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Kaleidoscope

The University of Kentucky Journal of Undergraduate Scholarship is a refereed journal published annually by the eUreKa! Office of the University of Kentucky. The journal is dedicated to the advancement of knowledge through the publication of the results of the intellectual pursuits of undergraduate students. The journal accepts reports of all forms of creativity and scholarship by undergraduate students including, but not necessarily limited to, artistic and musical creations, creative writing and poetry, and reports of studies and research in the humanities, the social, natural, and medical sciences, agriculture, business, architecture, and engineering. The journal is published in a traditional print format and as a Web site. The Web site may include creative materials, such as performances and art work, that cannot be reproduced on paper.

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Posters at the Capital. See page 120.

Squidbillies. See page 83.
CONTENTS

Welcome from the President 2
From the Editor’s Viewpoint 3
Voices of Home in Bluegrass-Aspendale: Constructing the Ideal/Matthew Clarke 4
Coming to America: An Examination of the U.S. Immigration Debate in its Historical Context/Julie Davidson 14
Domestic Violence in the Workplace/Amanda Fallin 23
Writing Moonlight: An analysis of Beethoven’s Piano Sonata Opus 27 No. 2 in C Sharp Minor/Andrew Lynch 29
Changing Geography of Retailing in Japan: Move from Traditional Shopping Arcades to Malls/Adam Peach 33
Antitrust Law and the Minor League Reserve System/Ryan Mabry 38
A Political Quagmire/Vinay Srinivasan 47
Four Months in France/Henry David Hicks 52
Nietzsche ContraWright: On Becoming What You Are/Jordon Rodgers 59
Prehistoric Drawings in Mammoth Cave/Logan Kisler 69
“Sometimes I Wish the Sun Would Just Explode:” Squidbillies, the Animated Hillbilly, and the Cultural Myth of Appalachia/Kayla Whitaker 83
The Chellgren Center for Undergraduate Excellence 92
Beckman Scholars Program 93
Megan Culler 94
Kathryn Schweri 96
eUreKa! 98
Showcase of Undergraduate Scholars 99
Summer Research & Creativity Grants 100
Undergraduate Research and Travel Fund 113
UK Undergraduate Research Program 115
Undergraduate Awards and Honors 117
S.P.U.R. 122
Oswald Research & Creativity Program 123
Special Programs 127

Kaleidoscope, Volume 6, 2007
On many occasions I have expressed my unwavering support for undergraduate scholarship — the scholarly, creative, and research endeavors of our undergraduates beyond the regular classroom setting. Such scholarship is formally and informally supported by many individual faculty members, by departments, by colleges, and by the University through the many programs of its eUreKai office. The public face of these activities is the many departmental research days, the annual “Showcase of Undergraduate Scholars” (which I enjoy opening and attending each spring), and Kaleidoscope.

Kaleidoscope presents the cream of our students’ scholarly achievements. It is a refereed journal. Every submission to the journal has been vetted first by the student’s faculty mentor. It then must be recommended for publication by at least one additional faculty referee. Finally, it must undergo revision and editing in close consultation with the faculty editor of the journal. This process not only ensures the superior quality of Kaleidoscope, it provides an invaluable learning opportunity for the student authors. Very few undergraduates have the experience of writing for a refereed publication. Once again, I want to offer my sincere thanks to all of the faculty mentors and reviewers who give generously of their time to support and nurture our students. The excellence of the articles is undeniable proof of the value of the faculty input.

I should note that undergraduate scholarship at UK occurs across all disciplines, as illustrated by the range of subjects in this issue. We can read probing articles in the humanities, learn from studies and essays in the social sciences and law, and glimpse some of the cutting edge research carried on in the sciences and technology. In the biological and chemical sciences, I am pleased to see once again the contributions of the latest of UK’s Beckman Scholars. We take considerable pride in the fact that UK is one of the few Research I universities selected by the Beckman Foundation to administer Beckman Undergraduate Scholars Awards, and that the Foundation has recently recognized UK with a third three-year Beckman Scholars grant that will enable us to fund six more Scholars.

It is clear from many educational research studies that engaging in undergraduate scholarship has an extremely beneficial impact on a student’s education. The benefits include, among others, increased retention, higher grades, better learning, better placements in jobs and graduate schools, and closer relationships with faculty members that yield more personal advising and mentoring as well as greatly strengthened recommendations. I urge every undergraduate to take advantage of the mentored scholarly opportunities at UK, and I thank again all of the faculty members who make these opportunities both possible and beneficial.
This is the sixth volume of *Kaleidoscope* and it just keeps getting better and better. It is a deep pleasure for me to work with and learn from the many students whose submissions have been selected for inclusion in this issue. Working with students is extremely rewarding. I hope that I am able to help them develop their talents as authors and scholars. In turn, I learn so much about many new and interesting subjects. I am well-read and quite widely experienced, but I never fail to learn from our students’ articles. Let me share some examples.

I have worked with Appalachian students and faculty members for many years and have been an associate of UK’s Appalachian Center for more than 15 years, but I had never heard of the *Squidbillies* until I read Kayla Whitaker’s delightful and insightful discussion of that irreverent animated television series. Parody can be used for piercing social analysis and Kayla describes and explains *Squidbillies’* significance in historical and cultural terms.

Baseball has been a love of mine for many years. I was vaguely aware of the history of major league baseball’s “antitrust exemption” and some of the implications of the “Curt Flood case.” However, I had no knowledge of the implications of the exemption for minor league baseball, nor the likelihood or possible consequences of a reversal of that ruling. Ryan Mabry, a senior mathematics major, decided that he wanted to attend law school (he is currently in his first year at the University of Cincinnati law school), and he thought that beginning to learn about the law and legal research while still an undergraduate would be a good idea. Ryan had worked for several years for the Lexington *Legends*, our local minor league club, so he combined his love of baseball with his interest in the law. The result is an excellent explanation and analysis of the significance of antitrust law and the exemption to it held by minor league baseball.

Let me offer one further example of how much I learn from our students. I have been to Mammoth Cave several times and gone on the typical tourist walks in it. I recall marveling at the amazingly well preserved artifacts of human exploitation of the minerals in the cave, especially during the War of 1812. But I have no recollection of prehistoric rock drawings. Perhaps I never saw or heard of them on my visits. However, I know about them now thanks to Logan Kistler, and I am intrigued by his analyses of the drawings and speculations concerning their origins and meanings.

I am sure that you, too, will learn much from this issue and I hope that you will be inspired to become or remain active in undergraduate scholarship. Your education does not end when you leave the classroom. On the contrary, the classroom should be only the beginning. Engaging in and then writing about your own scholarship is the way we make the most of our educations and at the same time educate others.
I am a senior majoring in Architecture, a Gaines Fellow, and a member of the Honors Program. I am the former President of the College of Design Student Council and of the Honors Program Student Council, a member of the Honors Program Ambassador Team, leader of the Isaac Murphy Memorial Garden design project, speaker at the Lafayette Seminar on Public Issues, student in the Rotterdam Summer Studio with Dean Mohney, a marathon runner, and a performing DJ. I received a Kentucky Historical Society Technical Grant and a Clay Lancaster Fellowship.

Next year I will continue my research on housing as an intern at Mecanoo Architecten in Delft, Holland. My responsibilities at the firm, one of the world’s leading architecture groups, will involve the research and design of housing. After researching the history of social housing in my hometown of Lexington, Kentucky, I hope to learn from the progressive and visionary nature of the Dutch. Eventually, I hope to put the knowledge I gain overseas and in graduate school to use to help realize affordable and “designed” housing in the Bluegrass. This project has tied together my love of architecture and love of place. I have learned a great deal about the design of research and how this process can translate into architectural proposals. I presented my preliminary findings at “Posters at the Capitol: Undergraduate Research Showcase” in Frankfort last year.

This project, my Senior Thesis as a Gaines Fellow, was a tremendous learning experience. After dedicating many hours to reading secondary literature, reading microfilms, talking with community leaders, and writing many drafts, I have learned about the difficulty and excitement that comes with serious scholarship. My committee chair, Dr. Wallis Miller, was a great help in guiding my research, defining the scope of my project, and carefully reading and re-reading all of my material. She was a steady and inspiring voice in the pursuit of a clear, well-thought out and engaging paper. The assistance of my committee and the Gaines Center for the Humanities helped me realize a difficult project that will hopefully influence real policy in Lexington.

Mentor:  
Wallis Miller, Ph.D.,  
Charles Parker Graves Endowed Associate Professor in Architecture

Matt’s work on Bluegrass-Aspendale combines solid textual research with a serious commitment to oral history. Taking a long-lived and long-ignored housing project in Lexington as his subject, Matt at once embraced the project as an object and confronted this object with the people who lived in and around it. The task of integrating moving oral histories with research on national housing policy, local political decisions, and architectural character was a difficult one; in the end, Matt found a very powerful way of juxtaposing them. The project was as much an encounter with a wide variety of source material as it is a very valuable contribution to Lexington culture that has political as well as intellectual significance.
Introduction

To those citizens unable to secure market-rate housing, the future of affordable housing in Lexington, KY, looms largely in their minds. Lexington has one of the nation’s most extended histories with fair and affordable housing. The Bluegrass-Aspendale housing project in the city’s East End neighborhood makes up a significant portion of that history. As part of the nation’s first attempts at public housing, it has experienced the extent of public housing’s tumultuous history. Recently destroyed, the future development of the project’s site has been the subject of a highly contentious debate. In looking at the memory of the former project, through the lenses of several voices, this paper attempts to insert an important body of knowledge into the discussion of urban renewal. It acknowledges that the complex history of Bluegrass-Aspendale will not be told through one narrator, but the collage of many layered voices.

A Set of Remarkable Circumstances

“The government is more than empty form.”
— Senator Robert Wagner (D. NY),
    testimony before congress concerning the
    1937 Housing Act.

Bluegrass-Aspendale, located on the old Bluegrass-Association Racing Track, or “the federal housing project” as it was referenced locally, was one of the first 52 public housing projects supported by federal financing and authorized through a national housing policy. The housing movement, which had lost steam during the middle of the 1920s due to apathy on the part of the middle class, was given new life during the Great Depression and its shortage of labor opportunities (McDonnell, 1957, p. 22). “Housers,” as housing advocates were termed, took advantage of the newfound social progressiveness to lobby for housing’s inclusion in New Deal legislation. Politicians obliged, anxious to support homebuilding and job creation. Bluegrass-Aspendale was realized beneath a complex umbrella of federal, state, and local action, indicative of social views toward the role of housing.

The National Scene

The Housing Division within the Federal Emergency Administration of the Public Works Administration (PWA) was initially authorized by the National Industrial Recovery Act of 1933, and existed primarily to spark the construction industry, one of the sectors hardest hit by the Great Depression (Lykins, n.d., p. 4). The PWA faced the responsibility, distinct from other relief agencies, of financing needed public works of “durable social value” (Badger, 1989, p. 21). The creation of the housing division was based on Title II – Public Works and Construction Projects, Sec. 202, which gave the administration “control of low-cost housing and slum-clearance projects” (Duke, 1934, p. 186). Harold Ickes assumed the position of director of the PWA, and took a famously firm hand in controlling its operations. The first six projects authorized by this agency were built with private capital outlays, as loans made to limited-dividend corporations to construct low-income housing privately (McDonnell, 1957, p. 36). After those projects were approved, Ickes decided that this method was an unsatisfactory means of providing low-rent housing (Lykins, n.d., p. 8). The private agencies were not capable of building units within the low-income price range. In 1934, he moved to legally incorporate the Public Works Emergency Housing Corporation in individual states so that local agencies could erect federally financed housing (PWA, 1936, p. 27). The biggest hurdle for the PWA in acting locally was the legality of the federal government exercising eminent domain.

State and local officials across the nation resisted the idea of condemning property for housing. On January 4, 1935, a judge in Louisville ruled that the PWA housing division could not exercise eminent domain, because housing did not constitute a “public use” (PWA, 1936, p. 31). This decision against the government nearly halted the prospect of public housing, especially given the decision’s proximity to Lexington. Thankfully, in the progressive state of New York, housers were able to argue for a positive ruling in the case of New York City Housing Authority v. Muller. The decision upheld low-cost housing and slum clearance as “public uses,” and seemed to contradict the Louisville case (McDonnell, 1957, p. 47). The PWA housing division felt confident that this verdict authorized them to enact its long-contemplated program of public housing and slum clearance. By November of 1935, 51 projects were approved for construction under the National Industrial Recovery Act and the Emergency Relief Appropriations Act of 1935, which provided $450 million toward housing. Lexington was appropriated $1,704,000 dollars for “286 row houses.”

Figure 1.
Aerial View of Bluegrass-Aspendale Site. (http://maps.google.com, March 27, 2007)
Just prior to this development within the Public Works Administration, Congress passed the 1934 Housing Act. Though important for authorizing the Federal Housing Authority, a government mortgage-insurance agency, the new act had little bearing on Lexington’s drive to realize public housing. The FHA did not build an office in Lexington until the early 1950s. The PWA was, for the first several years, the primary developer of federal housing. The greatest impact of the 1934 Act was felt as it spurred local and state agencies to authorize and create local housing commissions. The municipal agencies that were created helped facilitate the monumental 1937 Housing Act, which formed the groundwork for the federal government’s massive experiment in low-income housing.

**Lexington’s Stake**

Before federal assistance came to fruition in Lexington, the correction of housing inadequacies was deemed a parochial concern. Private entities were supposed to show civic concern for those in need. For example, in 1919, a $50,000 Stock Company was formed to build homes for the needy (Lexington Herald, 2/20/19). Also, in 1920, banks offered to back investments that would be used to expand the housing supply (Lexington Herald, 3/31/20). Ensuring racial equality, a superficial goal given the presence of Jim Crow laws, was also not a mandated goal. In 1920, when racial divisions were still defined by tightly grouped clusters throughout the community, public opinion held that the betterment of the housing stock for black residents was a concern for the paternalistic charity of his or her employer.

White residents could be assured steady and efficient negro domestic help by building their servants substantial homes with living comforts tending to make happiness. By the plan the servants would buy the homes, paying for them out of their wages on the installment plan. Razing the negro settlements in the heart of white residence territory and the building of substantial homes for the negroes, for sale on the installment plan, in the outskirts of the city, would provide more ample space for white homes and improve negro living conditions. This plan may be adopted in the campaign for housing relief here. A subdivision for negroes is now being opened on the Georgetown pike. Lots are being sold on the installment plan at a rate intended to be in reach of the better classes of the negro race (Lexington Herald, 4/9/20).

By exterminating the black presence in downtown, both parties would have “better” conditions, an ironic twist to the current, inverse distribution of race. Into the 1930s, areas such as Davis Bottom, Brucltown, Pralltown, and Irishtown were still home to dilapidated frame houses and unsanitary conditions. Housing was always seen as a local problem demanding local solutions. Even the recent national legislation was seen as lubrication for the paternalistic charity of his or her employer. The city’s administration was anxious to bring the PWA’s housing opportunity to Lexington, a necessary condition given that the PWA required local initiation. Just as Harold Ickes looked for permission to construct public housing, the city had to seek state approval to authorize a municipal housing agency. In 1934, the Enabling Act was passed by the Kentucky General Assembly, which provided for the formation of municipal housing commissions throughout Kentucky and granted the commissions full control over operation and management of housing projects (Lykins, n.d., p. 36). The Mayor of Lexington, E. Reed Wilson, appointed members to the Lexington Municipal Housing Commission (LHC) promptly after its formation (Lexington Herald, 6/26/34). The members during this time included C.M. Marshall, president of Union Bank & Trust Company; Washington Reed; Henry Milward, of the Milward Funeral Home family; and Dr. Frank McVey, President of the University of Kentucky. Hugh Meriwether, the city’s architect, was considered the driving force behind the Commission (Lykins, n.d., p. 37).

In a time when “shacks” and “fine old homes” defined the housing stock, the role of the housing commission was to equalize the large qualitative gap between the two extremes. The endeavor was as much about improving the image of Lexington, one report indicated that several companies decided to move their business elsewhere because of unsightly conditions (Lexington Herald, 3/11/37). Though involved with diverse populations, the agency was not directly interested in redressing racial inequalities. Without the widespread shortage of employment and the dramatic loss of housing stock for whites during the economic downturn, public housing might never have been so initially successful.

The last challenge in realizing the new housing project was finding an appropriate site, originally assumed to be Irishtown, on the western side of town. For that site to work, 80 black families would require relocation and their homes to be condemned.

…that there will be no problem in removing the colored people from the proposed project area, especially if the work is undertaken this fall during tobacco harvesting season. The majority of families living within this area work in the tobacco fields and there are plenty of vacancies available on the various plantations outside of the city to handle the problem …

— E.K. McComb (LMHC) (Lykins, n.d., p. 40)

The Irishtown site was popular for its established contextual amenities, such as schools, stores and playgrounds. However, after the Louisville Case questioned the use of eminent domain for public housing, the local commission decided to investigate the potential of more open sites. The Bluegrass Association Track had recently moved to a rural location on Jack Keene’s farm, the leftover parcel included 66 acres of relatively open land. The association stipulated that the entire 66-acre tract be purchased at the asking price of $1000 an acre, not in pieces (Lexington Herald, 8/1/35). The advantages of this site were the simplicity of a potential transaction, the lack of buildings, and the elimination of messy relocations. Its size also facilitated the easy division into black and white portions, even
though the white elementary school was some distance away. The familiarity of whites to the area due to its thoroughbred heritage made the racial balance socially adaptable. Even though the East End had a dense grouping of African-American enclaves, it was yet to be identified as a “black ghetto.”

Opposition to the project came from questions about government intrusion in the private market. The real estate industry, on both local and national levels, organized to protest the construction of housing. The National Association of Real Estate Brokers, formed to shore up the interest of private homebuilders, provided the most organized front to the legislative movement. Their influence affected important details of public housing, including the selection of tenants and the rate schedule (U.S. Housing Act, 1937, p. 84). In Lexington, property owners in Irishtown, expecting to receive large governmental windfalls after the condemnation, were irate about the switched location of the housing project. Others in real estate feared that the artificially lowered rents would create unfair competition to private property owners. The school board also objected to the site, unless the Housing Commission financed a new school for white students (Lykins, n.d., p. 46). Racial protests, though infrequent, were a part of the dialogue. B.J. Treacy, a self-proclaimed “property owner” said that:

This program contemplates 300 new housing units for whites and negroes, almost evenly divided. This is impractical and undesirable. Similar plans may work in other sections of the United States, but close communion of whites and negroes in Lexington, Kentucky is unworkable (Lexington Herald, 11/30/35).

The advantages to the former racetrack’s site proved greatest. The PWA agreed to build the first public housing in Kentucky on this site, a decision that would affect much of Lexington’s future public housing development. Because the entire tract was purchased, the Housing Commission was obligated to develop the entire site as a new urban space, and has done so over a period of 70 years.

The community supported the Commission’s purchase because of the economic condition of the country. The public had become used to unemployment and poverty as widespread effects of the stock market’s crash. Social charity and government intervention had become common and accepted means of intervention. “... the Great Depression provided the occasion for the first sustained, overt federal interventions in the housing market ... this helped overcome the philosophical reservations about lending a supporting hand. And it created a large constituency for public assistance” (Mitchell, 1985, p. 6). That constituency in Lexington was anxious to offer their opinions as to the appropriateness of the new housing. The press’s coverage of the planning stages put the project high on the community’s radar. Even negative commentary was helpful, because it gave the process a sense of transparency. The biggest criticism was directed toward the relatively high rents.

The Emergency Relief Act’s requirements stated that the new housing must operate with solvency, so as to cover its recurring costs. The national PWA office, with the local commission’s help, set rents late in 1937 (PWA, 1936, p. 58). While the newspaper anxiously covered discussion about the rent schedule, a split between national and local officials grew over the way and the schedule that those rates were decided. The initial rents, set at roughly $7.67 per room, were higher than most poor individuals could afford in Lexington. The local commission felt disenfranchised when the rents were announced, even to the extent that the entire board threatened to resign (Lykins, n.d., p.78). They had hoped to play a greater consulting role in the setting of rates. The challenge of realizing a self-sustaining project created the first instance of discrimination.

Construction began on the project August 9, 1936, with a projected completion date of early summer 1937. Initially managed by Kent E. Kerns, the local project would finally open on January 8, 1938, after delays caused by the great deluge of 1937. Under the original agreement with the PWA, federal outlays financed the construction of the project until the local commission took control under a 60-year lease. The LMHC signed this agreement on Christmas Day, 1937, just under two months after the passage of the United States Housing Act of 1937, which authorized the creation of the United States Housing Authority, the new governing body for federal public housing (Lexington Herald, 12/26/37; McDonnell, 1957, p. 402). Federal oversight shifted from the PWA to the newly formed USHA. Even though it was built by an agency tied to the Great Depression, Bluegrass-Aspendale became part of the federal government’s long-term program for social housing.

The Beginning of This Story
Jackson Jackson’s family originated in Kentucky, his father was from Scott County and his mother hailed from the Crab-Orchard area. They came to Lexington in the early 1930s as farm laborers on his grandfather’s farm at Coldstream. His father would find work as a maintenance worker.

We moved from the farm to Whitney Avenue here on the West End of Lexington. I began my schooling at Booker T. Washington Elementary School. We moved into East End on DeWeese St. near Short. The idea was that, my father was working at the Old Schultz United Department Store, and of course it was on Main St. and that was closer to his work. We moved subsequently of course to Aspendale, and I suppose that’s the beginning of this story (Jackson interview, 1/18/07).

Mr. Jackson, or “Junebug,” as most Lexingtonians know him, lived in Bluegrass-Aspendale from 1939 until 1949, at which point he left for college and his parents moved to Illinois. He was cognizant of the project’s construction during the mid-1930s, but does not remember the community’s overall sentiment about it. Before living in Aspendale (most interviewees referred to the place as “Aspendale” and not by the hyphenated title, indicative of the physical and social separation between the Parks), Mr. Jackson lived in a house on DeWeese St., rented by his parents and in poor enough
condition to warrant a move into the new projects, “They were single-family homes (on DeWeese). But as I know it, they were renting. My family … my mother and father had just married and jobs were hard to come by, and so they were renting” (Jackson interview, 1/18/07).

Mr. Jackson’s parents fit the profile of the resident envisioned by the PWA and the housing authority, his parents were poor but with stable work, family oriented, and currently occupying unsuitable housing conditions. Even though his family was not one of the very first residents, they likely applied well before the project opened, given the over 700 applicants who had applied by December of 1937. The selection as he remembers it was based on income, “It was supposedly based on how much income that you had. So, family size, and I suppose concomitant with income was part of that process” (Jackson interview, 1/18/07). The application process was designed for “success,” because no other option was acceptable; if the project failed, then the government’s venture into housing would quickly lose the support of federal funding. Applicants were rated on an acrating 100% scale; a 52% mark was automatically awarded if they lived in substandard housing (Lexington Herald, 12/26/37). A federal “home economist” traveled from Washington to survey the local conditions and new projects to help prescribe a fair rent schedule. She assisted in designing a plan that would bring in individuals of stable economic situations. Because the government could afford to be selective, the resulting group was considered by some as middle class. In later years, as public housing lost funding and faced growing discrimination, the selection process was a last-resort welfare system.

A cursory look at the occupants of the project would give you to understand that what you had was a very middle class group of individuals. The problem was always adequate housing. So that I know that the application process, from what I could glean as a child, was necessary because they were concerned about who would be coming in initially. Now later on in life I would learn how you make programs succeed, and that’s one way you do it [an application process] (Jackson interview, 1/18/07).

Mr. Jackson’s initial reaction to the new living situation was favorable. The pleasure of living in Aspendale was greatest for children, beneficiaries of the open green space and educational programs.

The place was full of young people and children. And of course not having any siblings, I was just delighted to find the others there” (Jackson interview, 1/18/07)

Many of the resources and advantages of the facility were geared toward nurturing children, educationally and recreationally, especially because the project held a high density of young people. With most parents working long hours, the children developed a rich social network. The children typically stayed within their own respective park but found moments for interaction.

Let me tell you a story. If you know the layout … Bluegrass Park children going to high school would come down Pemberton, to Race, to Third, probably to Walton, and to school. We came straight out of the project, Fifth Street, to Dunbar. As children are want to do, we would meet in the back of Aspendale and Bluegrass. There were times when we got along famously and there were some times that we tossed clods at one another. Very child-like, not racial. I can distinctly remember tossing clods, and then running home you see (Jackson interview, 1/18/07).

Mr. Jackson quickly pointed out that the child’s perspective was not necessarily tinged with the idea of race, but gave priority to an innate sense of competition. For the children there, race did not define the same boundary as the tall barbed-wire fence between Aspendale and Bluegrass Parks.

Officials seemed to understand that this communal home environment could nurture the growth of children in profound ways. Real initiatives on the part of the groundskeepers, the staff, and the residents kept the facility programmed with activities, games, and events.
We had marvelous facilities for sports. In fact, Kloosterman and Arnsparger (the groundskeeper and the facilities manager) helped us build our softball diamond. They built the backstop and everything and we dragged things around, and flattened it, and made it a very good softball diamond. And that’s one thing. We also had horseshoe pits, we had basketball courts, and initially we had tennis courts. And they were lit up at night, so that we always had someplace to go and be. We participated in the recreation leagues around town. And I can remember one fellow who coached us in softball, a Mr. Herman … so we had that beautiful kind of tight knit community (Jackson interview, 1/18/07).

In Mr. Jackson’s time, the facilities were kept up with immaculate care, especially because rents were set at a level commensurate with its maintenance costs. As an anxious public and federal government looked upon the site for signs of success, the condition of its grounds was of no little importance. Compared to his previous home on Deweese and Coral Streets, the relative quality of the place there. We had moved from having fireplaces that brought heat as opposed to the other amenities … coal and kindling to steam heat, it was generated from a central power source to the individual units. And so we were very comfortable there.

Well, I had lived in, I suppose all wooden houses to that point. The facilities in Aspendale were far and above, I guess, more comfortable than the homes I had lived in, I think mainly because of the excellent construction of the place there. We had moved from having fireplaces that brought heat as opposed to the other amenities … coal and kindling to steam heat, it was generated from a central power source to the individual units. And so we were very comfortable there.

You walked into a living room area and the stairs went straight up from there. You had a living room and a large kitchen, that, you would also use that for your dining. We had two bedrooms and a bath upstairs, ok. The stove and refrigerator were supplied, so they were there. As I recall, the flooring was, I suppose tile, now the composition I’m not sure, but I know it was excellent because it didn’t deteriorate, it stayed while I was there. So I would say, it was very, very compact, it was still comfortable. You had an excellent play area and those amenities close to it. But not a lot of space. I remember casement tile windows (Jackson interview, 1/18/07).

Mr. Jackson’s day was typical of most families within or outside the projects and revolved around schooling. Education was reinforced by both parental support and the social aims of the community.

We arose, had breakfast, I went to school, my father went to Avon, Kentucky. My mother was a housewife. Upon returning, she would have the meals ready, my father would soon come in, and on occasion he would do extra work, he might go out and back again. That was it, we were just the average family. They would want to know whether I did my homework. We did take our meals together, so that if I had issues I could bring them up (Jackson interview, 1/18/07).

The project did not just provide a place to live but a community full of activities, sponsored by the housing commission.

We were buttressed by the educational atmosphere in this community. The library would send a lady, and I can only think of her last name, Mrs. Coleman, and she would come and read to the very small children. Now those of us that understand the value of the educational process can see the value in that (Jackson interview, 1/18/07).

The physical landscape was well-tended to by the pair of dedicated maintenance workers charged with keeping the place looking good and supplying the residents with communal gardening equipment to tend to their individual yards.

One of the things that went on there, was the fact that there were two gentlemen who served as the, I suppose, maintenance persons for the projects. I still remember their names because to me they were Mr. Kloosterman and Mr. Arnsparger. And they kept the place going. They also kept, repaired, the lawnmowers. And if you needed one, you checked it out, cut your grass or lawn and so forth. Now, the lawns were very well kept. It’s unfortunate that in future times the place was overcrowded and it didn’t look a thing like it did when I lived there (Jackson interview, 1/18/07).

The ritual of daily life was marked by common celebrations among residents and neighbors. Even though part of Aspendale, Mr. Jackson nevertheless felt connected to the African-American community throughout Lexington. The experiences of shopping and worshipping connected groups within the project to larger geographic areas.

We had places to play. We had the playgrounds for all size children … and they would all meet there. And kindred souls, I suppose, would bond …

The office area became a social gathering place as well. I can distinctly remember stepping on the floor to dance with a young lady and grabbing the wrong hand and she promptly corrected me.

We interacted at school. Not all friendships formed were solely with children from the project. Some of my friends lived all over town and we are friends to this day. And so it was a very regular life.
I know the Fourth of July, one must come to Douglas Park to celebrate, OK. But then there were those times, like Halloween, when the community would have the children into the office space and we’d dip for apples and those kinds of things.

I went to church at Shiloh, very important. Now, you were undergirded at each place. We were taught something about living and how to do that at church. We were also pointed in various directions by church members as they could assist us. The schools were far more adept at teaching children than maybe anybody really knew.

There were markets, well two markets, on Fifth Street, right at Fifth and Chestnut. There was Owen’s Grocery and Arthur’s Market. And they were both on the corner there. As memory serves me, we also went to an A&P store, on Main St. Everybody utilized the same sources (black and white) (Jackson interview, 1/18/07).

The time that Mr. Jackson lived in Aspendale was a period of relative social respect. In later years, grocery stores would exclude by race, one on Sixth Street served the white part of the project while the one on Race St. served the black community. This simple but telling division did not plague the first era the project’s history. Mr. Jackson believes this initial society benefited from the village concept, or the benevolence imbued into the project by its designer. The harmony also came from the perspective of the country, mired in a war overseas against a shared enemy.

The Second World War was a time of commitment and sacrifice by everyone in this country. And, somehow or the other, as we passed each other we could determine or detect that we didn’t have each other as enemies, we had a common enemy. And as a result, and I believe history will bear me out, the Second World War was the beginning of the real thrust toward equality in this country.

The village concept was very much intact there. Education was stressed in that community. It was all a very good time for me. And I don’t know anyone there who lived with that had any problems being there.

Everybody knew everybody else. And I’ll throw this name around to give you some idea about the village concept. Now, this man and woman were not related to any of us up there, but it was “Uncle Prince Overstreet” and “Aunt Maggie Overstreet.” Now that’s only one example, because everybody else functions the same way, but if you had gotten out of hand and they saw you, oh you were handled right there and sent home. So we were well looked after (Jackson interview, 1/18/07).

If the layout of the housing units created a certain sense of communal cohesion, the staff supported that shared mission. Problems were attended to when needed and relationships were formed between the staff and the residents.

They maintained them and responded immediately. Did not have problems like that. I believe I said earlier that Kloosterman and Arnsparser saw to it. So you didn’t have rusty pipes or running water, none of that. If you look at those homes, the shed type roofs over the porches – copper. The roof was of course, tile. And I would almost wager that there weren’t ten cracks in those old original buildings, when they tore them down (Jackson interview, 1/18/07).

One of Mr. Jackson’s most memorable stories involves his relationship with that management of the project. This account is of significance because it contrasts with the changing interaction between residents and management in future years, when distance and neglect characterized the relationship. Mr. Jackson describes his humorous anecdote of “good government:”

Initially, the man’s name was Jack Bryan. Subsequently it was Connie Griffith, and I believe we have some buildings here named for her (the public housing towers for the elderly on Jefferson). Now let me tell you a little story. As I told you I went on to college and did some things and finally became the state’s first minority groups representative, and I took complaints all over the state. I got a complaint from the Bluegrass-Aspendale area. And after all these years, I walked into the office. And I stated that I was there, who I was, and the agency from which I had come. And from the back office came this, ‘Mr. Jackson Junior, come back in here.’ (shouting). It was Mrs. Connie Griffith, she had remembered me after all those years. And I was still Mr. Jackson Junior (Jackson interview, 1/18/07).

Mr. Jackson emphasizes the personal connections that the staff made with residents. Interestingly enough, although his anecdote relates to a case of minority discrimination, he seemed to forget this in favor of Ms. Griffith’s kind words.

The stigma of social housing was deflated, as mentioned, by an era of government support and national pride. Mr. Jackson firmly brushed off any thoughts of shame attached to his life in Aspendale, for it seemed to him a wholly normal way to live, rife with advantages. An embedded stigma would grow with the project’s later years as its social enthusiasm collapsed into a social “pathology.” Mr. Jackson described the unique community of Bluegrass-Aspendale as being normal, from the perspective of a resident.

