint. The questions posed include:

1. Please name the top 5 values significant to your life. (5 being the least important)
2. Why?
3. On a scale from 1 to 10 (with 10 being the least important), how much does your family influence these ideas?
4. Do you believe that your values are the same as your parents? Yes or No (Explain) why or why not?
5. Does your gender affect your values? Yes or No (Explain) why or why not?
6. Does your race/ethnicity affect your values? Yes or No (Explain) why or why not?

Four aspects of values (religion, family, education, and the arts) will be emphasized in the context of African American modern society. Listen 2003 will further demonstrate how self-education shapes today's popular culture.
Miranda Hinman and Laura Kidd
Dept. of Workforce Education and Development

“In My Easter Bonnet”: The Symbolism of Hats

This study investigates the use of women’s hats as accessories from historical and social-psychological perspectives. The research focused on answering four analytical questions: (1) When did the popular use of women’s hats originate in western societies?; (2) Why has there been a loss in the popularity of wearing hats in western societies?; (3) What meanings did western society attach to hats?; (4) What is the significance of hats in today’s modern society? Primary and secondary sources used in this investigation include Internet sources, books, journals, and personal accounts. Results indicate that women’s hat use in western society dates at least as far back as the Middle Ages. Hat adoption throughout history is based on a variety of reasons including social and psychological meanings, as well as for identification of social and economic class. Until the 20th century, an important social meaning attached to the use of hats by women included the idea that an ornately decorated hat signified a ‘lady,’ and a woman was not considered to be dressed properly unless she was wearing a hat. By the mid-20th century, women abandoned hats and many social meaning, partially in response to changing hair styles and the women’s movement. In modern society, hat use is strongest among ladies of African-American heritage, and many contend that, when dressed for church, no proper lady would go without her hat. Although the social ‘rules’ of hat use have changed, they continue to be an important symbol of femininity, power, and self-esteem for many women.

Edie Overturf
School of Art and Design

Relief Printmaking and Vintage Imagery

Photography is often used as a means to capture the essence of a moment. We often use these images as an aid in triggering memory. When these images are absent, we are left with an often failing visual memory. These memories become decontextualized and lost from the original moment. They become abstracted yet remain all the more recognizable.

I find that relief printmaking methods create an abstraction similar to the dissipating memory. By creating these images, I am recognizing events that had an effect on lives. I am referencing the notion of memory, and allowing the viewer to create a personal relationship with these images.
**Catalina Montanez and Max Grubb**
Dept. of Radio/Television

**Role of Community Stations in Colombia**

My main objective with this study is to get a better understanding of the role of community radio stations in a non-industrialized nation like Colombia. I plan to use Alan Wells’s five elements; control, finance, programming, target audience, and feedback to analyze a media system, as a framework for my study.

Colombia is a country that has been in civil unrest for almost 40 years. During that time, community radio stations have been spreading words of hope and peace to the people in their communities, hoping that society in the future moves away from violence. The researcher will study government plans that support community radio stations in Colombia’s rural areas and examine the results of their efforts.

Personal interviews over the phone, research on government websites, and material sent by community radio stations in Colombia will provide the data needed for this study.

**Brian Kangas**
Dept. of Psychology

**Human Performance in an Adjusting Delay Procedure: Delay Discounting of Escape from Disruption of Audio/Video Stimulation**

Previous research on self-control has revealed between-species differences in sensitivity to delay of reinforcement. We are examining delay discounting of a consumable reinforcer in humans to ascertain if the between-species differences are driven by differences in reinforcer type. In studies with humans, responding is typically maintained by contingent presentation of points exchangeable for money, whereas in experiments with non-humans, responding is typically maintained by immediately consumable reinforcers. Because points cannot be exchanged immediately, there are no immediate advantages to earning points sooner rather than later. In the present study, adults watched movies that were subject to random brief disruption. Disruption-free periods were arranged according to an adjusting delay procedure (Mazur, 1987). Subjects made repeated choices between a short disruption-free period, available after a fixed delay, and a longer disruption-free period, available after a delay that varied across choice trials. We are currently examining a wide range of schedule values to determine generality.
Apical cell geometry and ventral appendage morphology vary within the simple thalloid liverworts of the order Fossombroniales. Apical cell geometry is a phylogenetically informative character in liverworts. Ventral appendages cover the apical cell and secrete mucilage to keep it from drying out. The position of *Allisonia cockaynii* within the order is equivocal. Two objectives of this project were to determine the apical cell geometry of *A. cockaynii*, which was unknown, and to survey the diversity of ventral appendage morphology and distribution in the Fossombroniales. To achieve these objectives, apices of *A. cockaynii* were studied using serial paraffin sectioning methods. The apices of 7 of the 8 genera in the Fossombroniales were examined with scanning electron microscopy. It was determined that *A. cockaynii* has a wedge-shaped apical cell. The SEM images show that the type of ventral appendages present may be a phylogenetically informative character of the order.
Brenda McCollum  
School of Art and Design  

Light as a Metaphor for the Spiritual

My research project explores light as a metaphor for the Spirit through the medium of transparent watercolor. Light shining upon the human figure has historically been used in religious paintings to represent the Spirit. Dealing with the issue of content in my own paintings, I chose the non-religious objects of old glass bottles and jars as the supporting cast for my subject – light.