Owing to that time, and because as I have said, we had teachers, we had insurance executives, we had barbers and beauticians, we had contractors that lived there, government workers, and just regular workers. And I must hasten to tell you that there was not the stigma of
being there, at that time. One of the reason’s was, this community, this country knew it had a problem that was not of a person’s making. As I told you, not only were we middle class, we certainly were with a value system. We had the value system, what we didn’t have was a place to be. An example — right where we are living now, we came here (to their current house) in about 1964 or somewhere about in there. And African-American’s were still being guided into certain areas, if you want to look at the community I can point that out to you. So we are just now coming around. But you see, we’re middle class up here, our children are all college, they’re doing well. But we still have got a way to go. So there was no stigma for us in that project, because you see, we had the teachers and everybody there, so we had the community there (Jackson interview, 1/18/07).

He connects his experience in Bluegrass-Aspendale to the larger struggle of African-Americans in the housing market. So even if there were stigma attached to living there, the advantages it offered far surpassed the uncertainty of dealing with an unfriendly real estate market. Wright (1981) considers the PWA’s venture into public housing as a stepping-stone for those unable to own their own home. It was not intended for the poorest of the poor because the rent set by the PW A exceeded the means of most needy poor. Mr. Jackson never thought of Aspendale as his permanent home, he always saw it as a point of departure for some other opportunity, which for him happened to be his post-secondary education.

Before I went away to college, my father had already begun to look for a place to buy. We just happened to move away, he had just already begun to look. It wasn’t a place to stay forever, but getting out would depend on what was available. You see where I am coming from? Uh, you know yes, I could say I am ready, but if there’s no place to be, then I stayed there until the opportunity comes. And if you were to look at the way people came and left that place, you will see that happen. They would move out of there to Chestnut St. to Ohio St, as another home would become available. That’s what you found there. It was a question of opportunity (Jackson interview, 1/18/07).

It was, therefore, normal for residents to seek homes in the surrounding neighborhood. They would do so because of a desire to secure home ownership, but also because the housing commission saw to it that, if you could afford private market rate housing, you actively pursued that option. If your income exceeded a certain level, usually above five times the rent figures of the commission, you would be asked to start looking for alternative housing (LMHC, 1941, p. 5).

That was supposedly, now listen, I never paid a dollars rent, my father always took care of that. But I did come to understand that the rent was commensurate with your earnings, so that as your earnings went up, you would have to pay more for rent. And then at some point, you needed to be looking for housing outside of the projects.

I believe there was a maximum … and if you were making that kind of money, then you ought to be buying a home. So I believe that was the principle (Jackson interview, 1/18/07).

Aspendale was not only an opportunity for Mr. Jackson, but also an active force in shaping his childhood education. It, as he readily admits, set him on the trajectory to attend college and lead a highly successful life (realizing that success means many things). In fact, he has organized reunions and presentations about the project to maintain the memory of those first pioneers and has given outsiders a glimpse at the success of the place. His groups of friends by and large are college graduates and successful professionals. Mr. Jackson believes Bluegrass-Aspendale not only played a passive role in their upbringing as a stable living environment, but actively encouraged education and moral development.

Reading Home

The voice of Bluegrass-Aspendale varies considerably, no two perspectives are quite alike. But as a collective entity, the project had an identity that was greater than the sum of its parts. Cooper’s (1971) famous dictum that “house is a symbol of self,” takes an appropriately modern, Jungian conception of representation. She posits that a house serves as a primary archetype for the individual (Cooper, 1971). Bluegrass-Aspendale, as a public housing project and an urban condition, represented more than individuality; it became a sign of a community. The homes in the project were not under complete control of their inhabitants, and were subject to processes of government, of capitalistic structures, and of social inequity. As Harvey states, “ideology and political hegemony in any society depends on an ability to control the material context of personal and social experience” (Harvey, 1990, p. 226). By seeing Bluegrass-Aspendale as a figurative place, people can control how they interpret it, with respect to their own positions. Former residents can see it as their childhood homes. Outsiders saw it as a dangerous urban ghetto. Administrators saw it as a challenging operational task. Academics wonder at its unique heritage and social commentary.

Through its life, residents found ways to create meaning in the face of this material control. For example, given that single mothers have occupied roughly two thirds of the units in the past 30 years, a group of women organized MOM in 1992 to support their constituency. They were responding to the patriarchal control of authorities over their bodies, families, and homes, forced to move depending on their marital status and

In so doing, they created an oppositional public sphere wherein the maternal and the productive are linked through the metaphor of movement. That is, the name connotes women impressing,
signifying, and producing themselves in the world, in the process wrestling agency out of what might otherwise be a passive experience of being shunted from unit to unit by the state (Nast and Wilson, 1994, p. 53).

In reclaiming their territory, the women used a common agency to write their own story of home. Ironically, this collective spirit was comparable to the goals of public housing in the 1930s. By subsidizing housing for those unable to enter the market, the government (so often the target of our critical pens) was the active force in subverting unfair practices, particularly the exclusionary practices of Fordist industry. This benevolence deteriorated over time as those very same capitalist structures consumed public housing. Ironically, those most cognizant of this economic force are the residents themselves.

With Bluegrass-Aspendale now reduced to dust, its capacity for making memories has turned into an ability to create flexible meanings. Simply put, the project will live on as a symbol, co-opted by non-residents and residents alike. The nature of that remembrance will be left to the circumstances of memory. As Douglas argues, “each kind of building (or home) has a distinctive capacity for memory or anticipation” (Douglas, 1991, p. 294). That anticipation, no longer able to rely upon bricks and mortar, will construct narratives of the past that selectively recall and forget; symbolize and order; and make and remake. The story of home will be told by a number of people and likely affect how we create public housing in the future.

The question to ask at this juncture in history is: what does memory do for us? In losing the place, society can finally determine its value without worrying about the nature of its present reality. Memory reveals latent and layered meanings that respond to the circumstances of today. Emily Dickinson states it more eloquently:

> Perception of an object costs  
> Precise the Object’s loss —  
> Perception in itself a Gain,  
> Replying to its Price.  
> The Object Absolute — is nought —  
> Perception sets it fair  
> And then upbraids a Perfectness  
> That situates so far.  
> (Dickinson, 1955, 1071)

The stories of former residents represent these perceptions. The loss of the object results in the gain of a new symbol. Former residents have perhaps the most empowering ability of this entire saga, the ability to construct, away from external influence, their Home in Bluegrass-Aspendale. Freed from the intentionality of its maker, Bluegrass-Aspendale will gather the good and the bad through a continuous process of remembering and forgetting. With the material gone and the capital spent, their own imaginaries are free to build their Homes anew. These new constructions are rich with symbolism, “narrators are interested in projecting an image” (Portelli, 1991, p. 62). Even a complete forgetting, a complete displacement of Bluegrass-Aspendale from the community’s memory, will symbolize an important dimension of urban space.

**Death**

The Lexington Housing Authority wants very much to forget Bluegrass-Aspendale. Its memory connotes nothing more than the antiquated beliefs of housing authorities long ago. Today, they rely upon catchphrases to demonstrate how eagerly they wipe away the past, even though they utilize neo-historic architecture to supplant it. In a cruel irony of post-modernity, this force of redevelopment, “is continually reterritorializing with one hand what it is was deterritorializing with the other” (Harvey, 1990, p. 238). One such catchphrase, “transformation,” appears on the cover of one of their more recent annual reports, paired with images of machinery tearing down parts of the housing project. Framing the scene is a curving stonewall fence, comparable to hundreds of other such fences that would mark the entrance to common suburbs. In this sense, the Lexington Housing Authority has drawn upon the symbolic language of landscape to blend its efforts with typical suburban development.

The newest theme, “indistinguishable,” connotes the agency’s goal of wiping away the public’s stereotypical image of public housing. “Unpublic housing,” as Mr. Simms (Executive Director of the Lexington Housing Authority) so often calls this, negates the very factor that made Bluegrass-Aspendale so successful in its first 30 years. It relied upon community, both its own internal one and the larger municipal one, to support the goal of fair and equitable housing. The death of Bluegrass-Aspendale also brings about an end to collective idealism in considering how we might give everyone fair opportunities for housing. Instead of creatively addressing the social problems of housing shortages, today’s subsidized housing relies upon the symbolic language of an “upper” class to distort economic realities. As a result, social problems are sometimes glossed over in images of stonewalls or witty catchphrases. At what point is “transformation” substantive and not a mere façade?
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Bibliography


I am a senior social work major, Spanish minor from Pittsburgh, Pennsylvania. For the past four years I have been a member of the Honors Program. I am also a proud representative of the College of Social Work as an ambassador. This project has been a long process that started during my first year at the University of Kentucky when I began teaching English as a Second Language to native Spanish speakers. Since that initial contact, I have been interested in the current immigration debate as it relates to real people and real experiences. When Dr. Bhavsar gave his students a chance to choose any topic for an Honors pro-seminar thesis, I knew I had to investigate this issue. With Dr. Bhavsar’s encouragement and the many hours he spent with me to discuss my paper and ideas, I was able to turn my interest into a defense for the people who have truly made the United States the country that it is today. My volunteer work with immigrants and refugees also contributed to my passion for this subject.

I was recently nominated for a position with the Peace Corps, and I look forward to living abroad for two years to understand what it is like to adapt to a culture and language with which I am not familiar. When I return, I hope to work with refugee resettlement or an agency that provides immigrant support services.

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I am delighted to endorse this submission by Julie Davidson. Julie originally wrote this paper for my Honors Proseminar (HON 301) class. Her well-written, provocative and timely paper on the currently relevant issue of immigration prompted me to suggest that she publish her work. Kaleidoscope, the UK Journal of Undergraduate Scholarship, is an apt venue for her thoughtful analysis of the historical roots of immigration and modern debate on this divisive subject. Julie researches concerns that are raised about the influx of immigrants, explodes myths, and points to our historical past as a guide to pursue a humanitarian approach to improving US policy on the important matter of immigration.

Abstract

The United States is considered a country of immigrants, but a historical tension has existed between new arrivals and the “native” population. Policies regarding immigration have frequently mirrored the nativist fervor that is created in opposition to large influxes of immigrants. The debate about revamping immigration policy, that has been a key issue in Congress in 2006, is not surprising in an historical context. The concern about large numbers, the fear of draining social services, dilution of American culture, loss of American jobs, and the compromising of national security are all concerns that have been voiced recently, and are almost identical to the concerns of earlier generations of Americans regarding previous influxes of immigrants. This essay explores the historical context in which the new debate is set and uses this history to deconstruct the anti-immigration arguments. Finally, the essay proposes, using humanitarian concern and historical roots as a guide, ways in which United States’ policy can be improved concerning immigration.

Introduction

For decades, immigrants have journeyed to the United States of America. The Statue of Liberty has come to symbolize the aspirations and hopes for many people around the globe. As the New Colossus raises her torch to the sea, she proclaims, “Give me your tired, your poor, your huddled masses yearning to breathe free” (Lazarus, 1883). In fact, the only true natives of the United States are Native Americans who comprise about 1.5 percent of the population (Ogunwole, 2002), so the vast majority of the inhabitants of the United States are the product of immigration. Although the poem at the base of the Statue of Liberty paints a bright picture for immigrants, and the nation’s population is primarily of immigrant origin, many US
policies and a history of nativist xenophobia have stood in direct opposition to Lady Liberty’s welcoming message.

Even as a nation of immigrants, the United States’ population has typically reacted negatively to each new wave of immigration. Immigration policies frequently mirror the nativist fervor that is constructed in opposition to large influxes of immigrants. Set in this historical context, the current Congressional debate about revamping immigration policy is not surprising. Issues that seem new and unique to the wave of predominantly Mexican immigrants — such as concern of large numbers, the fear of a drain on social services, dilution of American culture, loss of American jobs, and the compromising of national security — are almost identical to the concerns of Americans in response to previous influxes of immigrants.

These concerns have fueled and continue to fuel policy and politics, and are reflected in bills the Congress has been debating recently. The current Senate bill includes measures such as a border fence, increased border patrol, and an electronic system for employers to verify the legal status of a worker, all reforms designed to curb undocumented immigration. Additionally, the bill proposes an increase in skilled-worker H-1B visas, a guest worker program, and outlines a program to grant undocumented persons the right to permanent residence after meeting several requirements (The Washington Post, 2005). The House bill, though, is harsher. To halt illegal immigration, this bill proposes a seven-hundred mile long fence, increased fines for employers who hire undocumented workers, and makes helping an undocumented immigrant in any way a felony. The bill also seeks to make undocumented status a felony (The Washington Post, 2005). Clearly, the immigration issue is as pertinent in the United States in 2006 as it ever has been.

This essay explores the historical context in which the current immigration debate is set, and uses this history to deconstruct anti-immigration arguments. The essay proposes, using humanitarian concerns and historical roots as guides, ways in which United States immigration policy can be improved.

**Numbers Are Deceptive**

Historically, when immigrants have arrived in the United States in large numbers, anti-immigration advocates have worried that the nation will be unable to absorb the influx. For example, one of the largest groups of immigrants to come to the United States were the Irish. Between 1850 and 1859, the United States received 1,029,486 immigrants from Ireland (United States Department of Homeland Security [USDHS], 2006). The Irish far outnumbered other immigrant groups. Americans met the Irish immigrants with hostility, and “the motivation was not suspicion of their loyalty, so much as the fear of their large number” (Curran, 1975, p.15). The Irish were more visible in society because of their sheer numbers, and American citizens thought they were being inundated by new arrivals. A large number of immigrants from a single country felt more threatening to the American population than a handful of people of a single ethnicity. This phenomenon is occurring once again with the current wave of Latino immigration. Like the Irish in the mid-1800s, Mexican immigrants currently make up a large group. Between 1968 and 1993, 20 percent of all immigrants came from Mexico (Hing, 2004). From 2000 to 2005, more than one million Mexican immigrants obtained legal permanent residence status, and the US currently has an estimated 11 to 12 million undocumented Mexican and Central American immigrants (USDHS, 2006). The number of Mexican immigrants has sparked controversy, just as the influx of Irish did a century ago.

In *The Case Against Immigration*, journalist Roy Beck argues that the sheer numbers are the most alarming aspect of immigration today (Beck, 1996). Beck believes that the United States simply cannot absorb immigrants on such a large scale, and he proposes that the increasing immigrant population will eventually destroy the economy, environment, and American life in general (Beck, 1996). The Federation for American Immigration Reform, or FAIR, echoed similar population concerns. The United States’ population was estimated to reach 300 million in 2006, and FAIR points out that, “most of the future U.S. population increase will result from immigration” (Federation for American Immigration Reform [FAIR], 2006b). Supporters of curbing immigration argue that the United States will in no way benefit from an immigrant population increase; rather, they argue that large numbers of new arrivals will drain resources and ruin the American economy, a bad situation when the United States has its own citizens to support.

Although the numbers seem overwhelming to some people, pro-immigration groups such as La Raza and the Mexican-American Legal Defense Fund see increasing immigration as an asset to the United States. Most notably, supporters of immigration point to the numbers because, “Overall gains to the U.S. economy from current immigration are estimated at about $20 billion even by critics of immigration. Some estimates are much higher. Either way, allowing more immigrants into the United States would increase these gains even more” (Powell, 2005). Pro-immigration groups argue that immigrants strengthen the economy rather than detracting from the Unites States’ ability to support its people.

Furthermore, immigration supporters contend that immigration does not have as large an impact on the nation’s population as immigration opponents believe to be the case. A Cato Institute columnist points out that “Immigrants are also blamed for...crowded schools and suburban sprawl...But immigration on average has accounted for...[only] 30 percent of the change in individual state populations since 2000” (Griswold, 2006). According to these statistics, immigration does not constitute the majority of population growth. The article goes on to state that Americans have a much better standard of living than they did a century ago, primarily because food is plentiful and many diseases have been eradicated.

Prosperity has increased along with population. As a result, “There is no reason why these trends cannot continue as the population rises” (Griswold, 2006). Nevertheless, during a large wave of immigration, such as the current Mexican influx, new arrivals are more visible and opponents to immigration become alarmed with the
possible consequences of their numbers. This anxiety, however, is not supported by the statistics, because the immigrant population continues to contribute to the United States.

The Impact on Public Services
The concern that immigrants may drain American public services builds on the fear of immigrants arriving in large numbers. During the Great Depression in the 1930s, Americans in the Southwest, particularly in Los Angeles, believed that Mexican immigrants were draining the welfare system (Boisson, 2006). In a time when everyone was desperate for any kind of assistance, people of Mexican origin were seen as the last priority even if they were citizens. Officials were so convinced that Mexicans were depleting public assistance that they began a policy of arresting both immigrants and citizens to be “repatriated” (Boisson, 2006). A leading official went so far as to send Mexican people in nursing homes or asylums back to Mexico, because he was determined to alleviate the perceived Mexican scourge of the welfare system (Boisson, 2006). During this anti-immigrant fervor, 60 percent, or about 1.2 million, of the “repatriated” people were United States citizens (Boisson, 2006). Mexicans, however, “did not produce a disproportionate strain on welfare services during the Depression” (Boisson, 2006, p. 25); in fact, Mexicans accounted for only about 10 percent of welfare recipients.

A similar anxiety over depletion of public resources has resurfaced in today’s immigration discussions. The current debate about immigrants’ harm to health and social service systems centers on undocumented immigrants from Mexico, particularly in California due to the high population of Mexican immigrants residing there. Undocumented immigrants are especially targeted, because most citizens believe they do not contribute enough by way of taxes to cover the cost of serving them.

One claim is that children of undocumented workers cause a strain on the public school systems. A recent Time magazine article explains that this problem arises because most of these children need specialized services, such as English as a Second Language classes. The supposition is that the parents of these children “typically don’t pay enough in taxes to cover schooling” (Cullen & Fonda, 2006, p. 43), and other taxpayers must struggle to support immigrant education.

FAIR claims that immigrants are destroying schools because, “The total K-12 school expenditure for illegal immigrants costs the states $7.4 billion annually” (FAIR, 2002). Reflecting this concern, Proposition 187, passed by 60 percent of California voters in 1994, denied access to public education, including post-secondary institutions, to undocumented immigrants and their children (Meier & Gutiérrez, 2003).

Proposition 187 also addressed strain on the health care system. Under Proposition 187, no medical treatment can be given to undocumented immigrants except for emergency care (Meier & Gutiérrez, 2003). FAIR posits that, “High levels of unpaid medical bills for undocumented immigrants have forced local health care providers to reduce staffing, increase rates, and cut back services. Dozens of hospitals … along the southwest border have either closed or face bankruptcy because of losses caused by uncompensated care give[n] to illegal immigrants” (FAIR, 2003). While recognizing that denying emergency care would be unethical, both FAIR and Proposition 187 stressed that undocumented immigration could force the medical system into bankruptcy.

Finally, anti-immigration supporters see the flow of undocumented immigrants as a financial handicap to the welfare system. FAIR cites a study by economist George J. Borjas that states, “For immigrants, their reliance on welfare aid went from 23.4 percent in 1994 to 20 percent in 1998, and rose to 21 percent in 2000. In California, immigrants on welfare went from 31.2 percent to 23.2 percent in 1998, but in 2000, 26.7 percent of immigrants received welfare assistance” (FAIR, 2002). As these statistics point out, those who want to see a decline and eventual end of immigration fear that denying emergency care would be unethical, both FAIR and Proposition 187 stressed that undocumented immigration could force the medical system into bankruptcy.

Hard evidence for the alarming claims of anti-immigrant supporters is elusive. Even in Colorado, a state in which an estimated 250,000 undocumented immigrants live, the evidence does not support the contention that immigrants strain the school system (McCombs, 2006). Many schools have high numbers of students needing English as a Second Language instruction, including students who are United States citizens. However, school districts spend only one percent of their total budget on the services typically most utilized by undocumented immigrants (McCombs, 2006). Immigration opponents argue that these children have gained citizenship by being born in the United States to undocumented immigrants, but many could be children of legal immigrants, or United States’ citizens who speak Spanish in their homes. The underlying point is, the United States has to maintain a commitment to public education to help create productive citizens, and even if these citizens are children of undocumented immigrants, they are citizens nonetheless. For these reasons, the strain undocumented immigrants’ children put on the school systems is a highly questionable assertion.

The argument of undocumented immigrant strain on hospitals is also difficult to defend because “most hospitals, community care centers, and doctor’s offices don’t track the documentation of their patients” (McCombs, 2006). Without systematic data collection it is impossible to say conclusively that undocumented immigrants are the sole or even the primary cause of bankruptcy for border hospitals. Undocumented immigrants are the obvious scapegoat because of the correlation between their location and the number of hospital bankruptcies, but correlation does not prove causation. Undocumented immigrants are a part of a much larger group of people, including citizens, who do not have health care insurance, and “Any uninsured patient — regardless of immigration status — presents a challenge
to health care professionals” (McCombs, 2006). Undocumented immigrants cannot be targeted exclusively as the cause of hospital bankruptcy, because this problem is tied to the larger crisis of millions of Americans not having access to health insurance.

The anti-immigration contention that documented and undocumented immigrants are draining the social welfare system is on even more tenuous ground. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996, more commonly referred to as the Welfare Reform Act, changed the eligibility criteria and benefits for immigrants and citizens alike. Undocumented immigrants were denied all benefits beyond emergency health care, public schooling for children, and the use of emergency assistance such as soup kitchens (LeMay, 2004). As a result of this legislation, there was a forced reduction in immigrant welfare use and there is evidence that “welfare reform has hit the non-citizen group harder than other groups” (Kim, 2001, p. 321). This statement is supported by the statistics that the “use of public benefits among non citizen households fell more sharply (35 percent) between 1994 and 1997 than that of citizen households (14 percent)” (Kim, 2001, p. 321). In addition, immigrants contribute to payroll taxes equal to or greater than domestic workers and, because they are more likely to be of working age than the native born population, immigrants are less likely to collect public benefits (Green, 2002). Use of the social service system by documented immigrants was limited to begin with and, after 1996, this use fell once again. Documented immigrants both contribute to and under-use social services in the United States.

Likewise, some evidence confirms that undocumented immigrants contribute more in taxes than they will benefit from (Bischoff, 2002); therefore, undocumented immigrants are unjustly targeted for ravaging the social service system. Those trying to avoid authorities would not enter this country and immediately seek assistance from a government agency. Even if they did try to take this approach, they could not receive social service benefits because of the Welfare Reform Act. Admittedly, many undocumented workers do procure falsified documents and social security numbers. These fraudulent documents, however, mean that the undocumented workers pay taxes, and “Through 2002, [undocumented immigrants] paid an estimated $463 billion into Social Security. Their takeout: almost nothing” (Cullen & Fonda, 2006, p. 43). Undocumented immigrants who work to put the money into the Social Security system will not reap the reward. The benefits will be entirely enjoyed by American citizens. Daily living in the United States also costs money; undocumented workers pay sales tax on items they purchase, and they add to the real estate market by paying rent (Bischoff, 2002). The purchasing power of undocumented immigrants, combined with their avoidance of public assistance and their contribution to the Social Security system, argues that they do not exhaust social services.

**Culture Shock**

Immigrant groups have also sparked fears of Americans losing the American “way of life.” Since the colonial period, Americans have tried to protect their lifestyle through exclusionist policies. In fact, colonial legislatures in conjunction with the British Parliament passed laws to restrict immigrants who might be a threat to the cultural fabric of the colonies (Curran, 1975). Excluded groups included Catholics, Jews, anyone who had committed a crime, and the poor. In the mid-1700s, Benjamin Franklin expressed his fears concerning German immigrants’ effect on American culture. In Observation Concerning the Increase of Mankind (1751), Franklin wrote, “Why should Pennsylvania founded by the English, become a colony of aliens who will shortly be so numerous, as to Germanize us instead of our Anglifying them?” (Curran, 1975, p. 16). Franklin’s attitude was still present around World War I when “The German language, in particular, came under severe attack” (Bischoff, 2002, p. 154). Language was and is an important part of culture, and the German immigrants’ use of the German language was considered unpatriotic, especially while the United States was at war with Germany. In fact, in 1917, Governor W. L. Harding of Iowa mandated that English was the only language allowed for communication in schools, at work, at church, and while conversing on the telephone (Bischoff, 2002).

The cultural frustration that many people opposed to immigration experience today mirrors these exasperated sentiments. In Pat Buchanan’s new book, State of Emergency: The Third World Invasion and Conquest of America, the author discusses his fear of losing the white majority in the United States. He contends that current trends in immigration have lead to the Hispanicization of the Southwest, and this trend will overtake the whole nation if nothing is done to curb new arrivals (Buchanan, 2006). Buchanan’s view, much like Franklin’s opinion before him, is that Americans need to defend their customs before they are completely culturally demolished.

The English language has been a frequent issue in discussions of the protection of American culture, and anti-immigration advocates fear that this important cultural element is being compromised in the current Mexican wave of immigration. Echoing the rejection of the German language decades earlier, in 1998, Californians reacted to the increased influence of the Spanish language with Proposition 227. This proposition requires that all public school classes, with the exception of foreign language classes, are to be conducted in English (Meier & Gutiérrez, 2003). Essentially, Proposition 227 is a backlash to bilingual education, underpinned by the fear that Mexican immigrants are not assimilating to American culture because they are not learning English. If immigrant children are not learning English in American public schools, they probably will not learn it anywhere else. By rejecting English, an essential form of communication and culture in the United States, Mexican immigrants are denying the American lifestyle, and may even want to change American culture. Pat Buchanan illustrates this fear when he writes, “California could become an American Quebec, demanding formal recognition of its Hispanic culture and identity” (Buchanan, 2006, p.
According to this view, Mexican immigrants must assimilate to American culture, including the English language, if they want to live on American soil.

Although many Americans fear their cultural heritage will be compromised by this wave of immigration, there is sufficient evidence to demonstrate that this concern is unfounded. A recent study shows that immigrants, and especially their children, do learn English, finding that, while 90 percent of immigrant children come from a home where their families speak a language besides English, 73 percent of these children preferred English over the language spoken at home (LeMay, 2004). Such language assimilation does not happen instantly; the children formed their preference for English after being in the United States for three years (LeMay, 2004). A preference for English shows that immigrant children are learning the language of their new country, and becoming so comfortable with it that they would rather speak English than the language of their parents. Indeed, English proficiency increases with the time immigrants have been in the United States so that, by the third generation, 78 percent of Latino immigrants are English dominant and 22 percent are bilingual (Pew Hispanic Center [PHC], 2004). Even of the first generation, 4 percent are English dominant and 24 percent are bilingual (PHC, 2004). Clearly, English is not being overtaken by Spanish. In fact, over time, and it certainly does take time to become proficient in a foreign language, Latino immigrants master the English language. Clearly, becoming English dominant results in acculturation, which is, after all, the ultimate goal.

As mentioned above, bilingual education is another important issue involving language. Although voters in California tried to strike down bilingual education through Proposition 227 because they feared that immigrants were not learning about American culture, bilingual education is intended to help children acculturate. Furthermore, bilingual education’s “original purpose was to help in the education of English-deficient immigrant students. At least part of their schooling was to be in their native language, so that they could learn some subject content while they were learning English” (Bischoff, 2002, p.158). If applied in this form, bilingual education can serve to help with the acculturation of immigrants while they learn English. Children gain knowledge in a language they can understand so they can actually retain information. This way, time is not wasted in learning other subjects, like American history, while the student is not proficient enough in English to retain complex information in a, for them, foreign language. Bilingual education is not a rejection of the dominant language; rather, it serves to promote education and acculturation while students also learn English.

Job Displacement
Citizens’ fear of immigrants does not stop with immigrants’ large numbers, their impact on the social service system, and their perceived destruction of American culture. Citizens also fear the loss of Americans’ jobs to immigrants. Once again, history can illuminate the sources of this fear. While immigrants have historically had multiple reasons for leaving their home countries, a powerful motive throughout the centuries has been economic. Once in the United States, however, immigrants often encounter protectionist and racist practices. Nineteenth century Irish immigrants encountered this phenomenon when employers would qualify a help-wanted sign with the statement “No Irish Need Apply.” This poignant example illustrates that Americans have feared losing jobs to immigrants for many years.

Other historical examples demonstrate that immigrants are desired to perform a job, but are rejected when economic problems arise for Americans.

In the middle of the 19th century, Chinese immigrants came to the United States, primarily the West Coast, to fill mining and railroad jobs. Between 1820 and 1850, only 46 Chinese immigrants lived in the United States. By the 1850s, however, 35,000 Chinese immigrants lived in California alone (Curran, 1975). The growing number of Chinese immigrants did not seem to be a problem while there was work to be done and companies could not find enough workers to do the jobs. When there was a decrease in jobs, however, problems arose. Miners spoke out against Chinese immigration in 1852 because they were worried about competition for jobs that were not as plentiful as in previous years (Curran, 1975). Further fueling the backlash against the Chinese, labor unions began to point out the “racial inferiority” of the Chinese (Curran, 1975). Not only were Americans’ jobs being taken, the jobs were being taken by people who were seen as sub-human. As American nativist fervor rose, many public figures and the general population decried the Chinese “scourge” on society. Finally, the Chinese Exclusion Act of 1882 was passed to suspend Chinese laborers’ immigration and deny the right of naturalization to any Chinese immigrant already in the United States (Curran, 1975). Unfortunately, the primary motive for this policy stemmed from the perceived threat of Chinese immigrants to American jobs.

Given this history, it is not surprising that current anti-immigration supporters complain about the robbing of American jobs by undocumented and documented immigrants. They believe that, although immigrants usually fill jobs that are rather undesirable, Americans would do these jobs except that “The presence of immigrants keeps those wages and conditions from improving to the point where Americans would take jobs” (Beck, 1996, p. 103). In other words, Americans could have had these jobs at higher pay and in less disagreeable conditions, if cheap immigrant labor were not present. Undocumented immigration, especially, has made many businesses, “so addicted to cheap, compliant foreign labor, they may have ceased to try to attract American workers” (Beck, 1996, p. 104). With plenty of immigrants available for low-skill, undesirable jobs, anti-immigrant supporters argue that there is no market for American unskilled workers who need jobs.

Even skilled, documented immigrants may be seen as a threat to the American job market. Visas such as the H-1B exist to permit skilled workers into the United States on a temporary basis (United States Citizenship and Immigration Services [USCIS], 2006). To qualify for an H-1B visa, a foreign worker must have at least a bachelor’s degree and the sponsorship of a United States employer (USCIS, 2006). Recruiting skilled labor from other countries can undercut highly skilled Americans. In fact, some argue,
American college graduates frequently obtain a degree and apply for a job, only to find out the position is filled by a foreign worker. Anti-immigration supporters believe that there is no reason why the United States should solicit foreign employees when Americans are just as intelligent and talented (Beck, 1996). Anti-immigration advocates conclude that an equation in which undocumented immigrants devour low-skilled jobs while other foreigners have special visas to take high-skilled jobs adds up to very little opportunity for American workers.

Despite the fear that immigrants take American jobs, there is little evidence to suggest that immigrants cause widespread American unemployment. American workers without a high school diploma or GED are the ones most likely to be displaced by immigrant laborers, but immigrants are a positive force for other laborers in the United States. In general, immigrant workers, especially undocumented immigrants, “tend to push American-born workers up the job scale” (Bischoff, 2002, p. 269) rather than taking Americans’ jobs. By taking jobs that American workers do not want, immigrants help to fill necessary jobs while leaving others open for American workers to fill. Evidence exists that immigrants actually create jobs by making the “economy more flexible [and] more dynamic” (Cullen & Fonda, 2006, p. 43). Immigration is not a zero-sum game for American workers — while some low-skilled workers are displaced, other jobs are created at moderate to high skill levels.

Furthermore, shortcomings of education that leave some Americans vulnerable to displacement because they fail to achieve high school graduation should not be blamed on immigrant workers. The alarming fact is that, in 2006, there are still many students who do not earn a high school diploma or GED. Measures should be taken to provide this basic educational need to make Americans more competitive in the job market, rather than blaming immigrants who take the low-paying jobs. In addition, some economists believe that immigrants keep “a lid on inflation and interest rates. As a result, prices for goods and services are lower, and citizens can purchase more” (Cullen & Fonda, 2006, p. 43). This effect of immigrant labor benefits Americans who do not have much purchasing power, such as those without a high school diploma or GED. Halting immigration, thereby probably raising prices, would not necessarily help American low-skilled laborers in the long run. Improved education and better training programs, however, would increase these workers’ marketability.

Anti-immigration supporters are concerned that skilled American professionals, too, can lose out to skilled immigrants such as scientists, engineers, and nurses. Some important job markets, however, are experiencing a labor shortage that citizens alone cannot remedy. A common example of a crucial labor scarcity is the current nursing shortage in the United States. According to the American Association of Colleges of Nursing, the nation “is in the midst of a nursing shortage that is expected to intensify as baby boomers age and the need for health care grows. Compounding the problem is the fact that nursing colleges and universities across the country are struggling to expand enrollment levels to meet the rising demand for nursing care” (American Association of Colleges of Nursing [AACN], 2006). There are “projections that the nation’s nursing shortage would grow to more than one million nurses by the year 2020” (AACN, 2006). If nursing positions are not filled, health care quality will be severely compromised. This profession is in high demand with a limited base of Americans able and willing to do the work; if Americans cannot fill this need, the nation must solicit skilled immigrants.

Another argument in favor of H-1B and other specialized visas is that these foreign workers make the United States more competitive. Bill Gates pointed to the increasing sophistication of research institutions in China and India, and the United States’ need to keep up with this growing competition. Gates remarked on the ridiculousness of having, “too many smart people” (McCullagh, 2005). Not only does the competitiveness of the United States benefit from this addition of brainpower in the high-tech industry, but a need to exclude skilled foreign workers implies that Americans could not match their skills. When anti-immigrant supporters oppose skill-based visas on the grounds of taking jobs from capable Americans, it is an affront to the abilities of Americans with high skill sets. Americans can and do obtain high-tech jobs, and usually end up working alongside H-1B visa holders rather than being displaced by them. This combination of American and foreign intelligence can only benefit the United States by providing a diversity of ideas and skills.

Finally, while undocumented and documented immigrants are helping to create jobs today, their labor will be increasingly in demand as the Baby Boomers retire. The birth rate is low in the United States, the population is aging quickly, and “by 2025, … 20 percent of the population will be more than 65 years old [so] more working people will be needed to support them and maintain the Social Security System through payroll taxes” (LeMay, 2004, p. 37-38). If the birth rate is low in the United States, the only alternative for sustaining the work force is through immigrant labor. This is the most viable option, unless anti-immigrant advocates are so opposed to immigration they would rather implement a program to force United States’ citizens to reproduce at a high enough rate to sustain economic activity. As demonstrated above, immigrants already contribute to Social Security, even undocumented workers who will not be able to collect these benefits, and the United States will continually require more of this support. In the relatively near future, the nation may well find immigrant labor an absolute necessity.

**National Security**

The final point of concern for anti-immigration advocates is the national security of the United States, especially while the nation is at war in Iraq and Afghanistan. Throughout the history of American conflict, foreign-born people have been targeted and their loyalty questioned. This practice can be found as early as the French and Indian War of the mid-1700s. During that time, the loyalty of French residents in the British colonies was considered highly uncertain;
this fear led to the imprisonment of many people of French origin during the war (Curran, 1975). Such anxieties during wartime did not end with the colonial period of American history. An infamous example of wrongful imprisonment based on xenophobia occurred during World War II, after the Japanese bombed Pearl Harbor on December 7, 1941. Following this surprise attack that jarred the United States into involvement in World War II, President Franklin Delano Roosevelt ordered the internment of approximately 110,000 people of Japanese origin. Most who were interned were United States citizens. The United States was also at war with Germany and Italy, but there was no order to imprison people of those nationalities (Curran, 1975). The internment of Japanese immigrants and Japanese-Americans is a blot on America’s record of civil liberties, and serves as a reminder of the fear of foreigners that people experience during wartimes, and the lengths to which they will go to control the alarm.

Since the terrorist attacks of September 11, 2001, Americans have been increasingly concerned about the porous borders of the United States. This dread has been focused on the U.S.-Mexico border, where even the efforts of the border patrol have not been able to curb the inflow of people. Many legislators and anti-immigration supporters have called for tighter security to keep out not only undocumented immigrants, but also potential terrorists. Former Speaker of the House Dennis Hastert remarked, “We’re at war, and we need to act like it … We need to close the borders” (Fears & Aizenman, 2006). The contention is that, if so many undocumented immigrants are entering secretly by way of the U.S.-Mexico border, then it is entirely possible that terrorists are also gaining access to the United States by this route. This national security argument was used to support the building of a border fence and, in October 2006, a bill passed the Senate and House in support of a 700-mile long fence on the nearly 2000-mile long border.

Although national security is at stake, many immigration supporters worry why the U.S.-Mexico border is the sole target of bolstered border control measures. As stated, this border is about 2000 miles long. The U.S.-Canada border, however, is more than double this length, and most of that border is not patrolled. If the United States is so concerned about terrorists coming by way of Mexico, there should also be alarm about the vast, unprotected U.S.-Canada border. The fact that Congress passed a bill to build a fence across much of the U.S.-Mexico border is inconsistent with the nearly complete lack of attention paid to the larger, less protected U.S.-Canada border. It seems unlikely that the United States wants a fence between itself and Mexico as protection against terrorists as the nation leaves a larger stretch of border vulnerable; rather, it is intended as a barrier to Latino immigration.

The difficulty of constructing this 700-mile-long fence can be imagined by considering the difficulties officials have faced trying to build a 14-mile fence between San Diego and Tijuana. That fence, tiny in comparison to the newly proposed fence, has not been completed after ten years of construction. Multiple lawsuits, from Latino groups as well as environmental groups, have arisen in opposition to the fence (Pomfret, 2006). This short fence shifted the migration patterns to the deadly Arizona desert, where many migrants have perished trying to reach the United States. The shift in movement also forced border guards to this desert region, basically leaving only the fence to prevent illegal entry through San Diego (Pomfret, 2006). T. J. Bonner, the president of the National Border Patrol Council, remarked that, “San Diego is the most heavily fortified border in the entire country, and yet it’s not stopping people from coming across” (Pomfret, 2006). Cost estimates for the 700-mile fence range from $2 to $6 billion (Weisman, 2006). Based on the San Diego example, a fence, especially one with such an astronomical price tag, is not a feasible way to control the border. Funding could be used for other measures that have proven more successful: for example, the Marine Corps found that a combination of traffic blockades and ground radar was an effective way to protect the border (Pomfret, 2006). While both the U.S.-Mexico and U.S.-Canada borders need to be more secure, simply targeting the U.S.-Mexico border with a fence is not a sufficient measure from a national security standpoint.

**What is the Next Step?**

There is no question that immigration policy needs to be overhauled, no matter which side of the controversy one supports. However, building fences and stoking the fires of xenophobia have not historically been effective in controlling immigration or in creating positive relationships with the home countries of immigrants, and they will not be beneficial today. This paper has shown that questions about the economic impacts of immigration are difficult to answer conclusively, but it is possible to talk about the question in a way that upholds the American ideals of equality, justice, and the pursuit of happiness. By treating the immigration issue more as the humanitarian dilemma it is, and with a consideration of history, policy makers can create effective, humane reforms to immigration law.

The first issue that should be addressed by policy makers, because it is the one most in contention today, is undocumented immigration. Both the House and Senate bills as discussed earlier suggest a border fence as their main provision to curb illegal entry. Without border patrol officers to monitor this fence, there would be no one to stop undocumented immigrants from crossing the fence or even destroying parts of the barrier in isolated areas. A more practical solution is hiring more border patrol personnel instead of building a fence. Additionally, if the United States is truly concerned with terrorists entering through a porous border, the longer and more remote Canadian border should not be forgotten. Both the Mexican and Canadian borders need to be protected with more border patrol officers. In conjunction with providing more personnel, new technology should be used to curb undocumented immigration and secure the border. As noted, the Marine Corps National Guard successfully used ground radar and road blocks to stop undocumented entrants. Because these measures have been shown to be more effective, it would make more sense to invest in this kind of technology. In addition, border patrol agents should be trained to treat undocumented
entrants humanely and with dignity; in particular, agents should be fluent in Spanish to facilitate communication. A combination of technology and agent training could address the immediate flow of undocumented workers, while ensuring that human rights are not violated.

Although the borders need to be addressed, the issue of employers hiring undocumented workers is also an area of concern. Hiring undocumented workers is illegal, but these laws are rarely enforced. Not only is such hiring a violation of the law, it can result in the victimization of undocumented workers who are exploited by being underpaid, overworked, and mistreated. Sanctions should be imposed on employers who hire undocumented workers. Reducing the demand for undocumented labor would eventually decrease the supply of such labor. Enforcing sanctions would also mitigate the exploitation of undocumented immigrants, particularly if the sanctions were imposed in conjunction with opening more legal routes of immigration.

Opening more channels for legal immigration would almost certainly lead to less undocumented immigration. Most immigrants would prefer to be in the United States legally but, in their need to escape desperate poverty, they do not have time to wait for months or years to obtain a visa. The United States would also benefit from this measure, because immigrants contribute valuable labor that will be even more in demand as a large part of the American workforce retires with the aging of the Baby Boomers. If the United States opens more legal immigration opportunities, it can curb undocumented immigration, provide legitimate employment for immigrants, and have its labor needs met, without spending resources on combating undocumented immigration.

Of course, none of these measures, alone or together, will completely halt undocumented immigration. Truly comprehensive immigration reform will be achieved only when the lives of potential immigrants are so improved in their home country that emigrating to the United States becomes a choice rather than a necessity. The United States needs to examine exactly why immigrants, both documented and undocumented, are arriving. In many cases, immigrants are trying to escape dire political or economic situations in which they cannot maintain themselves and their families in their home countries. Consequently, people come to the United States seeking safety and better economic opportunities. The United States needs to work cooperatively with organizations such as the World Bank and the International Monetary Fund, to ensure that these institutions do improve the lives of the general population in nearby immigrant source nations such as Mexico. As long as national and international policies exist that support an elite who control the majority of wealth and power, a situation will exist in which people are driven to leave their home countries. If the United States truly wants to curb undocumented immigration, the economic situations of the home countries of immigrants need to be addressed.

These measures, although difficult, could curb undocumented entrants, but the millions of undocumented immigrants currently living in the United States are also an immediate concern. As proposed in the House bill, many Americans believe that undocumented immigrants should be felons. Making illegal entry a felony is both extreme and unfeasible. Although the law might be easy to write, it would be difficult to implement both financially and logistically. An amnesty program, although controversial, would be more logical.

The United States has granted amnesty in the past, and should continue to do so. A large-scale amnesty program was first enacted in 1986 under the Immigration Reform and Control Act. Approximately three million undocumented immigrants were granted legal permanent resident status (United States Immigration Support [USIS], 2007). Other amnesty initiatives have been passed to grant amnesty to Central Americans in 1997 and Haitians in 1998 (USIS, 2007). The United States does have a history of granting amnesty, and offering such a program now would be a logical, practical, and humane action. An amnesty program would have many benefits. For currently undocumented immigrants, an avenue to legitimate residency could finally be opened, providing more opportunities for employment, housing, medical care, and schooling. Such immigrants would continue to contribute to the American economy. Moreover, amnesty could contribute to crime prevention. Many Americans fear that undocumented immigrants can evade the justice system because of faulty papers. Legalizing current undocumented immigrants would provide them with legitimate documentation that could be used to locate those who commit crimes in the United States.

Amnesty should be offered to undocumented immigrants who can prove they have been working in the United States for the past year. While critics argue that amnesty will entice more undocumented immigrants, if this program is enacted simultaneously with an increase in visas, immigrants can be documented before they come to the United States. Undocumented immigrants are currently living in the United States, and an amnesty program would address this reality by legitimizing their presence and offering a way for both immigrants and citizens to benefit. Although the argument can be made that granting amnesty would be unfair to those who follow legal channels, this argument ignores the extreme difficulty involved in obtaining legal entry, and overlooks the extreme poverty that prompts many Mexicans and Central Americans to enter the United States illegally.

The suggestions in this paper are by no means comprehensive or exhaustive, but they take into account the historical patterns of xenophobia and fear that have paved the way to the current immigration situation in the United States. An examination of historical context, deference to American values, and a respect for human lives should guide current or future policy formation. Immigrants who come to the United States are not just statistics; they are people who are trying to make better lives for themselves and their families. Most citizens of the United States today are the descendants and beneficiaries of immigrants who dealt with the same persecution that Mexican immigrants are facing today. It is time for reforms that acknowledge this history and consider our relationship with the human faces of the “huddled masses” coming to the United States.
Acknowledgement
I would like to thank Dr. Suketu Bhavsar for his constant support and encouragement while I wrote this paper. Dr. Victoria Bhavsar was a tremendous help with her great suggestions and editing. I also want to thank my parents for teaching me to never forget my roots, and my immigrant ancestors who were brave enough to pursue their American dreams.

References
Domestic Violence in the Workplace

Author: Amanda Fallin

I am a senior nursing student, and I have been a research intern with Dr. Debra Anderson for six semesters. Dr. Anderson’s area of expertise is issues facing the homeless population. I have had the privilege of assisting her with her current project, which is an investigation of domestic violence in the workplace amongst homeless and battered women. I have been involved with multiple aspects of the study, including conducting literature reviews, interviewing participants, conducting and transcribing interviews, and analyzing data. In February of 2007, I presented our results at the Southern Nursing Research Conference in Galveston, Texas. I also plan to participate in the Undergraduate Showcase in late April. I am continually thankful to Dr. Anderson for all the incredible learning opportunities.

Mentor:
Debra Gay Anderson, Ph.D., A.P.R.N., B.C. Associate Professor, College of Nursing

Our program of research focuses on vulnerable populations and violence. We have studied both homeless and non-homeless populations regarding their experiences of violence throughout their lifespan, from childhood through adulthood. The violence has included physical, emotional, and sexual abuse from parents, other adult relatives, intimate partners, strangers, co-workers and bosses. This particular study examined the experiences of workplace violence in the lives of homeless and battered women. Ms. Fallin has focused her efforts on the effects of domestic violence at the workplace and she reports that important work in this paper. She had her work accepted for presentation at the Southern Nursing Research Society’s meeting in Galveston, Texas earlier this year and we will submit the project findings for publication in a peer-reviewed journal. Amanda Fallin has worked with our team for three years and has been active in every part of the research process, from data collection to data analysis and dissemination of the findings. It has been my privilege to work with a student as talented and insightful as Ms. Fallin and I enthusiastically endorse her work for publication in Kaleidoscope. (Funding sources have included the National Institute of Nursing Research, National Institute of Occupational Safety and Health, and the University of Kentucky).

Abstract
Intimate partner violence (IPV) is a pervasive problem that follows victims from the home into the workplace. Many women who experience violence in their homes are also harassed at work and are abused in the workplace. For the current study, thirty women who reported a history of workplace violence were recruited from a homeless women’s shelter. Of the participants, thirteen experienced domestic violence in the workplace, and this paper focuses on the results obtained from those thirteen respondents. This paper also discusses the link between poverty and homelessness, intimate partner violence, and workplace violence.

Background
Intimate Partner Violence and Workplace Violence
Intimate partner violence (IPV) is a pervasive problem that follows victims from the home into the workplace. Many women who experience violence in their homes are also harassed at work and are abused in the workplace. According to the National Institute of Occupational Safety and Health (NIOSH) (2001), 16% of workplace...
homicides are perpetrated by an intimate partner. In 1994, Roper Starch interviewed 100 executives from Fortune 1,000 companies on behalf of Liz Claiborne, and respondents believed domestic violence affected profits more than AIDS, homelessness, and lack of health care (Liz Claiborne Inc., 1994). Intimate partner abuse adversely affects the victim’s ability to perform in the workplace. Victims of IPV are more likely to suffer from absenteeism, tardiness, and distraction in the workplace than persons not affected by IPV (Reeves & O’Leary-Kelly, 2007).

The Corporate Alliance to End Partner Violence conducted a survey from July to September 2005 of 1,200 currently employed men and women. Approximately twenty percent of the respondents to that survey indicated that they had suffered from IPV. Of the victims, sixty-four percent reported issues in the workplace resulting from the IPV. Fifty seven percent were distracted on the job, 40 percent experienced harassment at work, and 21 percent were terminated (CAEPV, 2006). Additionally, women who experience chronic abuse have more health problems, which adversely affects their ability to work (Staggs & Riger, 2005). IPV affects more than the individual involved; there is a cost to co-workers and to the workplace as a whole. The Centers for Disease Control (CDC) reported that, in 1995, victims of intimate partner physical abuse lost 7.2 days of work per incident. The estimated lost workplace productivity of victims of IPV was $727.8 million in 1995 (CDC, 2006).

**Purpose**

The purpose of the overall study, of which this paper is a subset, was to identify the types of violence and the risks of exposure to violence experienced by women who are homeless or living in domestic violence shelters. The focus of this paper is to (1) identify types of domestic abuse that homeless women are experiencing in the workplace and (2) identify factors contributing to incidences of domestic violence in the workplace.

**Sample**

A purposive sample of thirty women was recruited in the original study from two homeless women’s shelters in a mid-sized city in Kentucky. Both shelters offer basic lodging, food, and healthcare services. One of the shelters also contains an intensive detoxification and substance abuse rehabilitation program. The women were given a modest payment of $25 for their participation. For inclusion in the study, the women had to have experienced workplace violence, be over the age of 18, and be able to speak English. At the time of the abuse, the women were employed in various settings, including restaurants, retail stores, and offices. Thirteen of the 30 women (43 percent) interviewed reported experiencing abuse perpetrated by a current or intimate partner. The results presented in this paper focus on the thirteen participants who experienced domestic violence at the workplace.

**Methods**

Approval for the study was obtained from the University of Kentucky Institutional Review Board (IRB) prior to conducting it. Intensive interviewing was used to collect data for this qualitative study using the focused, semi-structured, interview guide shown here:

**Interview Guide**

**Opening Question:**

Please describe your most recent episode of workplace violence or harassment.

**Probes:**

1. What time of day did the episode take place?
2. Were there any witnesses to the episode?
3. What was your relationship to the perpetrator (current or past intimate partner)?
4. Was alcohol or drug use involved in the episode?
5. Did you notify law enforcement, and if so, what was the outcome?
6. Was a weapon used during the episode?
7. Did you notify your employer, and if so, what was the outcome?
8. What preventative measures did you take?
9. Did you decide to leave the abuser (if the abuser was a current intimate partner)?
10. Are you still employed at the location where the abuse took place? If no, did the abuse influence your decision to leave?
11. Did anyone intervene during or after the episode?
12. Is there anything else you would like to add?

Interviews were conducted face-to-face by two doctoral students and an undergraduate research assistant. Although the location was negotiable based upon participant preference, all the interviews occurred on-site at the shelter. The interviews were tape recorded, and lasted approximately 60-90 minutes. At the conclusion of the interview, the participant was given a modest payment of $25.

The original interview guide was developed based upon an extensive literature review and questions were added throughout the study as new topics emerged. Additionally, interviewers, at their discretion, explored unanticipated issues that arose. Each tape was transcribed after the interview, and a codebook was developed based upon the interviews and emerging themes. Atlas-ti software was used to manage the...
Qualitative data. The tapes and transcripts were kept in a locked filing cabinet, and access was restricted to the primary investigator and three research assistants.

It must be noted that the interview guide was revised as common themes unforeseen by the research team emerged in the first group of interviews. Furthermore, the results are based upon the participants’ self-report of workplace violence, and cannot be verified. The study results are applicable to the participants, and cannot be generalized to another population.

Results
Thirteen of the 30 women (43 percent) interviewed were abused by a current or past intimate partner. The abuse either occurred in the workplace, or directly impacted job stability or performance. Eight of the 13 women (61.5 percent) were abused by a current intimate partner, and five (38.5%) were abused by a past partner. Four incidents of abuse occurred during the day shift (between the hours of 7 am – 3 pm), four on the evening shift (3 pm – 11 pm), and two during the night shift (11 pm – 7 am). Four major categories of data emerged from these qualitative interviews: type of abuse, alcohol/drug and weapon use, employer support, and law enforcement support. The four categories are explained below.

Type of Abuse
The women experienced different types of intimate partner violence at the workplace. The major type of abuse encountered by the women was physical assault. Ten women reported physical abuse, including biting, striking with an object, and hitting. The abuse had significant ramifications, including scars, hospitalization, and absence from work. One participant stated, “He pushed me, shoved me around, or grabbed me by the hair of the head.”

Nine participants in this study experienced stalking/harassing communication at the workplace by their significant other. In the state of Kentucky, stalking is defined as “(engaging) in an intentional course of conduct directed at a specific person or persons which seriously alarms, annoys, intimidates, or harasses the person or persons which serves no legitimate purpose. The course of conduct shall be that which would cause a reasonable person to suffer mental distress.” Additionally, Kentucky state law defines “harassing communication” as “(communicating) with a person, anonymously or otherwise…in a manner which causes annoyance and serves no purpose of legitimate communication.” (National Center for Victims of Crime, n.d.). However, for the purpose of this study, “harassing communication” and “stalking” were classified together. A participant who experienced stalking/harassing communication stated, “He’d call every five minutes. You know, you can’t be productive in a job when you are getting threatening phone calls every five minutes, and I’m the one answering the phone and he’s screaming and hollering at me over the phone, or he’s showing up…you just, you can’t work like that.”

Five of the women were verbally abused using profanities and derogatory insults, such as those reported by this participant, “He would curse me…and ‘you ain’t good for nothing’, and my self-esteem was this low. I could crawl under it.” Some women experienced more than one type of workplace related abuse. “He’s been to every job I’ve had since the day I met the man. So I can’t really say that there’s not one he hasn’t been to, to threaten, shove, cuss.” Another participant stated, “And he used to get really jealous when I wouldn’t get off on time and he would come up and sit in the parking lot and wait for me to get out, come in and bug me, wanting me to come out and talk to him…I would go outside. Sometimes he would smack me, sometimes he would spit.”

Weapon Use and Alcohol and Drug Involvement
Four of the 13 women reported that their intimate partner used a weapon during the abuse, such as a knife or gun. According to one participant, “He had pulled a gun on me before and stopped me dead in my tracks, because I didn’t want to get shot.” A second women stated, “He always carried the knife with him, but he didn’t ever actually, he’d always just threaten, you know, he’d shoot me, or kill me, or cut me, it was always something.” Yet another said, “He took a shot gun and blew out the antique mirror on my grandmother’s dresser and burned my favorite teddy bear.”

There was a high correlation between alcohol and drug use and workplace abuse. Nine women (69 percent) reported alcohol or drug use by the abuser. According to one participant, “he (was) out there drunk…lying on top of the car, hollering through the windows ‘I’m going to kill you’.” Another stated, “Sometimes, if he was drinking or something, he would get physical, and…smack me around a little bit.” A third woman reported, “So he come in one night, drinking. He was a wino, I remember he always drank Thunderbird Wine. And he come in, I sat down on the couch, and he just all the sudden turned over and he had bit my nose. And it left teeth marks.” Four of the women (31 percent) reported personal alcohol or drug abuse. “Well I’m an alcoholic, my drinking got worse after…it.”

Employer Support
In some instances, the abuser intended to sabotage the woman’s employment or educational opportunities. “On purpose he would come approximately 10 til or 5 til 12, because the parents pick the children up at 12…and he wanted to make sure that, that he was causing problems and the parents might report something.”
Another participant stated, “He never wanted me to work...he wouldn’t say, ‘You can’t work,’ but there was always manipulation, there was always verbal abuse about it.”

Employers were not always supportive of the abused women, even when the abuse occurred during working hours. For the purpose of this study, employer support was considered when the employer was aware of the abuse. Employers who were knowledgeable about the abuse were labeled either “supportive” or “non-supportive.” “Non-supportive” actions taken by employers could include ignoring the situation, threatening the victim with job loss, or terminating the victim. “Supportive” actions could range from verbal expressions of sympathy to taking action to protect the victim, such as contacting law enforcement. Five participants in the study stated that their employer was non-supportive, compared to only one who reported support from the boss.

Five women were terminated from their job as a direct result of the abuse. “It just got so bad, him screaming and yelling at the work, and the boss was just like, ‘I just can’t have it...see that he’s locked up and not coming here on the property...or you’ll just have to leave.’ And ended up I lost my job and it was a good job for a mortgage company.” One participant reported, “I started dating a gentleman and he would have people drive by to see if I was there. Then he begin coming in every day, he would ask my boss and call to see if I would be at work, my schedule would be, when my days off would be, and got to a point where they wanted to fire me over it.” According to another woman, “One of the other girls would answer the phone and he would think it was me and he would threaten, ‘I’ll get you when you walk out tonight. You can’t hide from me forever.’ You know, that went on for two weeks, my boss was getting really upset. And you know...and even after he knew I wasn’t coming to that door, he started coming to the back door and that eventually led to me getting dismissed from my job.”

Although the employers were not supportive, some participants received support from their co-workers. Two of the women discussed a lack of support from co-workers, whereas four received help or support from co-workers. According to one participant who was supported, “I’ve had a couple of them walk with me to my car after that. You know, go out the back door with, make sure I got out.” However, another recalled, “I had told a couple coworkers that I worked with, beside everyday … how abusive he was and how he was out of his head, those two were with me, when he pulled up and saw him cause they took off running...they was afraid he might have a gun.”

**Police Support**

The police were involved in the majority (8) of the incidents. For the purpose of this study, police support was considered when law enforcement was aware of the abuse. Police officers who were aware of the abuse were labeled either “supportive” or “non-supportive.” “Non-supportive” actions taken by the police could include ignoring the situation or punishing the victim. “Supportive” actions attempt to protect the victim, and could range from providing information regarding shelters to arresting the perpetrator. Six of the women reported that the police were supportive, two stated that the police were not supportive, and five did not specify. “He just had me petrified. But you know, I called the cops and everything, and told them what was going on, and they said, ‘Well, he actually has to come to your home. He actually has to knock on your door, then you can call us. Other than that there, there is nothing we can do. He actually hasn’t did anything to you yet.’”

**Discussion**

**The Link Between Homelessness, Intimate Partner Violence, and Job Instability**

The participants in this study were residing in homeless shelters at the time of interview. Homelessness and poverty may increase a woman’s risk of experiencing domestic violence (Boris et al., 2002; Wenzel et al., 2004). In a study of sixty homeless persons, aged 18-21, Boris and colleagues (2002) found that seventy-two percent had been in a physically violent relationship. On average, the participants had endured two abusive intimate partners, and one reported having experienced abuse in twenty previous relationships. Poverty adds to the risk of domestic violence among homeless women. Based on interviews with 408 women living in Section 8 housing and 402 residing in shelters, fifteen percent of the participants reported intimate partner violence in the last six months (Wenzel et al., 2004). Furthermore, in previous studies investigating homeless women, participants have indicated that they have experienced instances of workplace violence (Anderson & Rayens, 2004; Hatton, 2001).

For low income women, IPV is negatively associated with job stability (Riger et al., 2004; Oslon & Pavetti, 1996). Victims of IPV who are of low socioeconomic status are placed in a precarious financial situation. They almost invariably are dependent on each paycheck for basic needs, such as rent payments, childcare, and food. Compounding the problem, victims of IPV may be terminated as a direct result of the abuse. A participant who was terminated reported, “I was raising my boys on that income, so I didn’t only, you know, I didn’t only lose my job I lost support for my children, I had...
to go on welfare, food stamps, you know, a lot of things happened, were the outcome of that.” If a woman dependent upon a low wage job is unexpectedly fired, she may find herself unable to keep up with financial obligations. The loss of a job can be the catalyst for a downhill spiral for these women.

**Decision to Involve Law Enforcement**

Most of the women in the study who contacted the police received support, however, many never involved law enforcement. There are several factors involved in the decision to contact law enforcement. Negative encounters with the police, or hearing discouraging stories, can dissuade IPV victims from contacting law enforcement. Others may refrain out of fear that the abuse may escalate. A participant reported, “I’d called the police a lot and that’s what got him to start stalking me.” Another respondent stated, “He went to jail for 30 days at the (name of jail) and when he got out he was at home worse than ever. He was afraid to come to the workplace, but he would beat me when I got out.”

Still other women consider IPV to be a shameful or painful family secret, and are reluctant to disclose the situation. One woman stated, “I was pretty ashamed of it back then. I really couldn’t...I didn’t want people to know...I didn’t realize how much secrets I kept...I wasn’t able to be as honest as I should have been...cause I had a lot of shame and guilt.” The women may also experience low self-esteem as a result of the abuse (Wolf et al., 2003). A lack of self esteem can lead women to believe they have done something to deserve the abuse. “Little things that...triggered...I would maybe ask him for a couple of dollars to get a pack of cigarettes...he would like fly off the handle about a pack of cigarettes and...I’m like...maybe I did ask wrong. I was blaming me.”

Low income women have special factors to take into consideration. In some instances, women may refrain from involving law enforcement out of a sense of economic dependence. Women also may not contact the police out of fear of discrimination against persons of lower socioeconomic status or race (Wolf et al., 2003). On the other hand, factors that may increase the likelihood of police involvement include having children, being subjected to severe violence, and suffering an injury (Bonomi et al., 2006). One woman reported an instance of abuse that left physical evidence, and she stated, “So I secretly went out the door and had to maybe call the police. And they come, and they see the mark and they took him to jail.”

**Recommendations for Employers**

An overwhelming majority of employers are aware of the devastating impact intimate partner violence can have on a victim’s ability to perform in the workplace. Sixty-six percent of corporate leaders participating in the Liz Claiborne study believed that “a company’s financial performance will benefit from addressing the issue of domestic violence among its employees.” (Liz Claiborne, 1994, pg. 3). Eighty percent responded that IPV pervades every aspect of a victim’s life. However, although employers are aware of the relevance of IPV to the workplace, they still believe the problem is of a personal nature and the primary responsibility lies within the family (Liz Claiborne, 1994). One participant in the current study revealed, “So then I started dating this guy...and he would try to fight me on the job and then (employer’s name) would just stand there and look. He wouldn’t help...it was just like he would hear him arguing at me and he wouldn’t come to help...kind of like you just see something on the streets and you just shy away.” Another respondent stated, “They was just letting it go on. They just hushed, swept it under the rug...if somebody fought on the job.”

Findings of our study confirm that victims of IPV experience an overwhelming lack of assistance from their employers. This is unfortunate, because employers are in a prime position to support victims of IPV. Persons in positions of power should take steps to create a supportive working atmosphere. In order to adequately support victims of IPV, management must take an active role.

The National Institute of Occupational Safety and Health (NIOSH) has recently published several recommendations for creating safe and supportive workplaces. First, employers must be dedicated to eliminating violence in their workplaces. If possible, management should provide multi-disciplinary assistance, including relevant medical, psychological, and legal services. Second, a specific workplace violence policy should be developed and implemented (NIOSH, 2006).

Unfortunately, not all workplaces in the United States adhere to these guidelines. In a recent survey of work sites, 70 percent of work sites did not have formal training regarding workplace violence. Of the workplaces with a policy, only 44 percent addressed domestic violence (Bureau of Labor Statistics, 2005). Finally, employers should invest in the health and safety of their employees (NIOSH, 2006). Currently, 73 million employees work at a site without any security staff, and 69 percent of workplaces do not control public access (Bureau of Labor Statistics, 2005).

A participant in our study stated, in reference to her employer, “When the guy was there sitting he should have called the police and had the police come pick him
up...that would have been trespassing, he didn’t have no business there, he was stalking me...the boss I worked for, he should have done a whole lot more...to keep him off of the property.” Companies should also restrict information about employees. Any phone or email requests for information about specific employees should not be answered. “And he went to a temp service and asked for me, and they didn’t know he was violent...he was there waiting when I got...off.” Support from the employer can make an impact on the trajectory of the abuse. Employer assistance is critical for the safety of abused women in the workplace.

**Recommendations**

The current study was a pilot study; therefore, it should be replicated on a larger scale. Perhaps another study could span multiple cities or encompass a larger sample size. Additionally, subsequent studies should investigate a link between domestic violence in the workplace and eventual homelessness. Alternatively, future research on the effect of domestic violence in the workplace could be geared toward women working in high risk areas or low-income jobs, including retail jobs, offices, or restaurants. Research results should be presented to employers to increase awareness of the problem of workplace violence.

**Conclusion**

Domestic violence extends from home into the workplace. Homeless or impoverished women may be at increased risk to experience intimate partner abuse, and this abuse leads to decreased job stability. Professionals who routinely work with homeless women or victims of domestic abuse must include interventions to promote job retention for these women. Also, future studies are needed to develop and evaluate various policy changes to decrease the risk of domestic violence transcending into the workplace.

**Acknowledgments**

Dr. Debra Anderson is the primary investigator for the project, “Domestic Violence in the Workplace.” As my faculty mentor, Dr. Anderson’s direction, insight, and guidance have been invaluable. Hanan al-Modallal is a graduate student research assistant and my co-worker. Without their guidance, this project and paper would not have been possible. I would also like to thank the University of Kentucky, the National Institute for Occupational Safety and Health, and the National Institute for Nursing Research for funding the project.

**Works Cited**


Andrew L. Lynch

I am a chemical engineering major and a Gaines Fellow for the Humanities in my senior year here at the University of Kentucky. While at UK I have been blessed with Goldwater, Udall, and Beckman scholarships. The creative process that fueled my submissions to Kaleidoscope has been one of the most important and meaningful components of my undergraduate education. Outside of the humanities I also enjoy applying a different aspect of the creative process through research in environmental chemistry. I hope to combine the qualitative analysis of the humanities with the quantitative analysis of science and engineering in my future career.

Faculty Mentor:
Ron Pen, Ph.D.
Department of Music

I am pleased to be able to commend Andrew Lynch’s essay to you because it represents a student’s very real attempts to comprehend the affective power of music and describe the intangible in pragmatic ways.