I have collected old glass bottles and jars that once contained “needful things” but have outlived that purpose and, in a sense, passed into a different realm. They are more than discarded containers. The shifting play of light on and through the glass bottles and jars symbolizes the way the human spirit changes and evolves. In exploring this passage of light on and through these glass objects I am metaphorically exploring the spiritual illumination of the human spirit. To convey my idea I have concentrated on the reflections created by seen and unseen bottles and jars. These reflections create an illusion of depth through abstract shapes and colors that resemble melted stained glass.

Each painting begins by creating still life set-ups containing the bottles and jars. I chose each bottle for its color and shape. My focus is the nuances of light shining on and through the glass and the abstract reflections this light creates.

In my research, I found that non-religious objects could poetically suggest spirituality through the use of light. Light has the ability to take ordinary vessels and transform them into the extraordinary, allowing them to speak to the viewer in a personal way.

Renee A. Lopez-Smith and Karen S. Renzaglia  
Dept. of Plant Biology  

Architecture of the Sperm Cell of Lygodium

To understand more fully the degree of variability among the highly complicated spermatozoids of the ferns, we examined mature sperms of Lygodium japonicum, a basal fern. Motile sperm were examined in the light microscope and scanning electron microscope. These images were correlated with transmission electron microscope observations of swimming sperm cells and those still contained within the antheridium. Each sperm cell is highly streamlined and coils approximately three revolutions in a sinistral direction. A broad band of microtubules extends around the cell periphery, internal to the plasma membrane, and provides the structural framework for the coils. The locomotory apparatus occupies the cell anterior and consists of a fibrous band, multilayered structure and approximately 50 flagella that are posteriorly directed. The nucleus is a long, coiled cylinder that extends the length of the cell. Numerous mitochondria and starch-filled plastids are positioned along the inner nuclear coils. Upon commencement of motility, swimming cells shed most of their organelles in bulk. The general architecture of the sperm cells of Lygodium is comparable to that of advanced filicalean ferns. However, significant deviations from other fern spermatozoids are evident in the details of the organization of the locomotory apparatus and the cell anterior.
Christopher Marcum
Dept. of Theater

“1931-”: Exploring the Dialectic Between Audience and Performer

This project used the theater as a laboratory to test the validity of a new theatrical theory called Connectivism. The goal of the “experiment” was to break down the barrier between the audience and the performers by staging a performance of a play that reconciles the seemingly contradictory theatrical styles of Epic Theater and Realism. The purpose in combining these two styles is not only to create a more exciting and internally kinetic theatrical experience for the spectator, but also to reveal both to the spectator and the performer the power of the theater to illuminate that which binds us together as people.

The results were gathered in several ways. First, data were received through the audience members filling out printed surveys that were put into the program. Also, after each performance there was a talk-back session with audience members where they could provide further comment. Finally, there was a companion website to the performance that also had the survey available and allowed people to email their comments and reactions to the play.

Although the more subjective reactions from the talk-back sessions and online surveys have yet to be fully analyzed, a look at the objective opinions garnered from the printed surveys showed several points of support for the Connectivist theory, namely whether certain employed theatrical devices created the desired effect among both the audience members as well as the performers.

The final outcome of this project will be more than just a performance; it will be the first step in developing a theory that addresses both the audience/performer dialectic and how the organic nature of theater is the most powerful way of understanding the human condition in today’s increasingly technocentric society.

Candis McCleary
Dept. of Animal Science, Food and Nutrition

Fescue Toxicosis Effects on Bull Spermatozoa Characteristics and Fertilization Rates In Vitro: A Proposed Study

Tall fescue grass is found in abundance throughout the United States. The grass itself does not pose a problem to grazing animals, but a toxic fungus that thrives through its synergistic existence with tall fescue does present problems. The fungus produces ergot alkaloids that while beneficial to the fescue can have detrimental effects on animals. It results in fescue toxicosis, which has had a financial impact of approximately $600 million/year on the beef cattle industry alone, due in part to reproductive losses. The limited research performed on fescue toxicosis and male reproduction has been mostly in laboratory animals. Male bovine reproduction research conclusions could lead to better management decisions by breeders when dealing with their sires.

Three bulls will be used to perform this research. The bulls will first be fed an endophyte-free fescue for a set time. The semen will then be collected twice a week. The motility, morphology, and concentration of the sperm will be tested to determine normal values. The bulls will then be fed an endophyte-infected fescue for a set time taking into account the length of spermatogenic wave. The semen from bulls will then be collected twice a week and the collections compared to those of the normal values. The control and experimental samples will be taken to the lab where they will be used to perform in vitro fertilization to observe the differences in fertilization rates by looking at pronuclei formation. The hypothesis is that fescue toxicosis will have an adverse effect on spermatozoa development and thus an adverse effect on successful in vitro fertilization. If this hypothesis holds true, beef cattle breeders in the United States will want to keep fescue toxicosis to a minimum for their sires to express maximum fertility rates.