Andrew is not a music major, nor is he a usual consumer/listener of music. What makes this startling is that this is the one piece of music that has somehow captured his attention, and he naturally wants to know why this is so. This essay is incited by genuine personal curiosity so it is intensely subjective. At the same time, it is a thoughtful rumination and analysis of the music itself, so it is completely objective. Thus, Andrew marries the subjective and objective in gaining insight into the musical material that creates the emotional affect of a musical composition. This is not, strictly speaking, a research paper, but it is not a creative bit of prose either. It is a thoughtful meditation and analysis upon a musical work that has surprisingly haunted the author. He has created a genuine and largely effective essay on his relationship to the Moonlight Sonata.

Abstract
An analysis of the first movement of one of Beethoven’s most popular sonatas, the Moonlight Sonata, by a chemical engineering major who is a relative outsider to music. Analysis proceeds systematically: line by line and stanza by stanza. The goal of this analysis is elucidation of Beethoven’s methods for producing the atmosphere of haunting desire which pervades the piece.

Introduction
I don’t own a single music CD. I don’t download music off Napster or Kazaa. While I occasionally listen to radio in the car, I usually just listen to news and talk. I really don’t “listen” to music at all in the colloquial sense. There is one exception to this: Beethoven’s Piano Sonata Opus 27 No. 2 in C Sharp Minor. It is better known as the “Moonlight” sonata, or, as he called it, the “Quasi una fantasia” or “Like a Fantasy” sonata. Ever since I first heard it a few years ago I have been captured by it, inspired by it, and haunted by it. This is the main reason I chose to analyze it. I want to understand why it has exerted such a hold over me. In this regard, its simplicity adds to its mystery.

The fact that it is a solo piano sonata of simple melodic form makes me even more interested in dissecting it. A last feature that draws me to the Moonlight Sonata is that I have no associative connection to it through such avenues as meaningful lyrics, movie soundtracks, or early childhood memories. It does not remind me of some sad breakup or of the first battle in Gladiator or of some pleasant experience I had when I was young. I am enraptured by the Moonlight Sonata for its sake alone. I cannot say this for any other piece of music.
The Ostinato Triplet
I will now focus my attention on analyzing the beating heart of the *Moonlight Sonata*: the rolling triplet accompaniment and the accompanying melody. I consciously use the word “accompanying” because the harmony is so integral to the haunting atmosphere of the piece; it is the most recognizable musical feature of the work. The sonata is played in 4/4 meter and proceeds at a relaxed, almost lethargic tempo, adding to the dreaminess and fantasy it epitomizes.

The sonata is divided into three movements, the first of which is the most well-known and celebrated. Because this is the part of the sonata I associate most strongly with the piece, because it is the part I most enjoy, and because of the space constraints of this analysis, I will focus my analysis on this movement. It starts with the ostinato triplet that figures prominently throughout the sonata. This repetition is highly effective; it contributes to the feeling of emotional brooding that develops in the sonata and also functions to tie the different portions of the movement together. Figure 1 shows this opening ostinato triplet.

The entire first movement is played mostly pianissimo (quietly) and no louder than mezzo-forte (moderately loud); as Beethoven dictates, it should be played “as delicately as possible and without dampers.” This technique applied to the somber, ostinato triplets sets the mood and creates a deep, dream-like atmosphere. The depth of this atmosphere is then enhanced by the melody (right hand of the piano player), shown in Figure 2.

The Melody
While playing a seemingly small role in this part of the work, the melody transforms the simple ostinato triplet into an introduction to a dream. The melody is subtle, and many listeners do not notice the long, deep notes of the melody at this point in the piece. The ostinati triplets continue, as does the melodic accompaniment. In the next two stanzas the key is transposed upward slightly, by half a step (Figure 3), but this subtle shift changes the sense of brooding and dreaminess of the first two stanzas into a feeling of hope near joy — a pervading optimism, yet ultimately a fragile and short-lived one. In the last two stanzas the pitch center returns to its original key, then falls further, as a deepening sense of doubt develops. This evolves into a delicate climb in pitch from very low to higher than it has ever been, producing a feeling of lamentation, of loneliness, desperation, and lack of hope. It is like a moment of quiet yet intense introverted sadness, a solitary yearning question posed to God and the world as to why things must be the way they are.
Elaboration
The next few stanzas (Figure 4) repeat this climb and elaborate on it. This changes the initial moment of desperation and anguish to a more controlled feeling of emotional confusion, sadness, and loneliness. It is as if the song gets a hold of itself after a moment of madness and returns to its normal state of longing and depression.

A few stanzas further on, a new form of the triplet ostinato is encountered, this time with an extremely low pitch (see arrow in Figure 5).

This is soon followed up by an even lower set of ostinati triplets coupled with an even more dramatic ascension in pitch (Figure 6).

New Depth and Emotion
One might expect the new depth in pitch and subsequent higher ascents to mark a point of even greater madness and even greater anguished desperation than in the first lowering in pitch, but this is not the case. Because the melody is now higher than the triplet harmony, the ostinati now create an impression of fatigue and pleasant sleepiness. It is as if the intense anguish and desperation of earlier stanzas has taken a great deal of energy out of the sonata and it is tempted to surrender to sleep and forget its worries.

However, it is not sleep that is suggested but, rather, the incredible sense of longing that I regard as its most central emotion. At this point the longing is expressed in a series of climbs up and down wild plunges and mad ascents but within the bounds of the delicacy engendered by the sonata (Figure 7).

The ascents at times feel unwieldy, as if the sonata is thinking, both mentally and emotionally, too fast and it begins to lose its footing through the wild ascents to the heights of love, triumph, and euphoria, and the descents to the depths of loneliness, destruction, and anguish. Throughout, though, the melody keeps a long, low, somber accompaniment that serves to anchor the harmony and allow the piece to reach equilibrium again (Figure 8).
The Triplet Again
Here we return to the initial triplet ostinati that we started with and a melody of even greater power due to the initial inclusion of three-note chords. The feeling of longing begins to deepen. We begin to forget the first burst of desperate madness, the feeling of fatigue thereafter, and the swooning ascents and descents of a heart and mind feeling too fast. We settle into the rhythm we began with, the beautiful, haunting triplets ostinati that imbue a sense of solitude yet not desperate loneliness, poignancy yet not anguish. We are left beyond all else with a feeling of reach exceeding grasp, of a desperate, all-encompassing longing for love and heaven and triumph that requires a sacrifice of comfort and peace. We are left with a fragile hope that holds off encroaching doubt. And yet, through all this, the Moonlight Sonata expresses a sense of inexplicable meaningfulness and richness. It leaves us wanting more, our hearts full to bursting with hope and doubt, joy and pain, love and loss. What we are left with are the following two phrases (Figure 9).

Finale
This finale of the movement is highly appropriate. The earlier ascents and descents in pitch are imitated in much more restrained fashion and with a delicacy that suggest the brief time when one wavers between consciousness and sleep. The increasing feeling of balance and peace is reflected in the last two sets of chords, which for the first time are of both high and low pitch together. This final set of melodic chords brings the feeling of sleepiness to fruition through their extremely soft and delicate pianissimo expression and the first movement of the Moonlight Sonata surrenders to the moonlight and fantasy of dreams that it so embodies.

Acknowledgements
I would like to thank Professor Ron Pen for his generous willingness to help a music illiterate analyze a sonata of such nuance. Without his help this paper would not have been possible.
I am currently a junior at the University of Kentucky majoring in International Economics and Foreign Language (Japanese). I am also a student in the Honors Program. Other activities include being an active member and treasurer of Sigma Alpha Epsilon fraternity. This research pertains to data gathered in Japan while I was there during the summer of 2006. The yearly trip to Japan, set up by Professor Karan, gives students an opportunity to develop a research idea and pursue it throughout the summer abroad. I was initially interested in the clash between traditional Japan and the modernization of capitalism. Professor Karan helped me narrow my subject down to study specific areas of business and how they were being affected by the developing economy. The project in Japan gave me an opportunity to collect data, statistics, and interviews on a subject that I was interested in studying. Looking back, there were many challenges that came with Professor Karan’s study abroad trip (language barrier, culture shock, etc.) but the difficulties made the concluding product much more fulfilling. In the future, I would like to work with a business involved in international commerce. Hopefully, the study of the Japanese language will aid me one day in the pursuit of this goal. Japan is a fascinating country filled with a rich history and a promising future; I want to thank Professor Karan for challenging me to go there and collect research on their changing economy.

Introduction
Structural, technological and regulatory change has swept retailing in most parts of the world. Retail outlets have become larger, more consolidated into chains, and less tightly regulated by governments. Reconfiguration of retailing has led to empirical and theoretical research into the spatial results of competition among individual shops and malls. Generally, explanations of shopping behavior based on rational choice models have proved inadequate, because the economic act of shopping is both cultural and social. A number of studies at very different scales have shown that place matters in determining retail habits (Johnson and Johnson, 1991; Simmons, 1991).

Japan’s retail market, estimated at $1.2 trillion, is the world’s second-largest after the United States. Japanese consumers demand high levels of quality and service. A complex network of distributors and wholesalers serve the retail trade. Many retailers in Japan are moving from traditional shopping arcades to newly built malls. Some are erecting large format stores and training employees how to serve the customer. Other changes have come directly from the United States, such as opening a space at the entrance for stacks of low price items, displaying goods in their original shipping boxes and grouping together related products such as dog food and flea collars. The mall stores also have Japanese innovations, such as an Ikea-style padded area where children can play while parents shop.
In this paper, the changing retail geography in Japan is analyzed, based on field research conducted in summer of 2006 in Yatsushiro, a city of 200,000 on the island of Kyushu. A medium-sized city was selected for this research because it reflects more accurately changes in retailing in Japan as a whole. Yatsushiro is nestled on the west coast of Kyushu, one of the four main islands of Japan. About the size of Holland, Kyushu consists of roughly 44,000 square kilometers, has a population of 14.7 million, and a Gross domestic Product (GDP) of 48.7 trillion yen ($413 billion), each respectively about 10 percent for Japan as a whole. Japanese, therefore, say Kyushu accounts for a tenth of the nation’s economy. In recent years major Japanese manufacturers such as Toyota, Canon, Nissan, Daihatsu Motors, NEC, Toshiba, Fuji, and Sony have made major capital investments in the region surrounding Yatsushiro. The growth of the automobile, semiconductor, and electronics industries within Yatsushiro hinterland makes the city an ideal location to observe the changes in shopping behavior and retail geography.

The Study
Over a period of four weeks in June/July, 2006, I collected data on shopping behavior and retailing in Yatsushiro City, Japan. The data collected through field observation was supplemented with relevant archival data from the Yatsushiro Government Building. Spending four weeks in Yatsushiro city gave me a unique opportunity to understand and evaluate the challenges facing the small, local business owners. Further perspective was gained by thoroughly interviewing two citizens who were being personally affected by these changes. Field experience, along with data, provides validity and value to this research.

Optimally, it would have been best to provide a more comprehensive report on the economic conditions of small business owners throughout Yatsushiro City. With the constraints of limited time and resources, I narrowed my study to businesses in Hon Machi One and Hon Machi Two. The arcade shopping area in Hon Machi One and Hon Machi Two are losing a large portion of their business; moreover, a significant percentage of these stores are closed, for sale, or for rent. I limited the boundaries for my research to include only the first floor businesses in Hon Machi One and Hon Machi Two, which are located under the new roof of the arcade.

The total number of buildings within these boundaries is one hundred and twenty. There were fifty six buildings in section one of Hon Machi and sixty four buildings in section two. For a visual interpretation, Figure 1 outlines the boundaries of my research, and clearly labels the separate sections of Hon Machi examined. Though some of the store names have changed, this figure accurately depicts the breakdown between Hon Machi 1 and Hon Machi 2, the location of the stores surveyed, and the proximity of closed businesses.

With these boundaries in place, I began to gather data. On several occasions throughout my four weeks in Yatsushiro, I rode to the arcade during morning, noon, and night. As my visits to Hon Machi One and Hon Machi Two increased, so did my familiarity with each shop’s respective “hours for business.” Moreover, I began to identify and chart the buildings that were closed. On my last few visits to the arcade, I began confidently to categorize each of these buildings as closed (no sign), for sale, or for rent. All three categories combined in both sections of Hon Machi gave a total number of twenty-one closed businesses. Based on my observations, there were a total of thirteen buildings that were closed without a
A Saturday morning in the Jusco Mall reveals a much livelier scenario. Shoppers are lined up at the market to get the relatively cheap prices offered by these large, outlet stores.

With nearly one fifth of the businesses in Hon Machi One and Hon Machi Two closed, I began to gather data on the factors that led to their economic decline. Normally, a business closes when it does not make enough profit; specifically, when expenses exceed revenue by a substantial amount and the owners decide to “cut” their losses. In regard to the small, family owned businesses in the arcade, the shops were not selling enough merchandise to cover expenses. During several observational studies in Hon Machi One and Hon Machi Two, it was apparent that the lack of sales was due to a lack of prospective shoppers. So the question for this portion of data collection became, “what were the main factors that influenced a person’s decision to not shop in the arcade of Hon Machi One and Two?”

Undoubtedly, one of the most crucial factors influencing the area’s poor attendance was related to the arcade’s location. Historically, Yatsushiro was a castle town in the Edo Period. Therefore, the construction of the streets was related to protection and fortification, not for ease of public travel. The arcade is located in an area of Yatsushiro that has not seen much restructuring and development of streets. In fact, its position is quite awkward, with limited accessibility by way of a narrow road and obscure entrances. In our interview, Masahiro Nagae expressed concern with these issues: “They (the government) need to develop parking lots and the roads that go to them...
because they are very complicated. They must make it easier to get in and out.” The same concern is reflected in an article by the Niigati Chamber of Commerce that relates the attitudes of small local retailers that have little capital and even less parking (Niigati, 2006). The article is written from the perspective of the shopkeeper who must remain competitive, though handicapped by small space and the lack of parking facilities. Unfortunately, I observed that the problem of difficult accessibility into the arcade has become crippling to shopkeepers, due to a rise in ownership of automobiles. The fact that the majority of shoppers come into the arcade via bicycle made it clear that a lack of parking facilities for automobiles led to a lack of customers. When I brought up a question regarding the lack of customers to Masahiro Nagae, a manager of the Hon Machi Development Association, this was the first connection he made: “Twenty years ago a family had one car; now a family has two or three cars. All these cars can not find enough parking in this area.” The inaccessibility of the arcade areas in Hon Machi One and Hon Machi Two is exacerbated by an increase in the abundance of automobiles. During my interview with Ms. Shizuko, owner of a 2nd floor tea shop in Hon Machi One and a resident of Hon Machi for fifty years, a perfect connection was drawn between the compounding problems of a difficult location and the growth in the number of automobiles. She said, “There are only three streets, each with a small parking area that doesn’t connect to the arcade. You must walk two to three minutes from the parking area to the arcade. Now, people don’t want to walk. They want to drive right up to their shops.” These factors contributed greatly to the lack of consumers in Hon Machi One and Hon Machi Two. Further research led me to the You Me Town and Jusco outlet malls, where a significant number of Yatsushiro’s citizens now decide to shop. My observational studies conducted at the two large shopping malls in Yatsushiro contrasted with my research at the arcade. Both the malls seemed bustling with shoppers and activity. Unlike the areas in Hon Machi, the malls were able to accommodate the rising popularity of automobiles, with wide, extensive parking lots. Along with the ease in parking, outlet malls like these also bring in customers with a vast number of products for a relatively cheap price. Jusco was one of the two outlet malls I studied in Yatsushiro. Jusco finds its consumer base by means of the chain’s product diversification, large space, and “everyday low prices” (International Journal of Retail and Distribution Management, 1997). There is no doubt that all of these factors have led to an abundance of shoppers at these malls and a staggering lack of consumers in Hon Machi One and Hon Machi Two. Figure 4 is a chart based on statistics obtained from City Hall, collected by the Yatsushiro Government. It represents the number of people visiting my specific areas of study on a random weekend in time. Take particular note of the constant drop in attendance, within every section of Hon Machi studied, since the opening of the Jusco and You Me Town malls.

Conclusions
The drastic drop in attendance in Hon Machi One and Hon Machi Two represent the difficulty that the large outlet malls create for small retailers. Unable to compete with the low prices, extensive parking, and vast variety of products, many of the small businesses are forced to close. My interview with Masahiro Nagae gave me insight into the changing attitude of the Japanese consumer. He said, “Now people think cheap is best; big malls get products at a low price. It is hard for small stores to compete with their price.” Examples of the average citizen’s concerns include destruction of history and traditions that are related to the local arcades within

Figure 4.

A Saturday afternoon in Hon Machi reveals relatively no consumers. The shop owners struggle mightily because of this lack of shoppers.
the Kumamoto Prefecture (Fukuoka, 2006).

The economic devastation in Hon Machi One and Hon Machi Two is extensive, to say the least. Though they seemed to be competing with an unbeatable retailing giant, the shop owners of Hon Machi One and Hon Machi Two are not giving up. Within the last three years the government has invested large sums of money to promote the arcade’s revival. The biggest contributions were to fund the construction of the new roof and the building of a new road to the arcade. Masahiro Nagae of the Hon Machi Development Association said that they were beginning to see an increase in consumers after the construction; unfortunately, the opening of Jusco made their remodeling inconsequential. The owners of Hon Machi businesses hold community functions, established a drum team, and put on plays to showcase their originality to the citizens of Yatsushiro. Ms. Shizuko told me that the owners want more customers without having to support drama, a drum team, and movies. She believes that the owners of businesses in Hon Machi should rely on their strengths relative to the big outlet malls. “The elderly love to talk to somebody. The large shopping malls like You Me town are too noisy for them and it is difficult to find a particular product.” The answer to how traditional arcades in Japan survive the changing geography of retailing is unknown and, unfortunately, Hon Machi seems to be heading toward the common pattern of arcade closure.

The data gathered in the field in Yatsushiro suggests that Hon Machi One and Hon Machi Two are in a desperate state. The arcade area is handicapped by the area’s difficult location, and the problem is compounded by the lack of parking and the growing popularity of cars. Instead of the traditional arcade, the consumers are choosing to shop at large outlet malls like You Me Town and Jusco in order to park conveniently and buy a variety of cheap products. Unfortunately, this economic struggle between the traditional arcade and the massive retail outlets is taking place all over Japan. Nashima relates this nationwide issue: “The number of traditional downtown arcades in Japan is fast falling into decay with one shop after another closing down. The hollowing out of downtown areas has become an epidemic, with roughly 90% of the total 18,000 traditional shopping districts nationwide facing some sort of problem” (Nashima, 1997). Using Hon Machi One and Hon Machi Two as case studies, I conclude that the data gathered in regard to the effects that complex location, insufficient parking, an increase in the number of automobiles, and the retailing competition from large outlet malls have on Japanese arcades is overwhelming. With all these compounding pressures against traditional retail arcades, the staggering percentage of closed shops in Hon Machi One and Hon Machi Two is justified.

References

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I want to give special thanks to my faculty mentor Professor Karan of the geography department. Without his advice, guidance, and enthusiasm this experience would not have been possible. I would also like to thank my parents for their unfailing support and encouragement. Thank You!

The parking lot at You Me Town Mall is filled with the cars of consumers. Without a doubt, business at Hon Machi has been hindered by its lack of such parking facilities.
I graduated from the University of Kentucky Summa Cum Laude in May of 2007. I received a Bachelor of Science degree with honors in mathematics, and a minor in statistics. During my tenure at UK, I spent time working as a peer mentor in the AMSTEMM program; as an ambassador for the College of Arts and Sciences; as a math tutor in coordination with the Appalachian Math Science Partnership; and as the baseball beat reporter for the student-run Kentucky Kernel. I am a National Merit Scholar, have appeared on the Dean’s List seven times, and last year received the Carolyn S. Bunyan Scholarship for outstanding mathematics undergraduates.

Upon graduation, I plan to attend law school, where I will continue to pursue my dream of working in the front office of a major league baseball team. I am currently employed for the third consecutive season by the Lexington Legends, where I perform game-day duties in the press box. Everyday, I see the results of baseball’s antitrust exemption played out before me.

I would like to thank Professors Joanna M. Badagliacco, Robert S. Tannenbaum, and Harold R. Weinberg for their help in getting this project off the ground. Without the careful guidance they each provided, this project likely would have never even taken place. All of them have proven critical to the success of this task.

Mentor:
Harold R. Weinberg
Wyatt Tarrant & Combs Professor of Law;
Associate Dean for Administration

Mr. Mabry’s paper is significant because it views the structure and operation of minor league baseball though the lens of antitrust law and economics. This approach yields practical insight into how the sport operates, including information obtained directly from the top executive officer of a minor league baseball team. The paper provides critical insight into the sport as it is under the current “antitrust-free” legal regime and as it might become if subjected to antitrust scrutiny.

Mr. Mabry’s paper is of superior quality. It demonstrates a solid mastery of the relevant fundamental antitrust principles and provides considerable legal and factual background concerning the antitrust exemption and related matters. Mr. Mabry synthesizes all this into a paper that is substantive, thoughtful, transparent, and very interesting.
Introduction
Antitrust law and baseball are intertwined in such a way that they may never be completely separated. Ever since the Federal Baseball decision in 1922, baseball has been exempt from the governance of federal antitrust law. Although its effect on the player-owner relationship in the major leagues is barely felt today, the exemption’s power still holds strong in the minor leagues, where players work at their craft under an antiquated reserve system that stifles their ability to earn what they are truly worth. Ironically, it is that very reserve system that allows the minor leagues to exist. This discussion will cover several relevant points of interest to this topic, including the genesis of the antitrust laws; the creation of baseball’s exemption to those laws; the players’ struggle to skirt that exemption; and, finally, the piece will settle on a discussion of what this situation means to the minor league franchises and cities that thrive on baseball’s lower ranks.

Antitrust Law and Sports
The legislators of the late nineteenth century were concerned with business concentration; the acquisition of monopoly power by American companies; subsequent wealth transfers from consumers to monopolists; and the ever-present links between economic and political power. In an effort to respond to these populist concerns, encouraging competition and lowering prices for consumers in the process, Congress passed the Sherman Antitrust Act in 1890 (Sullivan and Harrison, 2003, p. 3). Section One of the Act states:

Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court. (15 U.S.C. §1)

Section Two of the Act similarly provides:

Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $10,000,000 if a corporation, or, if any other person, $350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court. (15 U.S.C. §2)

These two sections make up the primary provisions of the Sherman Act, which spans seven sections. Sections One and Two create a sort of dichotomy, whereby defendants are usually only reasonably eligible to be prosecuted under one rule or the other, although it is quite common for a plaintiff to allege violations of both sections as a legal strategy. This application of the law rises from the idea that it would be impossible for a firm to “combine” with itself and thus violate Section One. Therefore, although it is possible for a single entity to violate the Sherman Act’s first section by restraining trade through a monopoly, single entities are normally liable under the first section only if there is a strong case against the firm in question under Section Two, which forbids monopolization of an industry. Similarly, it would be difficult to prosecute multiple firms under Section Two, because a monopoly, by definition, involves only one firm providing a product or service. Of course, there are exceptions to this rule as well, as “shared monopoly” theories exist. However, in general, plaintiffs alleging actions by two or more firms conspiring in restraint of trade would be advised to bring complaints under Section One.

Sports leagues are typically prosecuted under Section One, and so a league will commonly claim to be a single entity in defense of its actions. Prosecution of a league under Section Two, while possible, is difficult. It must not only be shown that the league has monopoly power, but that it also has undergone efforts other than market competition to achieve or maintain this power. (Sullivan and Harrison, 2003, p. 299)

Assuming that a league is not a single entity, there is still another hurdle for potential plaintiffs to scale. Antitrust court decisions fall into one of two categories: “per se” violations are actions that violate the antitrust laws so directly that it is very unlikely that any legal justification can be given; “rule of reason” violations, on the other hand, must be shown to have anti-competitive effects that are so great that they outweigh any pro-competitive benefits the agreement in question provides. Since the Supreme Court decision in National Collegiate Athletic Association v. Board of Regents (1984), in which the NCAA (the National Collegiate Athletic Association) was sued by The Universities of Oklahoma and Georgia for its restrictive football television contracts, sports leagues have been evaluated under the “rule of reason” doctrine. This decision has automatically added an extra layer to any antitrust proceeding involving a sports
league. The Court explained its decision to move to a “rule of reason” approach by acknowledging that some restraints on competition are necessary for sports leagues to exist (468 U.S. 85 at 103).

Another prominent antitrust statute that has importance to the operation of sports leagues is the Clayton Antitrust Act. It was passed in 1914, and was meant to close perceived gaps in the Sherman Act. Additionally, the legislature was not pleased with the construction of the “rule of reason,” which was crafted in the court system. Many parts of the Act, which spans sixteen sections, have few applications to sports, and are rarely if ever seen in sports antitrust trials. However, Section Six of the Act has produced an important consideration for negotiations with a union:

The labor of a human being is not a commodity or article of commerce. Nothing contained in the antitrust laws shall be construed to forbid the existence and operation of labor, agricultural, or horticultural organizations, instituted for the purposes of mutual help, and not having capital stock or conducted for profit, or to forbid or restrain individual members of such organizations from lawfully carrying out the legitimate objects thereof; nor shall such organizations, or the members thereof, be held or construed to be illegal combinations or conspiracies in restraint of trade, under the antitrust laws. (15 U.S.C. §17)

This section was crafted in response to some court decisions in which labor unions were found to be in violation of the Sherman Act. (Kaiser, 2004, p. 239) The language here essentially allows labor unions to exist, exempting them from antitrust legislation. This is known as the “statutory” labor exemption. Furthermore, the Supreme Court has adopted a “nonstatutory” exemption for labor regarding the results of the process of collective bargaining. Out of deference to the National Labor Relations Act (NLRA), courts have held that terms agreed upon during collective bargaining are exempt from antitrust law, no matter how uncompetitive the terms are. (Kaiser, 2004, p. 240)

The antitrust laws described to this point have caused sports leagues in the United States some problems in the past. As was mentioned above, a pair of universities successfully sued the NCAA under federal antitrust law for forcing its member institutions to enter into television contracts that limited their potential exposure and revenue in order to give other institutions an equal amount of attention. In the professional arena, the NFL (the National Football League) was forced to allow the Oakland Raiders to move to Los Angeles in Los Angeles Memorial Coliseum Commission v. National Football League (1984). Many other antitrust actions have been taken with varying results. However, professional baseball is exempt from nearly all antitrust suits. This exemption stems from a decision that was handed down by the Supreme Court in 1922: Federal Baseball Club of Baltimore v. National League (1922).

**Baseball’s Antitrust Exemption**

In the Federal Baseball case, a team from Baltimore that was a member of the Federal League sued the major leagues. The Federal League was the last legitimate rival to the National and American Leagues at that time. The Baltimore Terrapins claimed that the major leagues had conspired to prevent Baltimore from becoming a viable franchise by denying them access to major league players with the reserve system, which bound players indefinitely to the franchises that had signed them originally.

Initially, the Supreme Court of the District of Columbia ruled in favor of the plaintiff for damages of $80,000, which were trebled under Section Four of the Clayton Act. (15 U.S.C. §15) However, the Court of Appeals of the District of Columbia reversed the decision on the major leagues’ appeal, and the U.S. Supreme Court unanimously affirmed the reversal. Associate Justice Oliver Wendell Holmes, Jr. wrote the opinion for the Court and memorably proclaimed:

> The business is giving exhibitions of baseball, which are purely state affairs. It is true that, in order to attain for these exhibitions the great popularity that they have achieved, competitions must be arranged between clubs from different cities and States. But the fact that in order to give the exhibitions the Leagues must induce free persons to cross state lines and must arrange and pay for their doing so is not enough to change the character of the business. (259 U.S. 200 at 208)

Justice Holmes was addressing one of the primary requirements for a federal antitrust violation, that is, the defendant must have been involved in interstate commerce for prosecution under federal law. Having found that baseball did not involve interstate commerce, Holmes rationalized that Baltimore’s antitrust claim could go no further. This decision, however, did not simply prevent the Baltimore club from receiving damages. It effectively exempted professional baseball from federal antitrust statutes altogether.

Thirty-one years later, George Toolson tested baseball’s exemption in Toolson v. New York Yankees (1953). Toolson was a player in the Yankees’ farm system. When the Yankees attempted to demote him from his position with Newark of the International League to a team in Binghamton of the Eastern League, he refused to report. The Yankees “blacklisted” him, effectively ending his baseball career, and Toolson brought action against the team in protest of the reserve system.

In a one paragraph opinion, the Court reaffirmed by a 7-2 margin the existence of baseball’s exemption, and explained that Congress had done nothing to attempt to alter the decision in Federal Baseball; baseball had been permitted to develop since the Federal Baseball decision with the understanding that it was exempt from federal antitrust law; and legislation should be the means by which this exemption is overturned in order to follow the doctrine of stare decisis, under which it is necessary for a court to follow earlier judicial decisions when the same points arise again in litigation (346 U.S. 356 at 357).

In 1972, the Supreme Court heard an argument against the reserve system and the antitrust exemption...
for the final time in *Flood v. Kuhn* (1972). Curt Flood was a centerfielder for the St. Louis Cardinals. In 1969, he was traded to the Philadelphia Phillies, a move which he opposed. He petitioned Bowie Kuhn, baseball’s commissioner, at the time, for free agency, but was rejected. In response, he brought suit against the commissioner.

This scenario was similar to the one presented in *Toolson* in many ways, and predictably, a verdict similar to the one given in *Toolson* was delivered. Associate Justice Harry Blackmun wrote the opinion of the Court, which decided by a 5-3 margin. In his opinion, Justice Blackmun acknowledged that baseball’s exemption was unique, but refused to overturn *Federal Baseball* for the same reasons mentioned in *Toolson*. He repeated the *Toolson* Court’s demand that Congress make any changes in the application of this precedent.

Considering the weight of precedent in the court system’s decision-making process, baseball’s exemption seemed almost impenetrable. The reserve system looked like an immovable establishment. However, by 1968, the seeds had already been planted for the end of baseball’s reserve system in the major leagues.

The End of the Major League Reserve System

The Major League Baseball Players Association (MLBPA) had been the players’ formal bargaining representative since 1954, but the players had not taken the initiative of negotiating a collective bargaining agreement (CBA) under the National Labor Relations Act until 1968. The first CBA was simple, and essentially maintained the status quo, but it was important because it established a dialogue between the MLBPA and baseball’s owners.

In 1970, the players and owners established an arbitration panel with a mutually selected chairman. The panel would resolve disputes between the two sides involving any subject besides “the integrity of baseball,” which remained under the commissioner’s discretion. Three years later, at the expiration of the 1970 agreement, the players asked the owners for free agency. After a bargaining session, the owners agreed to allow players with two full seasons of major league experience to have their salaries determined by an arbitrator. The agreement also contained language that gave players who had played in the league for at least ten years, the last five of which having been with the same team, the right to veto any trade involving himself (Major League Rule 9(e)). If this agreement had been made four years earlier, Curt Flood would have had the right to choose to stay with the Cardinals.

Finally, at the conclusion of the 1975 season, the MLBPA was able to end the reserve system in the major leagues just three years after the *Flood* decision. Two players, Andy Messersmith and Dave McNally, refused to sign their standard contracts. They took their cases to arbitrator Peter Seitz, whose role had been written into the previous CBA. Seitz determined that the reserve clause did not constitute an indefinite right of renewal, but rather entailed a one-year team option — in other words, the clause only gave the team the ability to renew the player’s contract for one year after the first contract was signed. Essentially, the players had been granted free agency.

The owners attempted a lockout in response, but Commissioner Kuhn ordered the spring training camps to open to begin the 1976 season. A new CBA was reached during the summer, and free agency was officially written into the agreement. The players accepted a few owner-proposed restrictions that delayed true free-agency for several years after a player’s big-league career had begun, but the major league reserve system was weakened beyond the point of recognition.

Additionally, in 1998 Congress passed the Curt Flood Act. The Act proclaimed that baseball’s exemption from antitrust law as it concerned the relationship between players and management had been repealed (15 U.S.C. §26b). Occurring forty-five years after the *Toolson* Court had made its initial plea for a Congressional ruling, the Act amounted to little more than political posturing. It came in the wake of the struggle that characterized the relationship between the players and the owners in the 1990s, which saw a player strike that resulted in the cancellation of a World Series. Now that the players and owners negotiate by means of CBAs, federal antitrust law has little, if any, effect on the discussion. The nonstatutory labor exemption exempts the owners from prosecution for any anticompetitive measures they might choose to take, and the players have no need to use antitrust to get their way; the NLRA allows them all the bargaining weapons they require (Kaiser, 2004, p. 230).

It may have taken a century of work and negotiation, but the reserve system has been put to rest in the major leagues. However, its legacy lives on in another form: Minor League Baseball, without the benefit of a players’ union, has maintained a reserve system since its establishment.

The Minor Leagues

Minor League Baseball (MiLB) is a collection of twenty professional baseball leagues comprised of the affiliates of Major League Baseball (MLB) teams. These teams and leagues are independently owned, but operate in concert with MLB; this is most prominently demonstrated by the fact that the contracts of the players on each team are owned by the major league team with which the minor league franchise is affiliated. The minor leagues consist...
of several distinct levels, namely Class AAA, Class AA, Class A, Short-Season A, and Rookie. Class A is further subdivided into Short Season Class A, Full Season Class A, and Class A-Advanced; Rookie leagues are also sub-classified as Rookie or Rookie-Advanced (National Association Agreement, Section 10.02(d)). Players are drafted and/or signed out of high school, college, or foreign countries by a major league team and assigned to a low-level minor league team. As their skills improve and they gain more experience, they are transferred to a team on a higher level, with the eventual goal of getting to AAA, and then to the major leagues.

The relationship between MLB and MiLB is governed by an umbrella contract called the Professional Baseball Agreement (PBA). It is re-negotiated every seven to ten years (the current PBA was made effective on October 1, 2004, and runs through September 30, 2014), and includes a provision allowing the agreement to be terminated in the event of a work stoppage or a change in the application of antitrust law to professional baseball (Professional Baseball Agreement, Article III (A) (1-4)). MLB and MiLB have negotiated PBAs since 1992. The PBA provides stability to the minor leagues, because the relationship between MLB and MiLB was only loosely organized before 1992 (Stein Interview). Among the issues governed by the agreement are: a provision for a percentage of MiLB’s ticket revenue to be paid to MLB (5.5% in 2007, set to escalate to 7.0% by 2011); a requirement that a minor league team should vacate a territory in return for fair compensation if a major league team should move into said territory; allowances for MLB to conduct marketing campaigns in minor league stadiums and have access to all telecast feeds of minor league games; and, most pertinent to this discussion, the assurance that the MLB teams will maintain a Player Development Contract (PDC) with each of at least 160 minor league teams each season.

The standard PDC is contained in Rule 56 of the Major League Rules, which are negotiated between MLB, MiLB, and the MLBPA. The PDC is not permitted to be changed, and a maximum $500,000 fine is written into the agreement as a deterrent to any team attempting to modify or add to the PDC (Major League Rule 56(a)). PDC agreements are made between a minor league and a major league club, are only permitted to be made for either two or four year periods, and terminate automatically if a new PBA is negotiated (Major League Rule 56(c)). The PDC divides all the expenses associated with the operation of a minor league franchise between the major league and minor league clubs, from travel expenses all the way down to the bats and balls used on the field, and even includes provisions for items such as telephone service to the field manager’s office in each clubhouse. While salaries for players, coaches, and trainers; some equipment expenses; and hotel rooms are paid for by the big league club, the minor league team is responsible for most of the day-to-day expenses associated with the operation of the team. In addition, Major League Rule 58 establishes minimum facility standards for minor league venues. This rule governs everything contained in a stadium, from the number of seats for spectators down to the brightness of the lights shining on the field (Major League Rule Attachment 58).

The minor league franchise has no control over what players, coaches, and trainers are assigned to it by the major league team with which it is associated. Players are commonly promoted or demoted one or more levels by the major league management. Often, a change in affiliation at the expiration of a PDC is not initiated by the major league club, but instead by a minor league club whose ownership feels it is not being provided enough talented players by the major league club to be a successful attendance draw (Stein Interview).

The minor leagues are a great asset to Major League Baseball. They are not only a place where many major league stars are developed, but also generate fan interest; supply a pool of readily available players when current major leaguers become injured or lose effectiveness; provide a place for major league players to rehabilitate from injury; and corner the market on nearly all available talent, making it essentially impossible for a rival league to form. Of course, there are other well-established barriers to entry for a potential rival league, including a lack of available baseball markets and the inability to attract media coverage.

A major league franchise will commonly have six or more minor league affiliates, four of which (Full Season Class A and above) play 140-game seasons beginning in April and ending in September. These minor leagues resemble the operation of the major leagues in many ways, with teams traveling from one member town to another to play three-to-four game series before moving on to another town or returning home to host a series. The leagues come complete with an all-star showcase at the season’s midway point, and hold playoffs in September, when the major leagues are conducting the final month of their season (Major League Rule 32(b)).

The teams that do not play full seasons begin play in late June, after the annual First-Year Player Draft. These leagues represent the lower levels of the minor leagues, and are typically stocked with players who have been acquired recently by the major league franchises out of high school or college.

Every player who is drafted must sign a Minor League Uniform Player Contract (MLUPC) in order to play in the minor leagues. The body of this contract is written in “eight point fine print and is divided into twenty-seven paragraphs covering subjects such as parties to the contract, schedule of payments, loyalty, dispute resolution, termination, governing state law, and pictures of players.” (Crownover, 1995, p. 228) This portion of the contract is not permitted to be changed. Another part of the contract allows for a signing bonus and other considerations. The minimum monthly pay schedule is strict and amounts to barely more than minimum wage for the players at the lowest levels. While baseball claims that player salaries are “open to negotiation,” a player has no leverage with which to
negotiate. His choices are limited to taking the salary offered by his team, or leaving baseball. As a player progresses through the minors, minimum monthly pay increases, but it never approaches the major league minimum salaries that have been collectively bargained through the MLBPA. The minimum for a player in Class AAA is $2,150 per month, which amounts to less than $10,000 per year in what is essentially a four and one-half month season (“General Minor League Information”). In contrast, the current major league minimum salary is $380,000 per year (2007-2011 Basic Agreement, Article VI. (B)).

The same reserve system that the major league players worked so hard to abolish is still at work in the minor leagues. Included in the MLUPC is a provision that allows the major league franchise to renew the contract with the player under the same terms for seven professional seasons including the one during which the contract was signed (Major League Rule Attachment 3 (VI.) (A.)).

If a player reaches the major leagues, the MLUPC is replaced with a major league contract, but the player can still be sent back to the minor leagues during a maximum of three separate seasons without the team having to fear the player’s acquisition by another team. Once a player has accumulated three professional seasons, the player must pass through a waiver process in order to move between the major and minor leagues, giving other major league teams the opportunity to claim his rights (Major League Rule 10(e)). Furthermore, the Rule 5 Draft (Major League Rule 5) permits major league teams the ability to select any player not retained on the forty-man roster, provided the selecting team keeps the player on its major league roster for the entire season.

These allowances provide little mobility to the minor league player. If they give assurance that the player’s service to a particular major league franchise will not continue indefinitely in the minor leagues, they barely meet this standard. By the time a player is free from the restrictions of the reserve system, much of his career has already passed. A player who has languished in the minor leagues for this length of time is very likely to become nothing more than a journeyman or a career minor leaguer. This is because most baseball executives stop considering a player a “prospect” around the age of 24, and studies have shown that the average player typically reaches his peak production at the age of 26 or 27. Many players enter the minor leagues at the age of 18, but an approximately equal number of players are drafted at the ages of 20, 21, or 22. Indeed, a player who has stayed in the minor leagues long enough to be free from the reserve system will almost certainly never become an established major leaguer.

The Minor Leagues without an Antitrust Exemption

No attempt has ever been made to challenge the minor league reserve system, but it is widely believed that the courts would follow the same logic that led them to reject players’ pleas in Toolson and Flood (Szuchman, 1996, p. 279). However, imagining for a moment that the exemption were overturned and baseball’s reserve system were found to be in violation of federal antitrust law, one can examine the effect that such an action might have on Minor League Baseball, which has always been the most persistent lobby against any legislative attempts to remove baseball’s antitrust exemption (Roberts, 1999, p. 413).

It is no secret that minor league player salaries are artificially depressed by baseball’s rigid salary structure. The salaries are set by Major League Baseball, with no input from the players or their agents. Logically, MLB would not create a salary structure that would award players more than their worth. Therefore, the only conceivable possibilities are that salaries are appropriate, or that they are depressed. However, with no reason given for the current salary schedule other than the general economic welfare of MLB, the idea that these figures are suitable is farfetched. Soon after the major league reserve system was abolished, salaries ballooned. There is no reason to expect any other potential result in the minor leagues. In fact, market forces imply that increases in compensation would be inevitable in a system of minor league free agency.

Baseball executives generally admit that minor league baseball players are underpaid. However, they argue, the players are working for the potential reward of one day earning a major league salary (Stein Interview). As such, their jobs are highly desirable. Furthermore, almost every player receives a bonus the first time he signs his contract. Most of these bonuses are relatively small ($25,000-50,000), but a few of them are valued in the millions. The first pick of the 2006 First-Year Player Draft received a $3.5 million bonus (“K.C.”). Still, the fact remains that the vast majority of minor leaguers never make it to the major leagues, and are left with next to nothing in return for their time and effort.

If salaries are artificially low, baseball claims, it is because they have to be in order for the teams to employ such a large volume of players. It is difficult to determine the exact number of players used by Minor League Baseball, because the number always fluctuates greatly during the season due to the First-Year Player Draft in June. However, a reasonable estimate puts the number in the thousands. While the actual number of players might be relatively unknown, it is easy to understand the ramifications if the reserve clause were lifted. Baseball already evaluates its expenditures on
the minor leagues to be in the hundreds of millions of dollars (Szuchman, 1996, p. 286). Allowing salaries to increase exponentially, the bill would quickly become too expensive to justify payment. It is no coincidence that none of the other major sports leagues in the United States have minor leagues that come close to rivaling baseball’s level of depth. The National Hockey League has two minor leagues (the American Hockey League and the East Coast Hockey League), while the National Basketball Association has a sole minor league, the National Basketball Developmental League. The National Football League does not have a minor league in the United States.

It is nearly certain that if the antitrust exemption were to be revoked, fewer players would be employed by Minor League Baseball. Without the ability to pay the players, the major league franchises would end their player development contracts with many of the minor league teams. Running on meager budgets, the newly abandoned minor league teams would not have the ability to pay player salaries, either. The degree of reduction in the number of affiliated players and teams would depend on what the major league franchises could afford, which would in turn depend on the extent to which salaries in the minor leagues increased. Minor League Baseball as we know it would be changed forever, and potentially eliminated.

Assuming a small increase in player salaries that could be managed by the major league clubs, free agency in the minor leagues would present still another problem. Obviously, along with free agency would come the ability for minor league players to change teams. As mentioned above, the major league clubs already invest a large amount of money in player development. Introducing the potential for players to “jump ship” after spending years in one club’s system would further discourage franchises from making such a large investment in player development (Stein Interview).

Some teams might revert to the independent minor league system that existed before Branch Rickey created the modern “farm system” in the 1930s. The independent leagues still exist today, on a much smaller scale. Major League Baseball would probably attempt to retain a small portion of the current minor league system by purchasing franchises in order to internalize the minor leagues and give them the protections associated with the labor exemption, but with the increased salaries, maintaining more than one team might not be possible. All MLB teams currently carry a 40-man roster, but only 25 players can be active major league players at one time. The remaining 15 players are held on minor league franchises, and the clubs could probably find the funds to pay these players, even in an inflated salary environment. In a predominately independent minor league system, players would play on low-budget teams for salaries at rates of pay likely commensurate with what they are paid in the minor leagues today, hoping to be noticed by a big league team. Top performers in the independent leagues would be signed by the major leagues and put directly onto team rosters. Most high school players would probably opt for college instead of the independent leagues, with few having the ability to leap straight to the major leagues. With Major League Baseball searching for methods to develop players, not only would the college ranks become a chief breeding ground for major league talent, but the international leagues would also play an increased role (Brand and Giorgione, 2003, p. 59).

Will Minor League Baseball Lose its Exemption?

Luckily for Minor League Baseball, there is little chance of a court ever ending its reserve system. Unwilling to overturn past precedent, the Supreme Court went so far in Toolson and Flood as to ask Congress for help in correcting the exemption. However, the Flood decision narrowly fell in management’s favor. If one Justice who had joined in the majority opinion had switched to the opposite side, the Flood Court would have reached a 4-4 split. With such a tenuous grasp of the majority, it makes sense to think about the ramifications if the minor league system were evaluated under the rule of reason.

Minor League Baseball is a half-billion dollar a year industry. Nearly forty million people attend games annually (“History”). It is safe to say that the minor leagues are a staple of American culture. As such, it is clear that the minor leagues have merit as an institution and, hence, should be evaluated with care. The minor leagues would argue that the pro-competitive benefits of the reserve system outweigh any anti-competitive effects. In fact, the idea that the minor leagues could not exist as they currently do without the reserve system would be one of the league’s strongest arguments. However, if the minor leagues were to adopt this argument, they would still be required to adopt the least restrictive means of maintaining the aforementioned pro-competitive benefits (Spander, 1995, p. 113).

Another potential argument would be that the minor leagues operate as a single entity, with the goal of producing major league players. Unlike the major leagues, winning a championship is often a secondary goal for minor league franchises. Indeed, the games often take on a side-show quality at the lower levels. Allowing the single-entity defense would remove the minor leagues from consideration under Section One of the Sherman Act, because a single firm cannot commit an antitrust violation against itself. This defense has not always worked well for other sports leagues (726 F.2d
of the laws to which it had been newly subjected, where then would MiLB turn? To the people who make the laws, of course. With franchises in about 40 percent of Congressional districts, Minor League Baseball has an exceptionally well-oiled lobby. In 1998, MiLB successfully lobbied to change the Curt Flood Act to explicitly state that it would have no effect on the antitrust laws’ effect on the minor leagues. The Curt Flood Act was mostly a political move made in the wake of the 1994 baseball strike to help foster a better relationship between MLB and the MLBPA. Written into the CBA that was ratified in December, 1996, was Article 28, a single paragraph that stated that MLB and the MLBPA would work together to make major league labor negotiations subject to federal antitrust law (2007-2011 Basic Agreement, Article XXVIII). When legislators eagerly adopted this opportunity for political point-scoring, they were met with fierce opposition from MiLB, which had a laundry list of concerns with the bill. In the end, MiLB was able to have all of its concerns addressed (Roberts, 1999, p. 437). This success indicates that legislators consider the minor league lobby to be an important one, and signifies that future successes might be obtained. The sheer number of fans who would be unhappily disenfranchised in the event of a minor league collapse under the weight of federal antitrust law would be reason enough for federal legislators to become involved.

Lastly, one quite obvious possibility has been overlooked during almost this entire discussion. What if the minor league players were to unionize? It worked for the major leaguers, as the MLBPA has expanded rights, freedoms, and salaries for MLB players since it began to flex its muscle in the 1970s. There is no question of the minor league players’ legal ability to create a union (Szuuchman, 1996, p. 297). Of course, the union would begin slowly, seeking few concessions in the beginning. Eventually, however, players would request salary hikes. A minor league union would not have the leverage that the MLBPA possesses — players in the minor leagues make less money; are more easily replaceable; and are more desperate to work, because good performance in the minors is a minor league player’s only viable route to the major leagues. Still, MLB would be forced to bargain with the players under the NLRA. While the players might not gain free agency, salaries would eventually rise. Many of the same outcomes discussed above would likely occur as a result of the increased costs. With major league teams already eating into some of the profits of their minor league clubs by asking for a larger and larger percentage of ticket revenue, increased salaries for players would put an even tighter squeeze on minor league ownership (Stein Interview). While the presence of a union might not have the drastic effects on MiLB that a change in federal antitrust law would, the unionization
of minor league players would undoubtedly have visible effects on the game.

Conclusion
Minor League Baseball relies heavily on the antitrust protection it has enjoyed since the dawn of its existence. It has developed with an understanding that the rules do not apply to it in the same way that they do to other leagues and businesses. While not necessarily devastating, destroying one of the cornerstones of this industry’s foundation would create a tremor that would be felt by citizens in every corner of the United States. Our system of laws and lawmaking makes the possibility of such an event somewhat remote, but as long as there are people behind these laws and their interpretation, anything is possible. There is no doubt that Minor League Baseball will maintain a vigilant eye with the goal of protecting its share of our national pastime.

Acknowledgements
Profs. Joanna M. Badagliacco, Harold R. Weinberg, and Robert S. Tannenbaum were all instrumental in the success of this project. Prof. Badagliacco was kind enough to help me find a home for this independent work among the University’s selection of independent study options. Prof. Weinberg met with me numerous times to hammer out the legal theory involved, and gave me a crash course in antitrust law that proved indispensable as I read cases and law reviews. Prof. Tannenbaum was the driving force behind the entire venture. He encouraged me to begin a research project, and did all the legwork in finding Prof. Weinberg and arranging our first meeting. It is completely appropriate to say that this project would not have happened if it were not for him.

Works Cited


“K.C. signs top pick Hochevar to 4-year, $5.3 million deal.” Associated Press. San Diego Union-Tribune. 6 August 2006.


Stein, Alan, President and CEO of the Lexington Legends. Personal interview. 1 May 2007.


I am currently a freshman biology major. Although I am majoring in the sciences, I have an avid interest in world politics and am a member of the Honors Program. Throughout this process, Professor Harry Mason has provided invaluable guidance to me. His expertise in this field was irreplaceable. This paper was presented at the Showcase of Scholars this April in an oral presentation. I also serve as a writer for the Triple Helix, a national undergraduate journal, which publishes articles related to all disciplines of science, a CATS tutor, and an officer in Tri-Beta and SPUR.

Abstract
This paper is intended to characterize the precarious situation the House of Saud is facing. By exploring previous historical and current events, this analysis provides an insight into the complex web the House of Saud has woven; analysis of these events allows a glimpse into the future for this political regime and the uncertainty it faces. This paper is not intended to offer a solution or support a particular course of action, group, or individual.

A Political Quagmire
The House of Saud currently finds itself at the heart of controversy. It is being pressured by the United States to be a key partner in the war on terror and to improve the quality of life for the average Saudi, while having to maintain its role as the guardian of the holiest sites of Islam, Mecca and Medina. On the other hand, numerous liberalizing forces believe that the country lags behind many Western nations and needs to increase the pace of modernization. The royal family is believed to be corrupt, and this does not please the general public. The House of Saud is walking a political tightrope by trying to placate those with whom it interacts, while trying to cement its role in the current political system. All these factors have resulted in an unstable political regime that has to constantly satisfy the wishes of others just to ensure that it remains in power.

In order to study the issue more closely, it is necessary to review the structure of the ruling family of Saudi Arabia and its relation to Wahhabism, the Islamic reform movement that follows the teachings of Muhammad Ibn Abd Al-Wahhab. In the mid 1700s, Muhammad Ibn Abd Al-Wahhab and Muhammad Ibn Saud agreed that any territory controlled by Ibn Saud or his heirs would adhere to the strict Islamic teachings of Al-Wahhab.
One of the main tasks of the Saudi monarch is to ensure that pilgrims have safe and easy access to the holy sites. The general populace was furious that innocent pilgrims were taken hostage inside the most sacred of all Islamic sites. After Saudi forces retook control of the mosque, the royal family tried to restore order, but some damage was already done. An unexpected effect of the takeover was that clerics ended up gaining an enormous amount of influence after realizing how much the Saudi government depended on them. (Keckichian, 61-62) Since then, clerics have wielded much power and advise the royal family on a regular basis.

During the Gulf War (1990-91), Saudi Arabia was a potential target of invasion by Iraq. Iraq had massed a huge army capable of conquering more than Kuwait. (Gold, 158) Saudi Arabia decided that it needed to defend itself and began to search for options, because its own army was not large enough. One option was the US military that could come into Saudi Arabia to lead the fight against Saddam Hussein. The other option was using Osama Bin Laden. (Unger, 143) Bin Laden suggested that the House of Saud allow him to use his mujahideen warriors so that non-Muslims would not be defending the holiest sites of Islam. He also promised to have more than 100,000 mujahideen warriors and to personally lead the fight himself. However, the Saudi government refused his offer and instead decided to let American troops defend the country. (Unger, 143) To many Muslim people across the world, this was an outrage. They perceived that the royal family gave up its religious legitimacy in exchange for support against Saddam Hussein; this created a rift within the population of Saudi Arabia. The royal family asked Sheikh bin Baaz, the grand mufti of Saudi Arabia at that time, to issue a fatwa that gave American troops permission to be stationed on Saudi soil during the Gulf War. (Lippman, 303) Although Sheik Bin Baz reluctantly issued the fatwa, many commoners and clerics were still furious with the royal family’s decision. Many clerics started to issue their own decrees that claimed the royal family was not fulfilling its role as the guardian of the holiest sites of Islam.

The presence of American troops on Saudi soil brought great concern to the Saudi populace and eroded support for the royal family. The United States had done things such as open up its own radio stations in Saudi Arabia; these stations broadcast programs that could be heard by the local citizens. (Gold, 160) Many Saudis feared that un-Islamic ideas could now easily be spread across the Kingdom. In 1990, a group of Saudi women drove their own cars, which violated Saudi laws and raised concern that there was no longer respect for the traditional Islamic values on which the country was founded. (Gold, 160) Many scholars and clerics in the country signed a petition that requested King Fahd to repeal Saudi laws that conflicted with Islam, but the King rejected the petition. (Gold, 160) Meanwhile, there were many international organizations that started to think that Saudi Arabia should become even more westernized and take a greater role in protecting human rights. Two distinct groups were created during this time period. One group favored the adoption of a Western legal code, while the other favored a return to the strict principles of Al-Wahhab.

Many new clerics began to rise to prominence during this time. Although these clerics may not have been among the officially sanctioned state clerics, they were able to communicate effectively with the common Saudis; the traditional royal-family-approved clerics had never communicated effectively...
with the general populace. The new clerics were beginning to convince the population that the House of Saud was not working for Saudi Arabia, an accusation that had worried the royal family for a long time. They claimed that the House of Saud was serving the interests of the West, especially the United States. The clerics based this contention on one basic principle that the entire country could understand: unfair distribution of wealth.

Saudi Arabia draws much of its revenue from its vast reserves of oil and natural gas. In 2004 alone, the oil industry provided more than $100 billion in revenue to Saudi Arabia. (International Monetary Fund [IMF]) However, ordinary Saudi citizens receive little of the income that the country gets from oil sales. American companies such as Texas Oil Company, Standard Oil of California, and Standard Oil of New Jersey helped to create the first oil facilities in Saudi Arabia. The Saudi government only acquired full control over its oil facilities in 1980 and in 1998 renamed the company Saudi Aramco. Saudi Aramco manages virtually all of Saudi Arabia’s oil reserves, but is under the direct control of the royal family. The royal family still frequently outsources many of the contracts to American and Western companies such as Schlumberger, WesternGeco, Halliburton, and Weatherford, that provide a majority of the workforce in the oil industry as well most of the logistics for the daily operations. (Bradley, 208) For this reason, much of the money from oil revenues does not stay within Saudi Arabia and does not reach all classes of society.

The general public and many clerics petitioned the royal family to initiate a policy of “Saudiization” of these enterprises, because many Saudi companies are now acquiring the expertise needed to carry out these operations. The royal family, however, automatically gets its share of the oil money, because the state owns Saudi Aramco directly. The princes have been reluctant to implement a policy of “Saudiization,” because they have had long relationships with American companies and they additionally fear that oil production may slow during a transition phase of “Saudiization.”

Inflation in Saudi Arabia was increasing by only about 0.4% in 2004, but is now increasing by about 2.8% in 2007. (IMF) Gross Domestic Product increased by 1.3% from 2004 to 2005, however it has fallen by 1.8% since then. (IMF) Ordinary Saudis have begun to question where the wealth from oil is disappearing to, especially because the cost per barrel of oil is at an all-time high. To many people, it is simple. The royal family, which was already believed to be corrupt, is keeping oil revenues and, thereby, living extravagant lifestyles. (Bradley, 220) To many of the clerics and to much of the general public, this is another reason to believe that the ruling House of Saud is not legitimate.

However, the royal family has started to listen to many of the forces that favor the westernization of the country. In fact, in 2002, the Saudi royal family proposed a plan at the Beirut Summit (Arab Summit Conference) that would have required Arab countries to recognize that Israel is a state and has the right to exist, in exchange for Israel agreeing to create a sovereign Palestinian state and finding a just solution to the Palestinian refugee problems. (Gold, 198) However, the proposal did not meet the approval of all the delegates at the meeting and was not brought up again. Although the proposal did not succeed, the fact that it was even proposed serves to show that the royal family was paying significant attention to many of the more liberal elements in their country.

In March, 2007, the Saudi government again brought up the peace plan proposal and wants to present it again at a conference in Riyadh. The fact that the Saudi government wants to present a plan that was soundly defeated just 5 years ago shows the influence of these more liberal elements in their country. The only Middle Eastern countries that currently have formal relations with Israel are Egypt and Jordan; these relations were mediated at the Camp David Accords by President Carter. Saudi Arabia would have been the third Middle Eastern country to do so and if it had done so, that would have shaken up the Middle East as we know it, because Saudi Arabia is one of the most important actors in that region.

Was the Saudi royal family simply acting to please the more liberal elements of its society or were there other factors involved in the proposed peace initiative with Israel? One of the key factors that one would have to consider is the United States. It has long been acknowledged that the United States and Saudi Arabia have shared a close relationship, especially with the current heads of state, President Bush and King Abdullah. The Saudi royal family has given more than $1 billion to companies in which the Bush family has had significant stake, such as the Carlyle Group and Harken Energy, especially when these companies struggled financially. (Unger, 15) Furthermore, former President George H. W. Bush has long had significant personal ties with Prince Bandar, who, until recently, was the Saudi Ambassador to the United States. Prince Bandar reportedly commented to King Fadh that he wanted to resign after former President George H. W. Bush lost the 1992 election to President Clinton; in fact, Prince Bandar stated, “It was like I lost one of my family, dead.” (Unger, 152) With all of
these financial and personal ties between the Bush family and the Al-Saud family, it is surely possible to think that this plays a role in determining the policy between these two countries. After all, humans are not immune to affective bias while making their decisions.

After the 9/11 attacks, the United States government started to push the royal family to do more in the Middle East, where the United States would not have been as welcome. For instance, Saudi Arabia was one of only three countries that recognized the Taliban as the official government of Afghanistan after the Taliban takeover of Kabul in 1996. However, after the 9/11 attacks, the Saudi royal family was quick to support the efforts of the US military in Afghanistan and withdrew diplomatic recognition to the Taliban just before the War in Afghanistan began. (Lippman, 342) Furthermore, Saudi Arabia allowed the US to use Prince Sultan Air Base to coordinate the air war against Afghanistan, and they provided the US Air Force with low cost oil, gas, and fuel worth tens of millions of dollars. (Prados and Blanchard, 9)

This was a monumental decision by the Saudi royal family, because they still faced a backlash due to their decision to allow US troops to be stationed there during the Gulf War. Furthermore, a vast majority of Saudis did not approve of allowing a Western country to use Saudi air bases to strike another Muslim nation. One of the reasons that Saudi Arabia may have let the US use Prince Sultan Air Base is that the royal family was eager to appear as a friend in the eyes of the American public. At that time, the American public was extremely skeptical of the relationship between the US and Saudi Arabia, especially because 15 of the 19 9/11 hijackers were Saudi citizens. (Lippman, 325) Although the royal family knew that there would again be considerable internal backlash, they felt that they had to maintain their relationship with the United States and simply offering their condolences to United States would not have been sufficient.

However, there were some issues on which the Saudi government remained firm. Saudi Arabia has long been accused by groups such as Amnesty International of violating human rights. These groups cite instances such as public beheadings, amputations, and alleged torture in Saudi Arabia. Public punishment (including beheadings) is commonly used in Saudi Arabia in order to deter crime. (Bradley, 137) However, beheadings are not announced in advance and even the convicted have no prior knowledge of when they will be executed. (Bradley, 135) Many human rights groups have tried to get the royal family to adopt a resolution that would outlaw these practices, but have been unsuccessful. The royal family, however, claims that these beheadings are the best way to deal with crime in society. According to Saudi law, a victim's family is the only group that can pardon a crime after a person has been convicted. The royal family maintains that this means no one is above the law and even cites as evidence that a son of the influential Minister of the Interior, Prince Naif, was almost executed but was pardoned at the last second by the victim's family. (Bradley, 137) However, many human rights groups have said this was a mere ploy staged by the royal family to convince the world that it treated everyone equally. Human rights groups claim that the victim's family would have had serious problems later if they had let the execution take place as planned, and cite this as evidence that the royal family has a double standard: one for the commoners and one for themselves. (Bradley, 138)

There are other issues on which Saudi Arabia has been reluctant to change its stance. The United States has asked that Saudi Arabia cut off funding to many of the madrassas (religious schools) that operate in Saudi Arabia. However, this is an impossible request. Saudi Arabia is an Islamic state, first and foremost. It would not be able to shut down these schools; most Muslims agree that such an action would be un-Islamic. Not only do madrassas teach Islam, they also take in many orphans and those with no place to live. Closing these schools would not only be un-Islamic, it would seem to be a move against the general welfare of the country as well.

One of the main goals for any Saudi monarch is to make sure that Muslims can easily come and pray at the holy sites of Mecca and Medina, and that these sites are protected. Almost every Saudi king has issued a decree that cements the role of Islam in society, has worked to improve the conditions of the mosques in the country, or has attempted to ensure that pilgrims can safely perform the hajj, one of the five pillars of Islam. (Lippman, 317) These acts are the ones that lend the notion of religious legitimacy to the royal family of Saudi Arabia. Without them, the royal family would be in a political quagmire. Closing down these schools would be equivalent to an American president enacting a law that explicitly violated the Constitution. The king would face massive repercussions from the clergy and general population, as well as within the royal family itself.

Although traditionally stable, the House of Saud does have its own internal conflicts. In 1975, King Faisal was murdered by a nephew because the nephew believed that King Faisal was partly responsible for his brother's death. (Bradley,
68) Different factions ally with each other in order to consolidate more power within themselves and one day have a chance at the throne and the massive oil wealth that comes with the kingship. This adds another degree of uncertainty about the kingdom, because the reigning monarch has to ensure that the other members of the royal family are placated. Fellow princes often take opposing stands on an issue and need to be cajoled so that a compromise can be reached. In many cases, people suspect that this may mean diverting some of the revenue from oil to these princes; this extra revenue may satisfy the princes, but it cuts off much need revenue to other important sectors such as education and healthcare. The current monarch, King Abdullah, is over 80 years old and, although he has designated a Crown Prince, many princes are still competing with each other to move up the hierarchy and thereby closer to kingship.

The House of Saud has to make sure that it is religiously legitimate or it will lose the support of the clergy and, thereby, the general population. However, it must also try to work with other states and groups who believe that the country is behind times and needs to become Westernized in order to maintain a good public image. Compounding all this, the royal family has to remain united so that they can maintain the notion that they are the right people for the job. With all these commitments, the House of Saud is faced with a challenging situation, having to work to meet the needs of its citizens, pilgrims, other countries, fellow princes, and any other individuals or groups with which it interacts, just to ensure that it remains in power. In the future, the country may have to risk alienating one or more groups to meet the demands of another. This alienation could lead ultimately to toppling the regime, if one actor feels as if it has been unfairly disregarded. These circumstances have led to an unstable political regime that is doing whatever it takes to remain in power.

The future holds many challenges for the royal family. During her recent visit to Saudi Arabia, the Speaker of the House of Representatives, Nancy Pelosi, commented that she would like to see more women involved in Saudi politics, although she refrained from directly criticizing the royal family. Furthermore, King Abdullah commented that if the United States suddenly withdrew from Iraq, Saudi Arabia would have to support the Sunni Arabs in Iraq to ensure that they would not be in jeopardy. Although Saudi Arabia has a Sunni majority, there is still a sizable Shiite minority, which comprises 10-15% of the population located primarily in the oil producing Eastern region. The Shiite minority, may feel threatened by these possibilities and possibly retaliate against the government. The royal family will most likely face serious concerns from its citizens and interest groups, as well as other countries over its policies. With all these tumultuous events, only the future will tell whether the royal family will still be in the same state as it currently is.

Acknowledgement
I would like to thank Professor Harry Mason for his help in writing this paper. His expertise in this field and his willingness to serve as a reviewer were indispensable.

Works Cited
1. The Holy Qur’an.
I graduated UK in May, 2007, with degrees in History and French. Although my initial plan was to pursue a history major and a French minor, this quickly changed when I became aware of the high caliber instruction in the French department. As I continued through my undergraduate career, I began thinking about study abroad opportunities. Such a chance became available in the second semester of my junior year in Caen, France, by way of the Lexington-Deauville Sister Cities Exchange Program. My experiences there were not only culturally enriching, but also life-changing. I have a newfound affinity for other cultures as a result of my time in Europe. I just completed my first semester of law school, and I even find my French helping me here and there in my legal studies, as I encounter archaic French terms in the texts. I plan to graduate law school in 2010.

**Four Months in France**

An Illustrated Journal

**Introduction**

My name is David Hicks and I am a student at the University of Kentucky. I have lived in the United States my entire life, but on January 26, 2006, I left to study in northern France for four months. This European experience was completely new for me because I had not previously visited any foreign countries save for Canada. I had, consequently, not been exposed to other cultures and people; this made for a variety of new and interesting experiences in my new home, many of which will be detailed here in a combination of words and pictures.

Much like my own perception of a culture different from my own, this journal has been a work in progress. The style of each page, the rules of writing and the overall goal of this project have all significantly changed since January. I realize that this journal is alive as long as it continues to inspire the discovery of other cultures. This, for the most part, is my motivation for this project. I know that it will never die completely. It is my sincere hope that you, the reader, will garner some sense of another culture — and perhaps yourself — as a result of my own experiences recorded here.

This project was conceived to immerse the audience in the French culture, and to record my experiences in text and photographs. The end of this endeavor is triple: I want to understand my new environment, succeed in it, and obtain a larger respect and understanding for the views of other people. To facilitate the process, the journal is divided into two parts: a written journal and a photograph section. To enrich my comprehension of the French language and to immerse myself more completely in the French culture, the [original] journal was kept entirely in French. I will retain not only the advantages of a multicultural understanding, but also the possibility to share them with others. The final product will be bound, displaying the entries, photographs, and legends chronologically.
“In Thought, Paris:” Everything in this shot was captured completely by chance, from my listless stare to the bird haphazardly flying overhead. Compare the immediacy of my face with the distance of the Seine river and the Parisian flats overhead.

Journal

Thursday, January 26
4:31 PM CST (Wednesday, January 27, 12:31 AM in France)

Today I leave for France. I have always understood the imminence of this moment, but I suppose that I didn’t completely grasp it, like some distant reality. But now I am sitting in Chicago’s O’Hare Airport waiting for my flight to Paris. I already see an enormous diversity of people here. I hear the symphony of different languages while I walk, and my thoughts drift across the Atlantic. A new and strange land awaits me, and honestly, I don’t quite know if I am ready for it.

When I arrive in Paris, I plan on going to Republic Hotel to rest. I am excited that I will be staying close to the Notre Dame Cathedral, the Moulin Rouge, and other famous sights. I hope that the hotel is in a safe part of town and that the room is clean; I have heard many a horror story detailing unsavory living conditions abroad, and I don’t want to fall victim to such a fright. In fact, I cancelled my previous reservation for a youth hostel because I heard the rooms there are disgusting. Time will tell how things go.
“Beach, Lion-Sur-Mer:” The majestic beauty of Normandy’s beaches is simply breathtaking. This particular stretch of beach was complemented with a stone wall topped with a weathered white fence that seemed to stretch on endlessly. The rustic nature of the shot is accentuated by the sepia tone.

“I have no friends, familiar faces, or comforts of home here. I am in a foreign country, and for the most part, I actually love it. Yesterday I arrived in France, and the first difficulty was getting to the hotel. After a half hour of wandering aimlessly through the massive Charles de Gaulle airport, I found the metro, and later my hotel. The people here are somewhat reserved and silent in public, unlike many Americans. However, I can still sense the warmth and hospitality that I had always perceived as cultural trademarks of this country. In every restaurant and convenience store, I hear « bonjour » and « au revoir ». I am thrilled to be able to use my French, but I now realize that I may have overestimated my own speaking ability. I hope, however, to be fluent by the time I leave. Still, I understand that it will take diligence on my part to become so. I am ready for the challenges that await me here.

The real catharsis of all this is that I am finally free - free because I have neither friends nor family here, and I have a genuine opportunity to present myself as I truly am; people here have no preconceived notions of me as a person because no one knows me. I can be me – an American trying to survive in a strange country. Will he survive? Of course – he is determined to understand the culture of this place, and to leave with a newfound understanding that no classroom can duplicate. Welcome to France.

“Parisian Skyline:” Taken from the Pompidou Museum, this photo displays the city in all its glory. To the left, slightly off-center, stands the silhouette of the Eiffel Tower. To its left stands Notre Dame Cathedral and Montmartre.
Journal

Sunday, January 29
10:24 PM

I'm not a pro at the Parisian metro system. I can find the street where my hotel is located — Oberkamph Street. I love it. I love the little boulangeries (butcher shops) and pâtisseries (pastry shops) and their aromas mixing in the cold, crisp air. I love the cold wind that greets me each morning. This is the life of a Parisian, isn't it? I find that I am able to blend in with the locals if I don't talk much and if I am polite.

However, another facet of life here has attracted my attention: I noted that few Parisians speak English. This was contrary to my preconceived notion that pretty much everyone in Paris is bilingual. This is not the case, and thus there are limitless opportunities for me to practice my French. I have done well for the most part, but from time to time I find it hard to comprehend their rapid speech and slang terms. I hope that I'll see some real improvements in my French soon.

"Trees, Paris:" This shot continues my photographic trend of using objects to create lines within shots. In this instance, the trees served this purpose beautifully. Their lack of foliage, coupled with the dark afternoon sky, indicate a cold French winter.

"To the Tower:" The copper statue, commissioned under the reign of the emperor Napoleon, points triumphantly at the prize of Paris — the Eiffel Tower.
Journal

Monday, January 30
9:28 PM

I lose my identity in this ocean of people
Different voices mixing in the metro
Château d’Eau ... République ...
Oberkampf ...
The metro stops create a lucid symphony
in my mind
It’s dusk, and I can see the lights
through the window
Blinding me with an assault of color
Gold, blue, red, they are all
indistinguishable
And nothing exists save for this mass
of people
Pulsating, living, breathing
Searching for their own destinies
In a city without mercy
I have chosen to become one of these
This is Paris
Hemingway ... Picasso ... Stein ...
This is their city, not mine
But as I stare at these blinding lights
I know there is some method
In this madness.

Journal

Tuesday, January 31
11:25 PM

Tomorrow I leave for Caen. Astonishingly, I can honestly say that I am finished with Paris — for now, at least. I love this charming city, but I am not accustomed to city life. Caen, and the normality it should bring to life, will be a welcome change. In six days, I have visited a lion’s share of the popular tourist destinations in Paris. Now, I want to see a new side of France, and with it, a new type of people.

This is not to say, however, that Parisians are hostile; quite the contrary, they are warm, but reserved nonetheless. It’s natural in a larger city like this. I feel something new awaits me at Caen though. I am excited for tomorrow. I can only hope I don’t have any problems finding the campus and my dorm.

Le statue d’un ange, Paris
(Statue of an angel, Paris)

I was pleased with this photo because, to me, it evoked a mental image of an inhabitant of this new world in which I was so suddenly dropped. One can discern in this photo the mystery of Paris in the expression of the cherub, and also another characteristic — the faded background adds a dramatic effect.
“I.M. Pei’s Pyramid, The Louvre, Paris:”
Commissioned by president Francois Mitterand, this pyramid, composed of 666 pieces of glass, is regarded by many Parisians as an eyesore in the midst of the classical architecture of the Louvre Museum.

“I was lucky to get such a perfect scene; the sun had just descended below the gently sloping hills surrounding the city, and continued to cast a faint hazy glow. In the foreground, one of Paris’s numerous pleasure boats made its rounds on the Seine. The Eiffel Tower, dark and imposing in the background, completes the shot.”
“Seine, Paris:”
The celebrated River Seine is traversed by countless Parisian bridges, all of which are decorated with beautiful statues, most of the classical Greco-Roman style. The one seen here is no exception.

Une brasserie, Paris
(A café-restaurant, Paris)
Here one can see a typical scene of Parisian life: old buildings living once again with their flamboyant signs. The café-restaurant is a trademark of French culture. Though I did not visit this particular one, I had the good fortune of visiting many a brasserie throughout Paris.

“Cathedral of Nantes”
My name is Jordan Rodgers, and I am a senior philosophy major and mathematics minor at the University of Kentucky. I am also involved in the Honors Program here at UK. I was the winner of the Kentucky Philosophical Association's Student Essay Contest in both 2006 and 2007, and of UK's Kuiper-DeBoer Scholarship for the 2005-2006 school year. This work is the fruit of a long-time love of the philosophy of Friedrich Nietzsche, and a constant desire to relate the issues he grappled with to concerns of the present day. It is hopefully only the beginning of my work in this area, which I wish to continue in the future in graduate school, where I hope to work toward a doctorate degree in philosophy.

This project in particular was the Honors thesis resulting from a semester of study under the tutelage of Dr. Suketu Bhavsar, which was, in large part, involved in a study of recent evolutionary psychology and its implications for the moral and social fabric of the individual and society. The relationship between morality and individualism has been a passion for me in recent years, and it seemed to me that one of the most important (and perhaps most neglected) problems for an evolutionary worldview was how to find room for both a worthwhile morality and a healthy individualism. A sticky, but as I hope to show, not an irresolvable problem. My reading of Robert Wright's *The Moral Animal* convinced me that these issues were not being approached with a sufficient degree of caution, and that only a return to a vital individualism such as Nietzsche's could help us out of the forest. The result, I hope, is the promise of a new way of looking at ourselves as we fit into the evolutionary framework.

I would like especially to thank Dr. Bhavsar, who helped me immensely through in- and out-of-class discussions, and who read drafts of the paper as it was being written. Also, I would like to thank my fellow students in my Honors 301 class, who also read and suggested revisions for drafts of the paper, and whose points in in-class discussion helped to give birth to my ideas for the paper in the first place.

**Abstract**

Robert Wright's recent book on evolutionary psychology, *The Moral Animal*, is concerned largely with the ethical implications of recent evolutionary science, and espouses a form of utilitarianism as the ethical theory that should naturally follow evolutionary insights into human psychology. This paper challenges that notion, with constant reference to the work of the philosopher Friedrich Nietzsche, on the basis that such an ethical theory places far too little emphasis on the individual as such, and is tantamount to a form of nihilism. This paper also argues that, while seeking for the happiness of other people is a good thing, our most sacred duty is not to our fellow man, but to ourselves, and that the greatest ethical imperative is to “become who you are.” We have received with distress the news that we are fundamentally selfish beings, but Nietzsche’s advice is not that we try to minimize that selfishness — rather, we should make ourselves worthy of it.
Introduction

Charles Darwin’s theory of evolution has proven to be one of the most important and controversial scientific theories in the history of modern science. Of course, all scientific theories that are important and controversial on as grand a scale as Darwin’s become so largely on their extrascientific merits. Darwin’s theory of evolution has shown itself to be of great consequence in many areas other than biology. Because it has provided such a comprehensive view of the development of the human species, it has become relevant to religious, psychological, and moral investigations as well. Much ink has been spilled on the religious consequences of evolutionary theory, and the issue of how compatible a Biblically based religion can be with a theory telling us that humans have animals as their ancestors is still very much unresolved. I will not concern myself here with that debate, nor am I interested in the scientific validity of evolution as a theory. In this paper, I will assume that evolutionary theory is essentially scientifically valid, not because that is my reasoned scientific opinion, but because I am fundamentally concerned with other issues — issues that have gone largely unnoticed in the firestorm of the religion vs. science debate.

Unlike other major scientific theories in the history of modern science, such as Copernicus’ theory of heliocentrism and Einstein’s theories of relativity, the theory of evolution has profound moral and psychological significance. While Copernicus and Einstein put forward models of the world that were radically different from the ones that had been previously envisioned, their content was still quite distant from humanity as a living, breathing being. They affected how we look at the world around us in very profound ways, yes, but they did not affect how we look at ourselves — not directly, at least. The theory of evolution, however, has been constantly accompanied by a very troubling question: what does this theory say about us? Immanuel Kant once noted that all questions of philosophy can be summed up in one: “what is man?” The truth about evolution is that it has brought this question to the forefront in a way that perhaps no other scientific theory can rival.

Because it is so concerned with the development of humanity as a species, the theory of evolution invites us to think about humanity as a whole — in short, to ask, “what is man?” To attempt to answer this question is to venture into the dangerous and sometimes unfathomable depths of morality and psychology. Many smaller questions swarm the primary one as well. How different are we from animals? Do we differ in kind, or merely in degree? What are we to do with the knowledge of the principles of natural selection and survival of the fittest? These questions (and many others) have inspired a number of psychological and moral investigations (such as social Darwinism and Robert Wright’s utilitarianism) that have taken evolutionary insights into account and used them to form their theories. The remainder of this paper is devoted to examining social Darwinism and Wright’s utilitarianism. As we will see, these theories differ greatly from one another, and it might be worthwhile to wonder, as we go along, if the insights of evolution have led us any closer to answering Kant’s question.

Divergent Moral Theories

Before looking at two famous historical attempts to glean psychological and moral insight from evolutionary theory, a provisional comment must be made about the relationship between morality and science. It is common in philosophy to speak of the “naturalistic fallacy” or the “is-ought problem,” which has been presented in many different formulations. The basic idea is simple: what is and what ought to be are two very different things, and one cannot determine what ought to be from what merely is. This is of considerable interest for us. Darwin’s theory of evolution is a scientific theory and, as such, it does not prescribe for us how things ought to be; rather, it describes how things really are. It might be the case that new scientific theories open up new moral questions, or allow us to test the efficiency of this or that moral theory (if the moral theory is at all testable, that is). But, it cannot help us to discover what might be the proper moral theory. In short, it cannot tell us what we ought to do.

One of the most famous attempts to glean moral and sociological insight from Darwin’s theory comes to us in the form of social Darwinism, which had begun to develop (although not under that name) even before Darwin had published his monumental Origin of Species in 1859. The movement has had many different proponents, all of whom had different ideas as to how it was conceived. However, what is important here is the use of Darwin’s principle of natural selection as a sociological (and later, moral) principle. In Darwin, natural selection is the process by which those individuals endowed with traits favorable to their survival and propagation are more likely to thrive in competition than individuals lacking those traits. It is a simple scientific principle. Because the stronger individual on average has traits that allow him or her to survive in competition, the stronger individual will be able to procreate more often and more successfully than the weaker.

Although the principle is scientific, the social Darwinists applied it to social theory, saying that the fittest individuals in human society are more likely to survive in competition than those who are unfit. This scientific principle was, in turn, made into a moral
principle: the fittest individuals not only do, but ought to survive and thrive, and the weaker and less successful not only do, but ought to fail. Because the principle is elevated to the realm of morality, the concept of social progress becomes extremely important within social Darwinism. What was in Darwin’s scientific analyses a principle that merely guided species to become better adapted to their environment becomes in social Darwinism a moral progress: human society is constantly getting better and better, because the weak individuals are being weeded out. The stronger and more noble individuals should do all they can to survive, propagate, and pass on their genes to the next generation, and get rid of the weaker parts of society that might hold back social progress.

This moral outlook may, perhaps, seem utterly detestable from a modern point of view. It has been used by some to justify class systems and social inequality; it is, after all, perfectly “natural” to a social Darwinist that inequalities should exist among humans, and the correct way to deal with that inequality would be to encourage the strong to assert their superiority over the weak. In the end, the growing strength of humanity would be served, and society as a whole would progress. Because modern Western moral sentiments (influenced by recent movements for equality in civil rights for women and people of different races) tend toward a more egalitarian construction of society, this social Darwinist view has been largely rejected. Also, it has proven quite difficult to determine which individuals in society are, in fact, the “stronger” ones. Indeed, the term “strong” may be misleading; it seems obvious that we should not want society to be a means merely to a more physically strong people. Is intellectual strength meant? Moral strength? Eventually, “strength” becomes an objectively meaningless term; instead, those in political power use the principle to justify their oppression of those without power. However, the success of the politically powerful is not “progress” in any meaningful way.

It is for reasons such as these that, in the recent rise of psychological studies informed by evolutionary theory, evolutionary psychologists have generally been wary of any moralizing about the process of evolution, for fear that they might be labeled social Darwinists. The social Darwinists had confused what was “natural” with what was ethically preferable. Therefore, the new Darwinists avoided, if at all possible, any discussion of what is ethically preferable. However, recently this, too, has changed, and evolutionary psychologists are starting to moralize again, but this time with very different conclusions.

One of the most popular writers in this vein is the evolutionary psychologist Robert Wright, whose book, *The Moral Animal*, seeks, among other things, to provide a new look at how our concepts of morality might be informed by evolutionary science — a look that is not tainted by the view that just because something is “natural,” it is also ethically defensible. Wright wastes no time in making his intentions known; in his introduction, he writes:

> Can a Darwinian understanding of human nature help people reach their goals in life? Indeed, can it help them choose their goals? Can it help distinguish between practical and impractical goals? More profoundly, can it help in deciding which goals are worthy? That is, does knowing how evolution has shaped our basic moral impulses help us decide which impulses we should consider legitimate? The answers, in my opinion, are: yes, yes, yes, yes, and finally, yes. (Wright, p.10)

Wright’s beliefs are quite clear; though he admits the danger of the naturalistic fallacy elsewhere, he still maintains that science can help us to determine what moral judgments are “legitimate.” Because Wright is aware of the fallacy that he seems to be falling into, we must see how he justifies this move.

In order to look into this, it will be useful to remember the sorts of views that Wright is attempting to avoid, especially with respect to social Darwinism. What went wrong there? Basically, the discovery that all beings naturally sought their own self-interest was used as a justification for those in power to act selfishly, because they were in a position in which that was possible. Selfishness was essentially elevated to the highest moral good. It seems (at least to a modern person) that there is something wrong here: most of our most highly esteemed moral codes tell us that being selfish and altruistic is the moral way to act. For example, Christianity, one of the most popular of religions, has as one of its foremost moral demands that we love our neighbors as ourselves, whether they are weak or strong. Many other world religions have similar moral laws. When the social Darwinist tells us that we should root out and eliminate the weak parts of society, rather than attempt to help them, it goes against these fundamental religious beliefs and most revered moral teachings.

Wright tells us that the seemingly universal acceptance of these moral teachings can be explained adequately by an evolutionary history of beings concerned fundamentally with themselves. The term Wright uses for this development is “reciprocal altruism,” though he is not the first to speak of it as such. The idea behind reciprocal altruism is quite simple: if we want to describe how we came to be altruistic (and came to make it our highest moral good) within an evolutionary context, which tells us that we are always looking out for “number one,” we have to explain how altruism might be useful to the individual.

Wright’s basic explanation for this usefulness deals largely with a concept he calls “non-zero-sumness.” Wright invites us to think of ourselves as a chimp who has just found some food and decides to give it to a fellow chimp who has very little food. While you lose food in the exchange, the food is more valuable to the other chimp, precisely because he is in such dire need at the time. So, your loss is much less than the other chimp’s gain, and the two do not merely cancel each other out. “The essential feature of non-zero-sumness,” Wright tells us, “is that, through cooperation, or reciprocation, both players can be better off.” (Wright, p. 194) This perhaps somewhat obscure example is not the only case of non-zero-sumness, either; simple division of labor and trade of resources — cornerstones of practically every society with which we are familiar — are also prime cases. “The key
be hard-pressed to find another so strikingly opposed to social Darwinism. Wright makes it quite clear that his moral evaluations are in agreement with the ethical theory known as “utilitarianism.” This theory, developed mostly by English philosophers of the 19th century, such as Jeremy Bentham and John Stuart Mill (and, interestingly enough, Darwin himself), proposes that our actions are governed by the principles of pleasure and pain. Pleasure and happiness are basically good, while pain and suffering are basically bad. So, it makes the most moral sense to seek to increase the pleasure and happiness of the greatest number of people. Developing our morality consists of finding more and more efficient ways to eliminate suffering and promote happiness.

Though Wright mentions that Mill himself (utilitarianism’s greatest proponent) did not necessarily see his moral philosophy as deriving an “ought” from an “is,” he makes it clear that he thinks “that the goodness of happiness is, in fact, a moral value that remains unscathed by the naturalistic fallacy.” (Wright, p. 334) Wright’s commitment to utilitarianism seems, at least at first blush, to make a good deal of sense in an evolutionary context; it seems that processes such as reciprocal altruism, for example, have as their aim a sort of overall happiness. Two people cooperate with one another, and both benefit from the deal. The (successfully achieved) goal of the interaction is the happiness of all parties involved; Wright’s proposal is that we simply extrapolate, and apply the same principle to all of humanity. In other words, “You should … go through life considering the welfare of everyone else exactly as important as your own welfare.” (Wright, p. 336) So, the ethic that Wright derives from evolutionary science is diametrically opposed to that of social Darwinism: while the latter had preached selfishness as the greatest good, Wright would have us be as unselfish as possible.

Two things about this ethical theory that will prove more important later must be mentioned in passing. While Wright considers it the most natural and unassailable ethical theory possible (who doesn’t want to be happy?), it contains certain presuppositions that might seem a bit more debatable. First: utilitarianism is essentially hedonistic: as was noted above, utilitarianism preaches that our actions are governed by pleasure and pain, and we should seek in all our actions to maximize the former and minimize the latter. It should be noted that “hedonism” ought to be distinguished from the connotations of the “rock n’ roll lifestyle” that are often connected to it: hedonists can (and more often than not, do) distinguish between higher and lower pleasures, and most would say that some form of delayed gratification is indispensable in living a truly pleasurable life. However, the claim that pleasure is essentially good, and pain is essentially bad, is a highly debatable ethical claim.
Second, utilitarianism is a consequentialist ethical theory. This means that it judges the consequences of an action, rather than the intentions of the person committing the action, as the morally important component of the act. In order to judge whether an act is good or evil, utilitarianism invites us to see how much happiness it will cause, and for how many people. In other words, it tells us to look at the consequences of our actions, and make our decisions based on them. This, like hedonism, is a highly debatable position: other moral thinkers have focused completely on human intention and will in their investigations.

We have now looked at two vastly different ethical theories, both claiming to arise from the insights of Darwin’s evolutionary theory. We must remember that, however different they are, they do spring from a common root. As such, they also contain some important similarities. The first theory, social Darwinism, was summarily rejected for a number of reasons, not the least of which was that it committed the naturalistic fallacy and derived an “ought” from an “is.” Wright claims that he has avoided this flaw in his own moral theorizing, but then conveniently neglects to explain why, pointing out that the explanation would involve too long a digression from his main topics of discussion. That is perfectly understandable; however, it is a claim that seems to me completely unfounded.

As has already been indicated, utilitarianism, as an appropriate ethical theory, is not so undeniable as Wright seems to indicate. However, even if it were, that would still not allow us to jump from the “is” (I want happiness) to the “ought” (happiness is good). It is important to note that it is possible to agree with Wright on pragmatic grounds, and assert that happiness is what we all really want to pursue anyway, and still maintain that Wright falls victim to the naturalistic fallacy. But in doing so, we still must admit that the morality Wright offers is one of his own construction. It does not follow from his scientific conclusions, and thus loses much of its basis in commonly accepted premises.

Failing to avoid the naturalistic fallacy is not the only thing that social Darwinism and Wright’s utilitarianism have in common. They also both have some idea of historical human moral progress built into them. We have already explicitly discussed this view with respect to social Darwinism, but it is just as present in Wright’s moral theory. Wright’s utilitarianism works, however implicitly, with an end in mind. As our technology grows, and we become more intimately connected with people from the remotest regions of the earth, it becomes a matter of our evolutionary interest to care about everyone’s welfare. If what guides our moral judgment is the striving for the happiness of the greatest number of people, then technological evolution becomes moral evolution. The technological progress that allows us to connect to more and more people is equivalent to moral progress — those are more people whose suffering we can alleviate. Those are more people whom we can make happy.

Just as the social Darwinists thought of the process of the strong overcoming the weak as the progress of the world toward a strong humanity, utilitarianism sees global communication and connection as the progress of the world toward a happy humanity. In both cases, there is a constant moral progress toward an end. This follows quite naturally from a point made earlier: Wright’s moral theory (and social Darwinism as well) is consequentialist. It stands to reason that a theory concerned primarily with the ends of an action rather than the intentions behind that act would be absolutely concerned with the ultimate end of the process. A consequentialist moral theory, when pushed to its limits, seeks a good consequence (that is, a good end) not just to every singular human action, but also to human action as a whole.

Another similarity between the two theories that might not be immediately apparent is a certain style of moralizing. We must keep in mind that both theories at least purport to be derived from a scientific principle. For that reason, both attempt to offer a scientifically testable morality. In the modern age, in which scientific knowledge seems to have emerged as the paradigm for knowledge in general, it would seem quite natural to try to formulate a scientific morality. Social Darwinism attempts to do so on the basis of the nebulous concept of “strength,” and fails, but Wright’s utilitarianism is a bit more subtle and powerful. Happiness and pleasure, in this context, are far less ambiguous terms; we seem to know intuitively what is meant when we use them. And it would seem quite possible to scientifically test their presence or absence.

Take an obvious case for an example: the moral value of “thou shalt not kill” is easily testable under utilitarian methods. In fact, we can do the test more or less in our minds. Being killed, or having someone close to me killed, would greatly impinge on my happiness, and having the ability to kill people when I want does not seem to greatly enhance my happiness, nor can I imagine it doing so for another person, unless he or she is quite abnormal. In any case, the value of the moral restriction “thou shalt not kill” has been tested, and in this case it passes the test. Even if there are more subtle cases in which this experiment cannot be performed by the imagination alone, it can always in theory be tested in real life. This, in fact, is possibly the most important advantage of Wright’s utilitarianism. It seems less active in social Darwinism, but that is not because it is ascientific. Rather, it is because it attempted to be scientific and failed. An ideal of both moral views is that moral theories ought to be testable, i.e., scientific.

It is to similarities between the two theories such as these that I would like to turn, because I find myself to be unsympathetic, and even hostile, to all of them. I realize that this feeling of mine is not universal. It makes a lot of sense to some people to judge actions based on their consequences to the general public, and thus to progress morally toward a good ultimate consequence; it makes a lot of sense to some to seek to derive our moral principles from undeniable scientific ones, and thus to seek a scientifically testable morality. All of these, as they have been presented thus far, seem to be relatively benign, and seem to follow quite naturally from indubitable principles. They also seem to set quite reachable moral goals. There is a sense behind the whole of Wright’s book that the time is not far away
when we will all be able to live in relative peace with one another, and nothing could be more natural. It all seems so easy.

“Of course,” Wright warns, “if you’re not a utilitarian, sorting these issues out may be more complex.” (Wright, p. 341) Unfortunately, (or perhaps not so unfortunately) this statement rings true, and I also find myself compelled to sort out these issues in a different way than Wright, despite the complexity. Living morally seems to me something difficult and complex, and the ease with which Wright discusses it troubles me. It is not merely this, however, that drives me to the moral depths — I find that when I look into the underlying structures of moral theories such as Wright’s, I am largely unsatisfied with their view of morality and human nature. Though they may seem to make perfectly good sense on the surface, they contain certain assumptions that, if taken seriously, might kill any satisfying concept of morality. “The title of this book [The Moral Animal] is not wholly without irony” (Wright, p. 13). Indeed.

A quick note about the direction being taken here is necessary: I will focus mostly on a critique of Wright’s utilitarianism, and largely neglect social Darwinism. Much of what I say may apply to social Darwinism as well, but I will focus on Wright, because his theories are still convincing people. Social Darwinism had its heyday, but its faults are by now obvious to most, and I do not intend to beat a dead horse. The dirty little secrets of utilitarianism are somewhat less known, however, and deserve to be brought to light. For this reason, though my critiques are primarily directed at consequentialism, moral progress, and scientific morality, I will use Wright’s utilitarianism (and not social Darwinism) as a prototype of the morality at which this critique is aimed.

A New Perspective

I wanted only to try to live in accord with the promptings which came from my true self. Why was that so very difficult” — Hermann Hesse

(Wesse, p. 1)

The critique of utilitarianism that I will put forward here, and the consequent elaboration of a better way of looking at morality, is informed greatly by the nineteenth century German philosopher Friedrich Nietzsche. Why I pick him above the large number of other philosophers who are also decidedly anti-utilitarian will become fully clear only by the end of the analysis. However, a few preliminary remarks about my selection of Nietzsche are perhaps necessary. Indeed, the choice might initially seem somewhat strange. Nietzsche is certainly considered one of the greatest philosophers of morality who ever existed, but this is largely because of his brilliant critiques of morality. So, while it might seem that Nietzsche could provide a devastating critique of utilitarianism (and he certainly is up to the task), it might also seem that his critiques would apply to morality in general, and that no positive notions of morality are to be found in his writings.

I think this is misleading, largely because of a certain ambiguity in the term “morality.” It can, on the one hand, mean a system of rules or doctrines that is generally applicable to all of humanity, such as the Ten Commandments. However, it can also mean the simple concept of valuing one thing over another. I decide to value freedom of the press more highly than censorship, for instance, and in doing so I make a “moral” decision. To deny or critique “morality” in the first sense in no way condemns one to say that nothing is preferable to anything else.

While Nietzsche’s critiques of morality are scathing, I think that they are aimed at morality in the former sense, the broad, general system of moral rules; to question the latter, the making of specific value judgments, would be practically inconceivable: “how could you live according to … indifference? … [Living is] — estimating, preferring, being unjust, being limited, wanting to be different.” (Nietzsche, 2000, p. 205) As our discussion of Nietzsche unfolds, we will see that, because being an individual (i.e., being different rather than indifferent — asserting oneself and one’s estimations) is one of Nietzsche’s most valued “morals,” he is committed to attacking the concept of a “morality” that would stifle such individuals. Without distinguishing between the two, one could paradoxically assert that Nietzsche’s morality is opposed to morality. With the distinction, however, the paradox dissolves.

With that in mind, let us see what Nietzsche might have to say about Wright’s utilitarianism. One of Nietzsche’s oft-quoted phrases is: “In the end one loves one’s desire and not what is desired.” (Nietzsche, 2000, p. 283) Contained in this small phrase is Nietzsche’s first critique of utilitarianism: what we really love is not the objects we receive or the ends that come about from our actions, but the process of getting those objects and reaching those ends. I feel much more passion for the object of desire, for instance, when I am pursuing and trying to obtain it, than I do when I have already achieved my goal. Proverbs such as “absence makes the heart grow fonder” ring true in this light. Granted, I had the end of my pursuit in mind as I went, but my most intimate connection is not to that end, or even to the object of desire itself, but to my desire. I might add, though I do not think Nietzsche says this, that it is largely because we are so intimately connected with our desires that we tend to moralize about them, rather than their objects. So, I think it is in some sense natural...
to be dissatisfied with a morality that addresses itself only to the objects of our desires (such as the utility of an action’s consequence), and never approaches what are most important to us: our intentions and desires themselves.

This small point informs Nietzsche’s second and more thoroughgoing critique of consequentialist theories of morality. It was mentioned in passing above that, while Wright claims his moral theories are based on scientific truths, he also left open the possibility of accepting utilitarianism on pragmatic grounds. While I consider it proven that Wright’s utilitarianism does not follow from scientific truths (precisely because that would be impossible), one still might ask: don’t we all really want happiness? Even if we can’t “prove” that it is true that we should work toward being happy, don’t we all really want that anyway, and isn’t that enough? Nietzsche’s response to this question is an emphatic “no.” One of the most important and radical aspects of Nietzsche’s thought is a critique of this valuing of happiness and contentment as the highest good. Wright says that “we should look at moral axioms the way a prospector looks at shiny rocks — with great respect and great suspicion,” (Wright, p. 362) and surely Nietzsche would agree. As he was fond of pointing out, many moral philosophers have taken their own morality for granted as the true one and attempt to give reasons for it after the fact; they never really see the problem inherent in morality itself, i.e., the problem of determining the value of different moralities. (Nietzsche, 2000, pp. 287-9) However, it seems that Wright has not completely learned this lesson. He never inspects his moral axiom (that happiness is the greatest good) but simply attempts to find it rationally.

Nietzsche, on the other hand, is more than willing to inspect this moral axiom, which was just as widespread (indeed, perhaps more so) in the nineteenth century as it is now. Nietzsche finds this morality of happiness problematic. Why? First: utilitarianism claims that we are governed by pleasure and pain, and that we should seek to minimize the latter while maximizing the former. However, Nietzsche would call this an impossible endeavor — pleasure and pain are, in a sense, interdependent on one another. “If you decide...to diminish and lower the level of human pain, you also have to diminish and lower the level of their capacity for joy.” (Nietzsche, 1974, p. 86) If this is the case, then minimizing the pain of the world comes at a steep price, and a utilitarian morality seems to offer us not a utopia filled with happiness, but merely “as little displeasure as possible, painlessness in brief.” (Nietzsche, 1974, p. 86) It would seem that, under this conception of happiness (i.e., the minimization of pain), to be happy is merely to be satisfied with the state of things, and to have ceased needing to get very excited about life anymore. This is, for Nietzsche, the deeper truth of the interdependence of pleasure and pain: in order for life to be worth living, the tension between great pain and great joy must be present.

If we are to take this seriously, then we must take a different attitude toward pain and suffering. It should no longer be a pure evil that we always avoid. We must ask why joy and pain are interdependent, and the answer is that our joy often comes from hard-fought battles with things of which we are afraid, things that cause us pain. Thus, Nietzsche tells us in a particularly exciting passage:

For believe me: the secret for harvesting from existence the greatest fruitfulness and the greatest enjoyment is — to live dangerously! Build your cities on the slopes of Vesuvius! Send your ships into uncharted seas! Live at war with your peers and yourselves! (Nietzsche, 1974, p. 228)

It seems that nothing could be more at odds with utilitarianism. Living at war with each other is certainly not the way to promote the happiness of the greatest number. And, indeed, one might be a bit wary of such teachings — they might make one a bit afraid. But this is precisely Nietzsche’s point: “the imperative of herd timidity: ‘we want that some day there should be nothing any more to be afraid of.’...the will and way to this day is now called ‘progress.’” (Nietzsche, 2000, p. 304) As long as this is the sort of “progress” at which our morality aims, we are aiming at something very suspicious. If the joys and sorrows of life are dependent on a certain degree of suffering and danger, then what would it mean to get rid of this suffering and danger?

You want, if possible...to abolish suffering. And we? It really seems that we would rather have it higher and worse than ever. Well-being as you understand it — that is no goal, that seems to us an end, a state that soon makes man ridiculous and contemptible — that makes his destruction desirable. (Nietzsche, 2000, p. 343)

Thus, we see what the utilitarian “progress” really leads to: a devaluing of life itself. Fundamentally, to want above all to get rid of suffering is to decide that life is not worth living, for life is (quite literally) nothing without suffering. Consequently, a desire for this progress is a desire for an end to life, and as such is a form of nihilism.

It is this nihilism that hides below the glossy surface of such high-sounding ideas as “the happiness of the greatest number” with which Nietzsche is ultimately concerned. It is the inspiration for one of the more famous passages of his writings: his discussion
of “the last men” in Thus Spoke Zarathustra. The last men are so named because they represent the success of the sort of nihilistic progress just discussed. They have diminished completely their capacity for joy or suffering, and have thus fallen into a state of complacency and contentment. “What is love? What is creation? What is longing? What is a star?” thus asks the last man, and he blinks.” (Nietzsche, 1976, p. 129) In these questions, the last men show that they have renounced all the things that had made life so dangerous, exciting, and worth living in the past. They no longer even know what these things are. Though the last men claim to have “invented happiness,” they have really only created a life in which they no longer have to worry about the happiness that means something — that is, joy, great passion, a happiness that one has fought for. They are resigned to a life of boredom and stagnation.

So, what seemed like a very high ideal indeed, the happiness of the greatest number, turned out to be a hidden desire for destruction and death. One might ask with some urgency, if morality is not to be found here, where the ground seemed so solid, where are we to turn now? Ultimately, Nietzsche’s advice is simple, though certainly not easy to follow: no one can tell you where to turn but you, yourself, as an individual. The error that all moralities make is that they investigate what one should do in any given situation, and thus are no discriminator of persons. What I really want to know is what I should do in a given situation, and only I can determine that for myself.

Wright’s utilitarianism commits this error perhaps more flagrantly than most other moral philosophies: he tells us that we should view the welfare of others just as highly as our own welfare — every individual looks at him- or herself as the most important creature in the world, and obviously they cannot all be right. But Wright’s point is unnecessarily absolutistic. We are not talking about who really is “the most important person on Earth” in an objective sense, but how we, ourselves, should view ourselves. In this sense, I cannot view others as more important than myself. I am my most immediate concern. The fear of the selfishness inherent in social Darwinism sent Wright to the other extreme: perfect selflessness. But the lesson of social Darwinism is not that selfishness is evil; it is that selfishness not tempered by moderation can lead to disastrous consequences.

As we have seen, pure, thoughtless selflessness can lead to consequences just as disastrous. Nietzsche advocates a moderate position between these two extremes: “Self-interest,” Nietzsche tells us, “is worth as much as the person who has it: it can be worth a great deal, and it can be unworthy and contemptible.” (Nietzsche, 1976, p. 533) Selfishness is not evil. It is a fact of life, as evolution has helped to teach us. I am, without a doubt, more interested in myself than any other person in the world. The real moral imperative is not to minimize this interest, but to make oneself into a person who is worthy of it. It is this fundamental point that forms the core of Nietzsche’s individualism.

Because I am advocating an individualistic morality, moral theories in the traditional sense are inadequate, because they attempt to come up with general rules that apply to all people. Morality must be a discriminator of persons: “it is immoral to say: ‘what is right for one is fair for the other.’” (Nietzsche, 2000, p. 339) It is worth noting that this remark is not restricted to utilitarian and consequentialist moral theories; theories that seek to moralize about human intentions and duties, such as the ethics of Kant, are just as hated by Nietzsche. Like consequentialist theories, these moral theories proclaim that what is good for one person is good for all. Nietzsche’s complete opposition to this might seem odd; after all, is it not commonly held that all human beings have a conscience, which tells them what is really right and wrong?

But why do you listen to the voice of your conscience? And what gives you the right to consider such a judgment true and infallible? For this faith [i.e. the faith in one’s conscience] — is there no conscience for that? Have you never heard of an intellectual conscience? A conscience behind your “conscience”? (Nietzsche, 1974, p. 263)

What Nietzsche ultimately prescribes is to look behind our moral motivations, to look relentlessly deeper and deeper and to gain a greater knowledge of ourselves. As our study of evolution has pointed out to us, what seem to us to be pure and innocent moral feelings sometimes turn out to be nothing but “highly nuanced investment advice.” What is needed is an “intellectual conscience,” a ceaseless drive to know more about ourselves, and to seek constantly the answer to Kant’s question “what is man?” Though we might now rephrase the question: “who am I?” My fundamental concern in life is to discover who I am, and to create out of myself my own moral values:

Let us therefore limit ourselves to the purification of our opinions and valuations and to the creation of our own new tables of what is good, and let us stop brooding about the “moral value of our actions!” … We…want to become those we are — human beings who are new, unique, incomparable, who give themselves laws, who create themselves. (Nietzsche, 1974, p. 266)
From thoughts such as this we can formulate what is, for Nietzsche, the ultimate moral imperative: you should become who you are. A rather mysterious phrase, certainly. Surely I already am “what I am;” to speak of becoming what I already am would seem paradoxical, if not outright contradictory. The contradiction, however, is only apparent, not real. Nietzsche is implying that we are, in a sense, separated from ourselves, especially in the realm of morality. We have been “brooding about the moral value of actions” so much that we have completely covered over and corrupted our deepest opinions and valuations; these are the “promptings of the true self” that Hesse spoke about in the quote that introduced this section.

It is hard to follow these “promptings,” because our tendency has become to disown them in favor of such moral standards as the happiness of the greatest number, or Kant’s categorical imperative: “we are necessarily strangers to ourselves, we do not comprehend ourselves … for us the law ‘Each is furthest from himself’ applies to eternity.” (Nietzsche, 2000, p. 451) And so, the drive to become what one is is really the highest expression of what Nietzsche had called the intellectual conscience. Through a combination of our two most profound and important drives, the will to truth and self-interest, we can perhaps set to the task of discovering ourselves, and, in fact, creating ourselves.

The former of those tasks is certainly not easy. It requires great honesty and willingness to look at the less savory parts of oneself. The latter, however, would seem almost impossible. How do we create ourselves? For Nietzsche, this is the true realm for moralities, for tables of values. The key is that these tables of values are not created to apply to all of mankind; they apply only to me, for the simple reason that I have created them for myself and no one else. Nietzsche’s infamous conception of the übermensch presents the Nietzschean ideal: spirits that have elevated and strengthened themselves to the point that they can create their own values. To illumine his point, Nietzsche sometimes speaks of this creation of values in terms of aesthetics. Nietzsche had said in his very first book that “art represents the highest task and the truly metaphysical activity of this life,” (Nietzsche, 2000, p. 32) That is, creating oneself is an aesthetic endeavor, and yet it is not an arbitrary and senseless creation, for it has metaphysical significance. Thus, Nietzsche praises the ability “to ‘give style’ to one’s character,” which allows us to achieve the “one thing that is needful,” which is “that a human being should attain satisfaction with himself.” (Nietzsche, 1974, p. 232-3) What he is attempting here is a kind of fusion of ethical and aesthetic ideals — giving style to one’s character is certainly an aesthetic endeavor, but being satisfied with oneself is ethical, metaphysical. It seems to me that the nature of the fusion remains obscure, but I also think that this obscurity is, in a sense, necessary. Only you can give concrete meaning to this fusion for yourself. If Nietzsche could simply set out an easy formula for one to follow in order to give style to one’s character, the value of the idea and Nietzsche’s individualism would be completely undermined. The lasting image left with us is that the work is still left to be done, and only you can do it.

The man of knowledge must not only love his enemies, he must also be able to hate his friends.

One repays a teacher badly if one always remains nothing but a pupil. And why do you not want to pluck at my wreath? …

… You are my believers — but what matter all believers? You had not yet sought yourselves: and you found me. Thus do all believers; therefore all faith amounts to so little.

Now I bid you lose me and find yourselves; and only when you have denied me will I return to you. (Nietzsche, 1976, p. 190)

Conclusion
In the course of defending his claim that utilitarianism is the appropriate ethical theory to derive from evolutionary psychology, Wright discusses a group of people who might, at first glance, seem to be accepting my view. These people

… might say that although happiness is a fine thing, they don’t think there should be any such thing as a consensually accepted moral code. That’s their prerogative. They are free to opt out of moral discourse, and out of any obligations, and benefits, that the resulting code might bring. (Wright, 334-5)

This seems to be the most apparent danger for an individualist ethic. I have mentioned already that an ethic such as Nietzsche’s is obscure, and that such obscurity is necessary, because only the individual can illuminate it, and she can only do so for herself. But when we enter the realm of moral discourse, such obscurity presents a real problem. I want to be able to explain to someone what my moral motivations are and, to a certain extent, I take their moral judgments of me seriously, and I expect them to do the same for my moral judgments of them. We would hardly be satisfied with a murderer justifying his actions by way of asserting that his reasons for doing so, while perfectly clear to him, must remain obscure to us because of their individual nature. We would want him to explain his motivations for doing so, and evaluate whether they were right or wrong. If we accept a full-on individualism in ethics, it would seem that all moral discourse would be rendered useless.

There is a related point to be raised here as well. Our moral discourse is often largely concerned with the harm an action inflicts on other people. For example, the murderer, in general, is in the wrong because he needlessly makes another person suffer. However, if suffering, as we have said, is necessary for joy, and if the desire to abolish suffering is really a form of nihilism, shouldn’t we all become masochists, and seek above all to suffer as much as possible? To provide an extreme example: what if I decided to torture a young child? Nietzsche’s view would seem to suggest that this action is morally defensible, or even admirable; after all, in increasing the child’s suffering, I also increase its capacity for joy. The deeper the
suffering I cause without killing the child, the deeper the joys it will be capable of experiencing. Indeed, if desiring happiness and contentment as our final goal is nihilism, shouldn’t we seek above all to be unhappy? But surely this is nonsense. Who could live this way? And wouldn’t this be merely another and perhaps more potent nihilism?

These are serious objections, but I think that they are aimed at a position that is far more extreme than the one I advocate. What I think must be made clear, above all, is this: happiness is not, in itself, a bad thing. I am not trying to assert that it is when I say that Wright’s utilitarianism leads to a form of nihilism. My problem with Wright’s utilitarianism is not that it seeks to promote happiness. I think, in fact, that such promotion is quite worthwhile, and that happiness can be a very good thing. My objection to Wright’s moral views is that he elevates happiness to the position of highest and absolute good. The “second nihilism” of the preceding paragraph, on the other hand, goes to the opposite extreme, and elevates unhappiness (or capacity for joy, depending on how one wants to look at it) to the position of absolute good. It is just as mistaken, and I find it just as unacceptable.

What I find unacceptable is the whole process of elevating mere concepts such as “joy” and “happiness” to any ultimate or absolute significance. Such a process cheapens life. Life is not a straight line toward a single goal, which ends when one reaches that goal. Life is a tension between extremes, and between goals. The most fundamental problem that traditional moral theorists encounter is not that they choose bad goals, but that they reject the importance of the tension. Nihilism is a rejection of life. As such, it is a rejection of that tension. Happiness is good, as far as it goes, and so, too, is having a higher capacity for joy. But neither of these is the ultimate good, which should always be pursued at the expense of the other. To assert the opposite would be to say that one of these two is not really good, and that goes directly against our most fundamental instincts. I cannot regard happiness as bad, nor can I regard capacity for joy as bad; either of these alternatives would make life impossible, and so both are tantamount to nihilism.

Once this is recognized, I think that it becomes possible to reconcile individualist ethics with moral discourse. This is possible because the realm of moral discourse (i.e., public morality, political right, etc.) is governed not by absolute goods, but by many different goods in tension with one another. Because it does not have an absolute good for which we always positively aim, this realm presents us with a negative morality. The law rarely tells us what we should do, because to do so would be to claim that it knows what is best for our lives. Much more often, it tells us what we are prohibited from doing. This approach requires no such absolute claim, because it is involved in the situations arising from interaction among people, and our duties to others. But this approach cannot be the whole of morality; a truly worthwhile morality must provide us with some sort of positive motivation for us as individuals. The most basic function of individualism in our ethical life is to be this positive motivation, and to provide us with an ideal toward which we should strive. When Nietzsche tells us to “become those we are,” the statement has the feel not of a restriction but of an invitation.

This separation between positive and negative morality is absolutely essential. Wright’s problem, which he shares with most moral theorists, is that he thinks that our moral discourse should address positive moral claims. That is, we ought to actively go out and increase the happiness of the greatest number of people, and elevate this above all other practices. As we have seen, however, this leads to nihilism. Activities such as the seeking of the happiness of the greatest number can be justifiable pursuits. But, they are not sufficient in themselves. Happiness is far too concrete and universal a goal to provide positive impetus for an individual to act. It ought not be the highest authority to which all our actions are subordinated.

It is my conviction that, while moral discourse and the realm of negative morality in general are important, they still remain subordinate to the positive invitation to “become those we are.” We are used to thinking of our duties to others as being of ultimate importance, whereas we often forget, or even reject outright, that we have, first and foremost, a duty to ourselves. This is the deeper meaning of evolutionary psychology’s claim that we are all fundamentally selfish, and Nietzsche’s teaching that “Self-interest is worth as much as the person who has it.” Our duties to our fellow human beings are certainly sacred, but if we regard these duties as the most important ones, we deny ourselves. Our most vital and sacred duty is to ourselves — only as such can our lives be satisfying.

Works Cited
I am a senior in the Department of Anthropology, pursuing a second degree in sociology. I will receive honors in both departments, as well as from the UK Honors Program. In fall, 2007, I will begin a doctoral program in anthropology at Pennsylvania State University, studying archaeology and paleoethnobotany, topics with which I have become familiar through my coursework at UK and my preparation of this thesis. George Crothers, my faculty mentor, introduced me to the topic of rock art during a trip to Salts Cave in 2006. I have had an interest in the subject since, and he has been extremely helpful and willing to provide resources and advice throughout the course of my research. My hobby of caving led directly to my involvement in this research, and my experience in Mammoth Cave as a cave guide over two summers helped familiarize me with the terrain and the subject. The cave area was my home before coming to UK, and it has remained an important and fascinating place for me. It has been very enlightening to conduct this research.

Facility Mentor:
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In his thesis, Logan Kistler builds a convincing argument that the enigmatic prehistoric drawings found in Mammoth Cave, Kentucky, represent entoptic phenomena resulting from use of the deep cave environment to induce altered states of consciousness. The neuropsychological model that Logan draws upon was originally used to explain similar representational forms found in rock art cross-culturally and through time from the Upper Paleolithic decorated caves in Europe to San shamanistic rock art in Southern Africa. These repetitive images have their origin in human ocular anatomy, which can be induced by sensory deprivation and other hallucinogenic stimuli. The exact conditions and cultural context that compelled prehistoric American Indians some 2000 years ago to render these geometric and abstract images in the dark recesses of Mammoth Cave still elude us, but Logan has made a convincing case that it represents a category of ritualistic human behavior better known from famous cave sites around the world. Logan demonstrates in this article that he has a very good command of diverse literature from neuropsychology to ethnopharmacology. However, for me, it demonstrates that all learning begins with simple exploration and wonder about the world around us. Logan found his world in the great underground.

Abstract
During a recent Earthwatch Institute survey of archaeological remains in Mammoth Cave, a project was begun to find and record prehistoric images on the cave walls. I chose to analyze petroglyphs and pictographs on three panels in Main Cave. This article offers a hypothesis for the circumstances surrounding the rock art’s production: the geometric and anthropomorphic figures in Mammoth Cave are representative of a series of visual percepts experienced cross-culturally and caused by various conditions — including sensory deprivation, fatigue, and psychoactive drug use — acting on the ocular anatomy and nervous system. That is, the glyphs might be visual representations of simple hallucinations experienced by early cavers. These forms, “entoptic phenomena,” frequently occur in cave images and other artwork around the world, and are often ethnographically linked to shamanistic visions and other activities involving altered states of consciousness. The images in Mammoth Cave appear to represent several of the entoptic forms, and conditions of prehistoric cave exploration would have been ideal for experiencing them. Given this evidence, and considering the frequent use of caves for ritual activities across cultures, it is likely that Mammoth Cave Rock Art is linked to entoptic phenomena.
Introduction

As they explored the underground maze of the Mammoth Cave system in the early nineteenth century, the slave guides, wealthy tourists, entrepreneurs, celebrities, and other visitors often left their signatures on the limestone walls and ceiling to memorialize themselves in some of the period’s most remote known passages. Though historically fascinating and quite abundant, these mementos were left some two millennia after the first imagery in the cave — the geometric, sometimes anthropomorphic, and abstract images scratched lightly into limestone or drawn with the spent charcoal of the torches used to light the deep cave journeys. These puzzling images represent one form of evidence of early human exploration that has yet to be thoroughly scrutinized by archaeologists.

The glyphs occur in the cave well beyond the points at which natural light is visible, meaning that they were created using light from the torches brought in with the explorers (if indeed light were present during their creation). This fact, in conjunction with the large quantity of glyphs present, suggests that they were not created idly, but were made for some significant purpose. There are other Kentucky rockshelter and open-air rock art sites that likely align chronologically with the Mammoth Cave glyphs, but they are, for the most part, typologically and stylistically dissimilar to the abstract cave images (Coy et al., 1997). A few of the motifs commonly found in the Mammoth Cave imagery occur around the state and in the Green River drainage, but with very low frequency and with contextual settings — in terms of associated images and natural surroundings — different from those found in the cave.

The highly abstract Mammoth Cave rock art, therefore, should be considered to have its origins in a different social sphere from the images found at the open-air and rockshelter sites that share even the closest proximity to Mammoth Cave. While nearby surface sites reveal rock art likely created under environmental conditions familiar to the artists, the Mammoth Cave rock art was created in the unique setting of deep cave silence, darkness, and virtually unchanging climate. It is safe to assume that most members of the population would have had access to open-air sites, whereas the deep cave locations of rock art would likely have been visited by fewer people and for more specialized purposes. By assuming that deep cave sites would have been inaccessible to large portions of the population, and by contrasting the environmental conditions of open-air rock art sites and Mammoth Cave rock art sites, we can confidently suggest that both the social climate and the direct stimuli involved in the creation of the images were markedly different.

We will see later that the Mammoth Cave rock art can be viewed as typologically similar to images found in geographically and culturally unrelated sites, including the Maya center of Tikal, the California Great Basin, and Paleolithic sites in Europe (Haviland and Haviland, 1995; Lewis-Williams and Dowson, 1988). The Mammoth Cave images can be entered into inter-media comparisons with the embroidered artwork of the Huichol Indians in Mesoamerica (Furst, 1996), further illustrating the universality of the simple visual forms found in the Mammoth Cave system. The implication in these comparisons is that there is an underlying link that is not culture-specific between the origins of these abstract images in different world-regions. It is possible, even likely, that certain characteristics of human biology are responsible. This idea will be further explored when we begin to discuss the possible reasons for the presence of the abstract rock art in Mammoth Cave.

Archaeological Background of Mammoth Cave

The caves of south central Kentucky were used for a variety of activities by the area’s prehistoric inhabitants. Mammoth Cave and Salts Cave (actually part of the Mammoth Cave system) are the two most studied in the region, with an abundance of research that began shortly after their modern re-discovery in the late eighteenth century. The first modern industry in the cave system was a saltpeter extraction operation (as indicated by the first deed, claimed by Valentine Simmons) that operated on its largest scale during the War of 1812. Saltpeter miners, mostly African American slaves, came into the first contact with prehistoric remains in Mammoth Cave. The “Audobon Avenue Mummy” was possibly the first remains of a prehistoric human encountered in historic times, found perhaps as early as 1810 by saltpeter workers (Meloy, 1968, pp. 16, 21). Much more evidence of human activity has been recovered (and much destroyed) since then.

The discovery of the Mammoth Cave Mummy, “Lost John,” in 1937 marked a turning point in the archaeology of Mammoth Cave. Before that moment, it was still believed by some that the numerous artifacts deep in the cave were the result of events other than intensive cave exploration by prehistoric peoples. “There were some who even argued obstinately that the burned reeds that had been found in the cave had been washed in by fresshets or ancient rivers and that the primitive grass
sandals had been carried in by pack rats” (Pond, 1937, p. 176). The human remains provided the incontrovertible evidence needed to convince all but the most reluctant skeptics. The Mammoth Cave Mummy was the first evidence of its kind to be discovered in situ after Nels Nelson’s introduction of systematic archaeological techniques to the cave in 1917 with his investigations in the Mammoth Cave Vestibule (Nelson, 1917). From then on, the questions were not centered on whether the cave was explored and used by prehistoric groups, but when, why, and to what extent.

A chronology has been established to demonstrate the era of heaviest use of the cave (see Figure 1). Kennedy and Watson (1997, p. 5) suspect two discrete periods of occupation and cave use, one in the late Archaic and the other in the early Woodland Periods. The first group left less evidence of intense resource exploitation and crop cultivation than the second, and there is a gap of about two hundred years between the two occupations. (1997, p. 5, Figure 1) These findings are consistent with typical subsistence patterns of indigenous populations in the area (Fagan, 2005, Ch. 17-18). The earliest date (4120 ± 70 B.P.) was recorded from the Mammoth Cave Interior, and is an outlier by several centuries; although, comparable dates have been taken from torch debris in nearby Lee Cave (Watson, 1974, p. 215). The most recent date (1920 ± 160 B.P.) was taken from internal tissue of the Salts Cave Mummy (or Little Alice, or Little Al), a flexed burial discovered in the late 19th century (Kennedy and Watson, 1997, p. 5; Meloy, 1968, p. 6).

Minerals were the primary cave material of interest to the prehistoric cavers, and a number of minerals were collected from the walls and floors of Mammoth and Salts Caves. Battering on the walls indicates prehistoric gypsum mining. Watson indicates that “pounding with sharp-edged rocks will dislodge an intermittent stream of gypsum powder which could have been caught in a gourd or basket by an assistant or which could have been allowed to fall on a cloth or hide spread at the foot of the wall. In many places the scars of these mining tools are discernable on the walls.” (1969, p. 60) Gypsum could have been used for some perceived medicinal benefits, for a whitewash pigment, or some other ritual purpose. (Watson, 1969, p. 58) Hadley (2006, Ch. 4) provides an extensive discussion of cross-cultural uses of gypsum.

Gypsum occurs in the cave in the form of elaborate “flowers” and “cotton,” as well as a crust covering large areas of the walls and ceiling throughout. We should not rule out the possibility of some value placed upon cave gypsum as a trade commodity and/or ritual material, due to the sheer amount of the mineral removed from the two caves. “The gypsum crystals could have served as charms, curiosities, or components in a medicine bundle” (Watson 1969, pp. 58-60; Watson, 1974, p. 232).

### Radiocarbon Age Determinations from Mammoth Cave and Salt Cave, Kentucky

*All representations are two-standard-deviation ranges*

![Figure 1. Use of Mammoth Cave (After Kennedy and Watson, 1997, p. 7)](image279x495 to 573x650)

Meloy (1968) characterized gypsum as a valuable ritual commodity for the prehistoric people in his discussion of the Mammoth Cave Mummy (or Lost John). “On the under side of the large block, the glitter of his reflected torchlight revealed the precious gypsum” (Meloy, 1968,p.16). Watson (1969, p. 58) points out that Meloy, like others, had the tendency to romanticize the significance of gypsum as a powerful ritual substance, especially with respect to the Mammoth Cave Mummy. “His faith in the sacredness of the tribal need for gypsum, precious ceremonial paint of the ancestors, had driven him on through the silence ...” (Pond, 1937). This type of depiction stretches well beyond the reach of any conclusions that can be drawn reasonably via archaeological evidence. Nonetheless, the climbing poles, mining tools, and walls stripped of gypsum well above the easy reach of an average-sized human indicate that for some reason it was vigorously sought by the prehistoric people.

Mirabilite was also removed from the caves, and was probably sought for its medicinal qualities as a cathartic (Watson, 1969, p. 58; Watson, 1974, p. 232). Experiments reported by Watson (1969, p. 58) show that when ingested in amounts of about two and two-thirds or more tablespoons (in its natural form as found in the caves), the cathartic effects are significant. Schoenwetter (1974, p. 56) indicates that “the mining of mirabilite for its medicinal properties seems wholly in keeping with the reconstruction of a high-roughage diet of stored seeds.” The mineral’s salty taste might also have made it a valuable resource for flavoring foods. Watson (1969, p. 58) believes there to be “no doubt that a salty mineral would be valued and probably widely traded.”

Chert was a third mineral gathered in the caves of south central Kentucky. Mammoth Cave, especially Flint Alley and Jessup Avenue, provided a supply of high quality chert for flint knapping. Salts cave provided only poor quality flint, and was not heavily exploited for this resource (Watson, 1974, p. 10). “At C10 [Jessup Avenue, Mammoth Cave] there is a vertical shaft with both nodular and tabular chert outcropping in it and near it ... Both kinds are of good quality and chunks of both have been smashed and battered out of the wall” (Watson, 1974, p. 188).
Surface survey revealed extensive chert use for the manufacture of flaked stone tools (Watson, 1974, pp. 3-15).

Archaeological evidence from Salts and Mammoth Caves has contributed greatly to the study of the diet of the prehistoric people of south central Kentucky. Yarnell speaks of the “extraordinary yield of data essential to the reconstruction of ancient patterns of subsistence and ecology” preserved by the caves’ shelter and naturally curatorial static temperature and humidity (1974, p. 113); and Kennedy and Watson point out that the nutritional and dietary information gained from paleofecal analyses “provides the most detailed and best preserved such evidence available anywhere in the world for a prehistoric human group” (1997, p. 6).

Virtually all published accounts of the early cavers’ diets indicate typical involvement in the Eastern Agricultural Complex (Fagan, 2005, p. 424). The gradual increase in certain plant remains over time suggests increasing use of native cultigens, specifically cucurbit, chenopod, maygrass, sunflower, and sumpweed (Yarnell, 1974, pp. 118-119). Paul Gardner (1987, p. 358) also mentions that non-native cucurbit was in the area by 4000 B.P., long before any known indigenous mining of the caves. By analyzing flotation samples from the Salts Cave Vestibule (later dated in the Early Woodland by Gardner [1987, p. 359]), Yarnell reconstructed a subsistence pattern of nearly two dozen varieties of plant food (1974, p. 120). Schoenwetter’s pollen and macrobotanical analyses also indicate seasonal exploitation of a number of wild fruits and berries, with almost constant use of fresh or stored chenopod, sunflower, hickory, and maygrass (1974, p. 52), and Yarnell’s analysis of the Salts Cave Mummy’s intestinal contents reveals the presence of animal protein and insect cuticle (1974, p. 109). Altogether, the evidence indicates subsistence through plant domestication and storage, heavily supplemented by seasonal hunting and gathering of local resources.

Kentucky Rock Art as Context

Significant rock art research has been conducted around the state of Kentucky, revealing numerous petroglyph and pictograph sites. Coy et al. (1997) compiled a volume including over sixty rock art sites in Kentucky. The sites are not evenly distributed throughout the state, but cluster largely in the Eastern Mountains and the Pennyroyal region, including the Green River Drainage. Ison (2004) suggests that because the glyphs often occur in the two areas of heaviest early adoption of the Eastern Agricultural Complex, they might somehow be related to early crop domestication in the Late Archaic and Early Woodland Periods. He uses the frequent juxtaposition of bedrock mortars (hominy holes) and petroglyphs as evidence, pointing out that “rock art motifs and hominy holes are often found on the same boulder within shelters and ... never intrude on one another” (Ison, 2004, p. 183).

Common motifs at the Kentucky sites recorded and catalogued by Coy et al. include faunal elements, anthropomorphic elements, and abstract geometric figures. Bird tracks dominate the field, occurring at 31 of the sites. Human footprints occur at 15 sites, and all other motifs are significantly less common. Most of the areas are petroglyph sites, meaning the rock art is scratched or pecked into the surface without pigment. The only exception is the Mississippian Asphalt Rock pictograph site in Edmonson County, where the images are painted with natural red ochre (Coy et al., 1997, pp. 42-46). Geometric shapes and other forms similar to those represented in the Mammoth Cave system, such as spirals, zigzags, etc. occur at a number of Kentucky sites, but are often stylistically different. The High Rock petroglyph site in Powell County shows a complex arrangement of geometric forms, but with thick, deeply-incised lines and what Coy et al. characterize as “Meso-American style” (1997, p. 153). Spirals appear at Dismal Rock in Edmonson County (1997, p. 41), Tar Springs in Butler County (1997, p. 15), and various other sites around the state, but often appear alongside bird tracks, as well as other glyphs and bedrock mortars.

The Burnt Ridge Petroglyph Site in Madison County (Coy et al., 1997, p. 94-96) has the most comparable anthropomorphic glyph to those appearing in Mammoth Cave, but the stylistic differences are profound. The Burnt Ridge figure has a bulbous head and linear body, limbs, and crude digits (all of the same width) carefully pecked into the stone surface. This style is in sharp contrast to the human figures in Mammoth Cave, which typically appear in a “corn-husk” style; that is, a trunk body represented by an area of vigorous vertical scratching, with arms and/or legs crafted in the same manner, sometimes with digits represented as single short lines incised at the distal ends of the limbs. They are occasionally depicted in positions suggesting movement, and are frequently represented either with no head or with what might have been intended as a head but is now (after centuries of mild wear) indistinguishable from the simple form of the body. Overall, the human figures cannot be described as anatomically or artistically precise, but only as basic representations of the human form. These glyphs are the only ones in the cave whose representative value can be interpreted in even the most basic terms with a moderate level of confidence. The highest concentration of human figures occurs on a panel known as Standing Rock (discussed below).

The contrasting styles of Mammoth Cave rock art and other Kentucky rock art are easily observed. Mammoth Cave rock art tends to be very superficial, each line scratched lightly with a single pass of a sharp implement (probably limestone cave debris used as an improvised drawing device, judging from the infrequency of flake-stone tools found in the cave interior) or drawn with charcoal from cane and wood torch remnants. There is nothing to indicate that significant time or artistic precision were spent creating the images. This is not surprising, bearing in mind that the artists would have been working only by the light of a limited number of torches; however, if the only factor preventing a higher level of precision in the deep cave glyphs were lack of light, it might be expected that we would find more expertly crafted images in the entrance and “twilight zone,” where natural light can still be seen from the surface. Because we do not find such glyphs near entrances, it seems that the expedience of production associated with the deep cave glyphs has little to do with
the time constraints imposed by the cave darkness. This idea is further diminished by experiments demonstrating the efficiency and ease of transport of *Arundinaria* sp., *Gerardia* sp., and other material commonly used as torches (Watson, 1969).

The rock art commonly found at surface sites in Kentucky is scratched or pecked into limestone or sandstone. The lines often have appreciable width and/or depth, indicating significant time and effort spent incising the glyphs. Coy et al. indicate that “the designs of the sites in Kentucky were well-executed. The bird tracks and turtle of Big Sinking Creek Turtle Rock ..., the ‘Meso-American style’ complicated design on the smaller rock of High Rock ..., and the many complicated designs of Turkey Rock ... are evidence of considerable skill in planning and execution” (1997, p. 153).

If the drawings in the Mammoth Cave system were intended by their artists to showcase the kind of workmanship described above, they would not appear as the haphazard, hastily created forms that are found in loose aggregates throughout the passages. People living in the same area during the same time period — and almost certainly culturally associated with the prehistoric cavers — were creating rock art in surface sites that have lead modern researchers to conclude that they were “careful craftsmen” (Coy et al., 1997, p. 153). Conversely, the superficial, abstract, repetitive rock art images of the Mammoth Cave system altogether indicate no careful planning or execution, but rather an *ad libitum* reaction to local stimuli or to some inexplicable expressive urges experienced in the unique setting of the deep cave.

The kind of superficial images found in the cave system would almost invariably have been destroyed by the two millennia of weathering since their inscription, if they were located in open-air sites. The protective cave environment has allowed the preservation of many faint images that would otherwise have been lost to the temperate weather patterns of the Eastern Woodlands. For this reason, we cannot be sure that these kinds of images were not drawn alongside those found today at surface sites, possibly even by the same artists; we might choose to use the environmental conditions to partially account for the absence of the cave-style glyphs at open air sites. There is virtually no way to test this hypothesis. What is certain is that if the kind of carefully designed and deeply incised glyphs that we see in surface sites were ever drawn in the cave, they would still be preserved and the only erosive effects would be those of historic human activity.

We can reasonably assume that, although some cave images may have been mimicked at surface sites, the vast majority of robust glyphs at surface sites never had counterparts in the cave system. Furthermore, the bird tracks, animal tracks, human hand and footprints, and most of the other representative motifs found at contemporaneous sites near the Mammoth Cave system do not occur inside the cave. Because the Mammoth Cave glyphs are so anomalous in the context of Kentucky rock art, we should consider them to have originated in association with different activities, different direct stimuli, and/or in different social settings from those found at surface sites.

Surface glyphs have been loosely associated with bedrock mortars and thus early food production (Ison, 2004, p. 185). To draw a parallel to this economy/subsistence based origin, the deep cave rock art might well be associated with the well-documented gypsum and other mineral mining activities known to have taken place several miles from the entrance. The artists at surface sites would have been working in conditions generally consistent with the temperate weather patterns of the Eastern Woodlands, and with the option of daylight. The cave artists would have made their drawings by torchlight, in an environment virtually free of sound (except where water can be heard dripping through vertical shafts or flowing through underground streams and rivers), and with nearly constant temperature and humidity. They would also have been working with the awareness that they were a great distance from the surface, a condition that has been cross-culturally exploited in any number of ritual settings (Crothers, n.d.).

Sobolik et al. (1996) tested twelve Early Woodland paleofecal samples from the Mammoth Cave system for steroids, and based on their results determined that all twelve samples had been deposited by males. While this is too small a sample to be conclusive, it does suggest that a disproportionate number of males were involved in the activities taking place in the cave. On the other hand, Ison (2004, p. 187) suggests that rock art at surface sites in Kentucky, often associated with the processing of cultigens, might well have fallen under the responsibility of women. He discusses a common North American Indian division of labor, in which women were generally responsible for horticultural and plant-processing tasks. In addition to ethnographic and ethnohistorical literature, Ison (2004, p. 185) cites as evidence grave goods specifically linking women to plant-processing in sites containing petroglyphs associated with hominy holes. He argues that “[i]f a hominy hole was the personal property of a particular woman or the women of a nuclear family, then the boulder it was on was probably recognized as her property as well” and “the rock-art on these boulders could also fall under the category of women’s ownership” (Ison, 2004, p. 187).

Kentucky’s documented rock art sites form a significant element of the state’s archaeological record, thanks largely to the work of Coy et al. (1997). There are no doubt hundreds of undocumented glyphs left at open-air, rock shelter, and cave sites. However, the Mammoth Cave glyphs are significantly and undeniably different from the surface sites in Kentucky. This might be attributed in part to one or more of the above-mentioned differences between the two venues, or might be best explained by other variables. These observations can function as a starting point for the following interpretive discussion of Mammoth Cave rock art.

**Discussion of Mammoth Cave Rock Art**

**Description and Classification**

The Mammoth Cave imagery is assumed to originate largely from the Early Woodland period, aligning chronologically with the intensive mineral mining. This assumption is based on numerous dates taken from the cave interior, and a high volume of glyphs more likely associated with large-scale use of the cave rather than the “exploring, reconnoitering, or just caving for
sport” that was the probable purpose of much of the Archaic Period cave use (Kennedy and Watson, 1997, p. 5). It is to be hoped that direct dates will be determined from the images eventually, so that they may be more confidently associated with specific episodes and varieties of cave use. Taking direct dates from the Mammoth Cave glyphs would likely prove extremely difficult. The charcoal from the pictographs could be directly dated with AMS technology, but the resulting data would represent the time that the torches were originally used, not necessarily when the images were drawn. A glyph drawn today might easily be carbon-dated to the Early Woodland Period, as long as prehistoric torch debris (which is extremely abundant in the Mammoth Cave system) were used to create it. Thus, verification of the glyphs as authentically prehistoric is based on wear and patina accrued over the centuries, as well as the frequent superposition of historic graffiti over the images.

There will be no quantitative analysis of the glyphs for various reasons. The glyphs are often very faded, indistinct, and concealed by two centuries of historic graffiti; some areas, particularly sections of Lower Mammoth, are so completely covered in historic graffiti that any faint prehistoric images that once adorned the walls have likely been completely destroyed. Quantitative analysis would almost certainly yield incorrect results because of the destruction, obstruction, and general inconspicuousness of an unknown number and variety of prehistoric images in areas with extreme historic disturbance. Also, many areas of the cave have been surveyed for apparently prehistoric rock art, but because there has not yet been documentation of the images in all areas visited by Early Woodland cavers, I cannot reasonably assert that the search for rock art has been exhaustive. I will focus instead on the nature of a limited number of already-known glyphs.

Three panels (vertical standing rocks) of glyphs in Mammoth Cave are the primary locations of the rock art to be discussed in this paper. They will hereafter be referred to as Devil’s Looking Glass, Standing Rock, and The Cataracts. Devil’s Looking Glass and Standing Rock are so-named on the 1908 Max Kaemper map of Mammoth Cave (Watson, 1974, Figure 23.1). “The Cataracts” names the location of a narrow vertical shaft in Main Cave, which is the closest landmark to the third panel. Glyphs from Upper Mammoth Cave and Salts Cave not appearing on these panels will be discussed occasionally, based on personal observations made during my time in the Mammoth Cave system.

I have defined three main categories of imagery (not including historic elements) by which to classify the Mammoth Cave glyphs. These categories are largely for convenience, but do represent somewhat natural divisions based on differences in artistic emphasis, style, and/or the activities associated with their production. I will explain the classification system using examples from Devil’s Looking Glass.

The charcoal pictographs on Devil’s Looking Glass (Figures 2a-b) are some of the rock art specimens most frequently viewed and interpreted by park personnel and visitors to the cave. They lie in Main Cave, are accessible from the Historic Entrance, and are easily viewed from the developed trail. The panel is not in an area with electric lights, so plant and algal growth on the vertical rock have not been an issue. The images have been worn by historic activity, and are overlain by a number of historic graffiti. This makes rough authentication of prehistoric elements easier, but discerning them from their surroundings considerably more difficult.

“First order” images consist mainly of the kind of relatively bold images found on the lower right section of Devil’s Looking Glass. I define them as glyphs created...
by active human artistic agency (i.e., the image itself was the intended product of the activity that created it, and not the auxiliary effect of another activity, such as stoking of torch ends on the rock’s surface to discard the spent portion). Also, they must be bolder, or created with more emphasis, than what we will call “second order” imagery, and must have clearly defined boundaries. On Devil’s Looking Glass, a headless anthropomorphic figure, a vertical zigzag, and a small field of dash marks are included in this category. The zigzag has been problematic because it is significantly darker than the other first order images, suggesting a more recent creation or touch-up than the others. The topmost part of the zigzag appears fainter, roughly equal in wear to the anthropomorphic figure immediately to the left. This peculiarity suggests that at least part of the image can be safely considered prehistoric. Because the darker part blends smoothly with the lighter section, either: a) the artist applied increased pressure with the charcoal while drawing from the top down (or vice versa), creating the differential tones, or b) the artist who touched up the drawing subsequent to its original production traced part of the original pattern, leaving a small portion of the glyph untouched. To explain the boldness of this glyph it would be necessary to conduct a microstratigraphic analysis and/or direct dating.

Second order images are those glyphs whose boundaries are not defined clearly enough to be classified in the first order, and/or that were drawn significantly less boldly, generally with single lines scratched or of charcoal, and that were — like first order images — created actively by human artistic agency. On Devil’s Looking Glass, second order images can be seen intermingled with the first order images discussed above. They are faint, sweeping parallel lines, nested curves, cross-hatching, and other vague shapes drawn lightly, and apparently with single strokes of the charcoal. They have no obvious representative value, and they are significantly more difficult to discern from their surroundings than the bolder first order glyphs, at least one of which was drawn using multiple strokes of the charcoal. Second order images at this location are considered first order glyphs, and are considerably larger than the first order glyphs on Devil’s Looking Glass. There are no conclusive second order glyphs on this rock face, but there is a form resembling a wheel with spokes scratched with single lines between the two zigzags on the left side that is possibly of prehistoric origin. A similar figure on Standing Rock appears to be prehistoric, as is the basis for my suspicion that this is also from the Woodland cavers. Two distinct areas of torch stoking (residual imagery) are apparent on the left side of the panel. All other human-made alterations to the Cataracts panel appear to be of historic origin.

Standing Rock (Figures 4a-e) is the site of the highest known concentration of anthropomorphic images in the cave system. The majority of the prehistoric imagery on Standing Rock is inconspicuous and appears on the side of the rock facing away from the developed trail, making it relatively little known and interpreted, especially compared to Devil’s Looking Glass and the Cataracts. The images are mostly petroglyphs, scratched into the limestone. This makes them harder to distinguish than charcoal pictographs for two reasons: there is less contrast between the petroglyphs and the surrounding limestone, and they do not stand out as easily from historic graffiti scratched into the limestone around and often over them. However, careful examination and digital filtration make locating the petroglyphs a feasible task. Presumption of their bona fide prehistoric origin is based on relationships with abundant historic graffiti, including at least one signature each from 1810 and 1812.

The anthropomorphic figures on Standing Rock are similar in style — even though they are scratched, and not drawn with charcoal — to the anthropomorphic pictograph on Devil’s Looking Glass. On Standing Rock, trunk bodies are represented by areas of vertical scratching with a sharp
implement, probably a corner of a nearby fragment of limestone debris. Legs are sometimes drawn in the same fashion, but it is equally common for legs to be represented as a field of straight lines fanning downward and outward from the base of the body. Arms are present on some glyphs in the same style as the bodies, on some in the same individual line style as the legs, and absent on others. If heads are present on any of the glyphs, it is nearly impossible to tell because of wear and damage from historic activity. The anthropomorphic figures are defined more clearly than some of the other glyphs on Standing Rock, but stand out less than the human figure on Devil’s Looking Glass. They are slightly more difficult to define than the charcoal pictograph because of: a) the extreme disturbance they have received from subsequent activity, b) the ambiguity of the boundaries and relationships amongst the human figures and with other glyphs, and c) (most importantly) the general difficulty involved with determining, some two thousand years after their creation, which petroglyphs were originally drawn with the most emphasis. (This emphasis is less obvious with petroglyphs than with the charcoal pictographs on Devil’s Looking Glass.) All the anthropomorphic figures on Standing Rock are first order imagery, however the distinction is not as definite as with Devil’s Looking Glass. This classification is based mainly on stylistic elements likening the human form on Devil’s Looking Glass to those on Standing Rock, and on a general reluctance to lump these discrete, representative forms with the far more common and abstract second order glyphs interwoven between them.

Second order petroglyphs are nearly ubiquitous on the illustrated face of Standing Rock. They are present in the form of faint sweeping nested curves, concentric circles, cross-hatching, a wheel-and-spoke pattern, and straight parallel lines. The second order glyphs on this panel are almost always single-line patterns (i.e., made with a single pass of the drawing tool), as opposed to the vigorously scratched bodies and sometimes limbs of the human figures. They are not obviously representational of any tools, animals, or other material goods that might have been important to their artists. This is not to say that they should be immediately dismissed as representational of real-world objects, but if they are, we have basically no way of interpreting them.

Because the rock art images are so abstract as to leave us without a logical starting point for interpreting their meaning, it would be more profitable to try to answer the question of their origin. (I am less concerned with determining what these glyphs mean — because in many cases I have doubts that they represent anything physical at all — and more interested in why they take the abstract forms in which we find them, and why they are deep in Mammoth Cave system, a unique
setting of total darkness and nearly total silence.) In the following section, I will explore these questions through a broad hypothesis integrating a number of possible contributing factors to the manufacture of the rock art, including sensory deprivation associated with the deep cave environment, fatigue associated with mining and exploration, the stimulating effects of alkaloid chemicals found in plants associated with cave exploration, cross-cultural ritualism, and the hotly-debated subject of the role of entoptic phenomena and universal forms in rock art.

**The Neuropsychological Model**

In the existing literature on the Mammoth Cave system, discussion of the pictographs and petroglyphs is extremely limited. There is little interpretation and certainly no consensus with regard to the meaning of the images or the social circumstances surrounding their origin. A small number of glyphs might reasonably be attributed to idle scratching or “doodling,” but the Mammoth Cave images are too numerous to suggest this possibility. The abstract glyphs also sometimes are interpreted as zoomorphic. This idea is misguided, given that nearby surface sites from the same time period show clearly representational zoomorphic forms (Coy et al., 1997). That is, the people who created the area’s rock art were capable of producing animal-like images if they so chose, and there is no evidence that the abstract glyphs represent the same kinds of entities. Therefore, interpreting Mammoth Cave’s zigzags, spirals, and other geometric images as zoomorphic is premature. Other ideas, including the following “neuropsychological model” (Lewis-Williams and Dowson, 1988, p. 202), might be usefully applied to the interpretation of the rock art of Mammoth Cave.

In a paper dealing with the possibility that male initiation rituals took place in the Mammoth Cave system, Crothers (n.d., p. 15) suggests that the rock art may be considered as evidence that “the prehistoric cave experience may have had supernatural overtones.” Although it is impossible to discuss the nature of Woodland Period rituals with a high level of specificity, the idea that the cave was the stage for ritual activity is likely, given the extensive cross-cultural occurrence of cave and kiva-based rituals (Crothers, n.d.). This concept plays a role in the following discussion of recurrent forms in visions experienced cross-culturally, and the possible importance of these forms in Mammoth Cave’s rock art.

This discussion of the significance of the Mammoth Cave rock art will be largely based on concepts proposed in the 1988 article “Signs of Our Times: Entoptic Phenomena in Upper Paleolithic Art,” by Lewis-Williams and Dowson. Therein, the authors argue that certain patterns appear in rock art across time and space in unrelated cultures, and that these repeating forms may have their origins in the human ocular anatomy. They use the phrase “entoptic phenomena” (entoptic, from the Greek meaning “in the vision”) to describe the visions of these redundant forms, which are experienced by persons in contact with various stimulating conditions. The authors broadly describe the entoptic forms as “a feature of altered states completely controlled by the nervous system,” rather than “culturally informed hallucinations” (1988, p. 202). The implication is that the same forms are experienced regardless of cultural affiliation and can, therefore, occur in unrelated groups at any time the stimuli are present. Although Lewis-Williams and Dowson’s ideas on entoptic phenomena in prehistoric rock art have generated considerable debate and disagreement.
The neurological basis underlying the representative images found cross-culturally in cave art remains a viable hypothesis to explain the types of images found in Mammoth Cave. In light of the vast cross-cultural experience of these forms in ritual settings and their representation in cross-medial artwork, as well as a number of ideal conditions for their occurrence that are present in deep cave settings, a strong case can be made for the involvement of entoptic phenomena in much of the rock art in the Mammoth Cave system.

The work of Heinrich Klüver (1926) marked the beginning of systematic study dealing with redundant forms in visions associated with altered states. Klüver studied the hallucinatory effects of mescal buttons from the peyote cactus, and discovered certain recurrent shapes in the subjects' visions. Decades later, other scientists (see Lewis-Williams and Dowson, 1988, p. 202 for a complete list of relevant publications) recreated the results of Klüver's work by identifying similar redundant forms in test subjects' visions that “take geometric forms such as grids, zigzags, dots, spirals, and catenary curves ... experienced as incandescent, shimmering, moving, rotating, and sometimes enlarging patterns” (1988, p. 202). The stimuli that have been demonstrated to produce these percepts include electrical stimulation, flickering light, psychoactive drug use, sensory deprivation, fatigue, rhythmic movement, intense concentration, hyperventilation, auditory driving, and schizophrenia (1988, p. 202). I will point out for later discussion that several of these stimuli could very conceivably have been common circumstances under which prehistoric Mammoth Cave exploration took place, especially in view of the likelihood of some ritual use of the cave.

Lewis-Williams and Dowson consider San shamanistic rock art from Southern Africa, Coso shamanistic rock art from the California Great Basin, and Upper Paleolithic cave art in France for their study, which is the first published link between entoptic phenomena and rock art. The authors construct a model of three stages of mental imagery experienced in altered states of consciousness by drawing on twentieth-century experimentation and shamanistic practices, and they apply the model to the rock art in various settings to explain cross-cultural similarities and culture-specific elements in each. The work is based on neuropsychological research performed in laboratories working independently of one another, a condition that they suggest “greatly reduces the inferential component” in their argument (Lewis-Williams and Dowson, 1988, p. 213).

The first stage of their three-stage model consists of the perception of entoptic forms consistent with numerous accounts derived from laboratory experiments. The visions cannot be consciously controlled or acted upon, and are focused at reading distance. They are sometimes bright and colorful, and can occur even in the total absence of light with eyes open or closed. The forms change rapidly, and are generally described as having a “life of their own” (Lewis-Williams and Dowson, 1988, p. 203). Because these visions are supposedly produced by interactions between the stimulated nervous system and ocular anatomy (and not the subject’s knowledge and experience), they do not depend on cultural background, and thus occur across cultures with high consistency (1988, p. 202). The authors selected six of the most common entoptic forms for consideration, and defined them as follows: “1) A basic grid and its development in a lattice and expanding hexagonal pattern, 2) sets of parallel lines, 3) dots and short flecks, 4) zigzag lines crossing the field of vision (reported by some as angular, by others as undulating), 5) nested catenary curves (in a developed form the outer arc comprises flickering zigzags), and 6) filigrees or thin meandering lines” (1988, p. 203). They note that there is variation, but these are considered to be fundamental forms based on their abstraction from numerous reports. Their illustrations of these six basic forms alongside examples of rock art in which they occur from their areas of study have been reproduced here as figure 5.

The second stage of their model involves the subject’s conscious or unconscious manipulation of the entoptic forms into familiar images. In other words, they try to “make sense of entoptics by elaborating them into iconic forms.” (Lewis-Williams and Dowson, 1988, p. 203) Because this stage is based on the subject’s own experiences and knowledge, the visions are — unlike the first stage visions of purely entoptic forms — dependent on cultural setting. The authors describe how this stage is sometimes embraced in ritual contexts: “during the period of his training a Samoyed shaman is encouraged to ‘guess’ what each element in his vision represents (Siikala, 1985)” (Lewis-Williams, 1988).
and Dowson, 1988, p. 210). This “guessing” leads to willful manipulation of the visions into iconic forms. The rock art that is created to represent this stage of mental imagery is supposedly an intermediary between purely entoptic and purely iconic forms, integrating the basic entoptic forms into culturally relevant iconic ones (see figure 5 for examples).

The authors describe the shift into the third stage as follows:

As subjects move ... into Stage 3, marked changes in imagery occur (Siegel, 1977, p. 132). Many laboratory subjects report experiencing a vortex or rotating tunnel that seems to surround them, and there is a progressive exclusion of perceptual information (Horowitz, 1975, p. 178). The sides of the vortex are marked by a lattice of squares like television screens. The images on these ‘screens’ are the first spontaneously produced iconic hallucinations; they eventually overlie the vortex as entoptics give way to iconic images (Siegel and Jarvik, 1975, pp. 127, 143; Siegel, 1977, p. 136) ... Subjects stop using similes to describe their experiences and assert that the images are indeed what they appear to be. They ‘lose insight into the differences between literal and analogous meanings.’ (Siegel and Jarvik, 1975, p. 128) ... [I]conic imagery is ‘often projected against a background of [entoptic] geometric forms’ (Siegel, 1977, p. 134) (Lewis-Williams and Dowson, 1988, p. 204).

In this third stage of mental imagery, the subject sometimes experiences complex integration of him or herself into the hallucination, and can “transform” into an element of the vision. Sometimes the subject can be integrated into an iconic part of the hallucination; “I thought of a fox, and instantly I was transformed into that animal. I could distinctly feel myself a fox, could see my long ears and bushy tail, and by a sort of introversion felt that my complete anatomy was that of a fox (Siegel and Jarvik, 1975, p. 105)” (Lewis Williams and Dowson, 1988, p. 212). In other cases, subjects report that in the midst of extreme sensory confusion associated with altered states of consciousness, their own anatomical appendages can appear to be composed of entoptic forms; “[The subject] felt his legs consisted of ‘spirals’ and that these somatic spirals blended with a luminous spiral rotating in the visual field ... Another subject reported that he became identical with an entoptic ‘fretwork’ pattern as his arms, hands and fingers turned into fretwork: ‘The fretwork is I’ (Beringer, cited by Kluver, 1942, p. 182)” (Lewis-Williams and Dowson, 1988, p. 211). Lewis-Williams and Dowson (1988, p. 211) apply the third stage concept to San images of humans with zigzag legs and Coso anthropomorphic figures frequently decorated with entoptic patterns. The “vortex” often accompanying the third stage of mental imagery is, for the authors, probably the represented subject of the concentric circles and/or spirals that occur frequently in their subjects’ rock art (Lewis-Williams and Dowson, 1988, p. 205).

The authors note that these stages are not necessarily sequential, but often occur in conjunction with one another (1988, p. 204). Therefore, a shaman, or other person experienced with visions derived from altered states might well learn to associate entoptic forms with more involved iconic forms and, eventually, hallucinatory trances in which the subject is totally integrated into his or her mental vision. This principle makes the entoptic forms — which, alone, have no grounding in the subject’s cultural background — strongly related to the powerful iconic images and complex multi-sensory hallucinations that play a major role in cross-cultural ritual activity. The Huichols of Mexico actively associate entoptics with complex visions in this way: “[t]he first [stage of peyote-induced phosphene images] involves brightly colored geometric imagery in motion, called nierika by Huichols, in reference to sacred designs that serve as portals to other worlds” (Schaefer, 1996, p. 156). This associative relationship can, as is the case with the Huichols, lead to a high level of importance being placed on entoptic forms.

The relationship of entoptic forms to the rock art discussed in Lewis-Williams and Dowson’s article is clear and well-demonstrated. In addition to the San, Coso, and Upper Paleolithic rock art discussed in that article, the neuropsychological model has been applied to images found at the Maya center of Tikal (Haviland and Haviland, 1995). Furthermore, images consistent with entoptic forms can be found in the embroidery of the Huichols. “They feel it is their duty to record these psychedelic patterns in their weaving and embroidery designs after they have returned home” (Schaefer, 1996, p. 157). The ideas are further supported by accounts of yajé-induced visions in the Colombian Amazon that include descriptions of “innumerable scintillating” visions of “grid patterns, zigzag lines and undulating lines, many-coloured concentric circles or endless chains of brilliant dots” (Reichel-Dolmatoff, cited by Lewis-Williams and Dowson, 1988, p. 204).

Entoptic Phenomena in Mammoth Cave Rock Art

To build an argument for this theory, I will first revisit the stimuli that are known to produce mental imagery with entoptic forms, and describe how several of these stimuli could have been part of the prehistoric Mammoth Cave experience. If we eliminate electrical stimulation as a possible stimulus, we are left with flickering light, sensory deprivation, fatigue, intense concentration, hyperventilation, psychoactive drug use, rhythmic movement, auditory driving, and schizophrenia (Lewis-Williams and Dowson, 1988, p. 202). I would reject schizophrenia as a possible stimulus on the grounds that it cannot explain any widespread experience of entoptic forms in a normal population, and is not specific to the cave environment. Rhythmic movement and auditory driving, though possibly present at the time of the glyphs’ creation, I have also eliminated from the following discussion.

Of the remaining six stimuli, flickering light and sensory deprivation are the most likely to have been factors, inasmuch as they were almost definitely experienced on prehistoric journeys into the cave. The open flames from torches used to light the way would have been flickering constantly and casting quick-moving shadows around the passageways, and, in the event that their torches failed, total and immediate loss of any visual...
Acorus calamus

As mentioned before, fatigue would likely have been a regular part of deep-cave gypsum mining expeditions. In addition, the long ordeals of solitude in caves and similar environments that are sometimes part of cross-cultural initiation rituals (Crothers, n.d.) could be sources of extreme mental and physical fatigue, based on the social gravity of the experience, the unfamiliar setting, possible tasks involved, and general anxiety felt by the subject. If fatigue were indeed felt by prehistoric cavers, it is the fourth possible stimulus of the cave setting known to trigger visions of entoptic forms. Intense concentration (though easily the most vague of the stimuli) could be likewise associated with either the mining activities or, even more so, ritual activities involving tasks and settings both unfamiliar to the subject and important to his/her social position.

Hyperventilation is the final stimulus. This can occur as a physical response to (among many conditions) anxiety and nervousness, stress, and stimulant use (Kaufman, 2006). I have discussed how these conditions were likely to have been involved in at least some of the prehistoric deep cave journeys, and it follows that hyperventilation could have been triggered by elements of the experience.

I have provided several viable situations in which one or more of the stimuli indicated by Lewis-Williams and Dowson (1988, p. 202) to trigger the perception of entoptic forms could have occurred in the Mammoth Cave system. By comparing the grids, spirals, concentric circles, sweeping nested curves, zigzags, fields of dash marks, and parallel lines that occur in Mammoth Cave rock art — comprising some of the first order and virtually all of the second order imagery — with descriptions of entoptic phenomena and with art known to represent them, we see that the similarities are uncanny.

Conclusions

It is impossible to determine with certainty the meaning behind any abstract rock art whose creators have not left direct evidence of its significance. However, there is strong evidence to show that conditions were right for the perception of entoptic forms by prehistoric explorers in Mammoth Cave, and the rock art created by these early cavers takes the ideal forms to support this hypothesis. Not only do the simple entoptic forms occur frequently, but the anthropomorphic figures’ irregularities (missing heads or limbs, legs and arms represented by parallel lines) might be attributed to more complex visions in which the subject feels him- or herself transform and be integrated into the entoptic and/or iconic images. The superposition of these anthropomorphic figures over the geometric second order petroglyphs on Standing Rock can almost be viewed as an illustration of the previously quoted passage: “[I]conic imagery is often
projected against a background of geometric forms.” Furthermore, I have provided a hypothesis by which the simple geometric forms occurring in Mammoth Cave are not dismissed as the “idle doodlings of bored novices” as has been the case with similar rock art (Haviland and Haviland, 1995, p. 295), thus refuting an explanation that does not concord well with the volume and consistency of the glyphs. Overall, the evidence — likely presence of the right stimuli, Mammoth Cave glyphs as entoptic forms, cross-cultural ritual practices, dissimilarity to nearby surface glyphs, etc. — makes the hypothesis of entoptic forms’ influence in the rock art of Mammoth Cave a plausible model for explaining its origin.

Visual representation of one’s surroundings and experiences is a tradition dating from well before the peopling of the Americas. Rock surfaces are frequently the chosen places for such representation, but as Coy (2004, pp. 3-4) points out, “the frequency of reported rock-art sites diminishes as one progresses from the west to the east in the United States.” He proceeds under the premise that “the preponderance of picture writing on nonportable surfaces done by the northeast Native Americans was more often executed on trees rather than on rocks.” If Coy’s hypothesis is correct, it is likely that a high percentage of prehistoric Eastern Woodland drawings have been long lost, leaving only the best-preserved specimens for our study. In that case, the surviving Kentucky rock art, including what is found in the Mammoth Cave system, probably represents only a small fraction of the pictographs and engravings once created in the area.

I make this observation to demonstrate that Mammoth Cave was probably not the site of as large a proportion of all prehistoric artwork as it represents today. The rock art therein should be interpreted differently from surface rock art that is seemingly in step with day-to-day activities. When we find such images in a unique environment such as a deep cave setting, we should not fail to consider that unusual circumstances — including the possibility that the artists willingly or accidentally perceived universal geometric forms — played a role in their creation. In accordance with this tenet, I have presented and argued the hypothesis that the rock art of Mammoth Cave represents the same entoptic forms recorded by Paleolithic artists in France, Maya workers at Tikal, Huichol shaman artists, San and Coso shamans, and very likely others throughout history.

It is important to reiterate that direct evidence in support of this idea is scarce. Cross-cultural comparisons and theoretical reconstruction of the prehistoric cave experience indicate that the early cavers likely experienced visions of entoptic forms while inside the cave, possibly caused by conditions of mineral mining and exploration or during ritual activities. A reasonable model is that the early cavers accidentally discovered entoptic visions while exploring the cave, and, like the Huichols, integrated them into a broader shamanistic complex. This would explain why the forms were important enough to record so frequently as rock art. While we cannot be sure of the exact circumstances of the glyphs’ creation, future archaeological research in Mammoth and Salts Caves can help us understand and reconstruct the broader nature of early cave exploration, and possibly provide insight into the rock art’s origin.

Additional research into the use of extracted gypsum would be extremely valuable, if reasonable results could be obtained. This evidence could help us better understand the nature of mineral mining, and possibly the social dynamic of the activity. Direct dating of the rock art would confirm or disconfirm that it was created during the time of the large-scale mining activities in the Early Woodland Period. This could indicate the importance of a possible relationship between the rock art and intensive mining of gypsum and other minerals. In addition, an exhaustive search and recording of rock art in Mammoth and Salts Cave would help us better quantify, classify, and analyze the glyphs. Paleoethnobotanical investigations could help determine the frequency of sweet flag use on early cave journeys, and might yield direct evidence of use of the plant’s rhizome. Additional sex determination of the depositors of paleofecal remains by steroid analysis would be valuable for making statements about gender roles in deep cave activities, including rock art production. With constantly improving technologies and methodologies, future investigations may be able to expand on the existing bank of literature on the archaeology of Mammoth Cave, and may bring us closer to a clear understanding of the petroglyphs and pictographs within.

Bibliography:
Crothers, George M. "Ritual Use of Caves in Eastern North America During the Early Woodland Period." Manuscript in Preparation. (n.d.)


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I would also like to thank my committee members, Professors Chris Pool and Monica Udvardy, for their valuable feedback on my work. It has helped me shape my thesis into exactly the product I intended to create, and has allowed me to examine my own ideas from viewpoints I might not have otherwise considered. Furthermore, thanks to officials and guides at Mammoth Cave National Park for their input and opinions on my work, and for making my time in the field thoroughly enjoyable. Finally, I would like to extend my gratitude to any friend, family member, professor, or other person who has taken the time to discuss my hypothesis with me. Through these interactions, I have been able to hone my explanation and form a sound, reasonable argument based on the reactions, opinions, and questions of individuals both in and outside the field of anthropology. I thoroughly appreciate all the help I have received while producing this thesis.
Kayla Rae Whitaker

I am a senior English major with a minor in Appalachian Studies from Montgomery County, Kentucky. I am also a senior Fellow in the Gaines Center for the Humanities at UK.

This research project is simultaneously an excerpt from my Gaines senior thesis project and an altered version of my 2007 Edward T. Breathitt Lecture. As an Eastern Kentuckian, an aspiring scholar, and a cartoon fiend, my thesis project is entirely fitting: “The Drawn and Quartered Appalachian: The Image of the Cartoon Hillbilly in Animation.” I find “Squidbillies,” and all other Adult Swim cartoon offerings, to be intriguing and entertaining. After watching the initial episodes, I was inspired to involve Early Cuyler in my research; if nothing else, it gives me the opportunity to employ new and fun obscenities in formal, scholarly writing.

Early in my career in the English department, my focus was creative writing. As I progressed and began study the subject of Appalachia, I was pushed out of my area of comfort and forced to write more formally. My faculty sponsors were terrific aids in this endeavor. Learning a new mode of writing has been a challenge, but a wholly rewarding one.

As for my post-graduate plans, I will be conducting an experiment entitled, “Seeing How Far an English Degree From the University of Kentucky Will Get Me in the World.” I will also be a fellow and intern in Berlin, Germany, with Humanity in Action, a program that focuses on minority rights research and activism, next year.

Facility Mentor:
Lisa Broome-Price, Ph.D., Interim Director, Gaines Center for the Humanities

Kayla Rae Whitaker’s lecture explores the image of the hillbilly in 21st-century animation as representative of a contested new Appalachian myth. She surveys the history of the hillbilly icon from late 19th- and early 20th-century depictions of the mountaineer both as a cheerful rustic and as an extremely poor “other” to the white, middle-class Americans, providing a useful context in which to examine the present-day image of the hillbilly provided by television shows such as Squidbillies, the jewel in the animated Adult Swim crown of Cartoon Network. Whitaker shows that, rather than simply updating the image of the hillbilly by adopting the lexicon of the New South — in which Nascar attire and crystal meth replace overalls and moonshine — Squidbillies presents a hybrid signifier of regional pride and oppositional culture. By featuring a mixed family of squids and humans as its hillbilly protagonists, Whitaker argues, the animated show claims allegiance to the tradition of animation in which animals such as Bugs Bunny regularly interact with humans (viz., Warner Bros.’ 1950 cartoon, Hillbilly Hare), but also heightens the absurdity of the visual narrative in a particularly self-reflexive, satirical way, thus challenging facile consumption of any aspect of the Appalachian stereotype.

The argument of Whitaker’s lecture is drawn from her superbly researched undergraduate thesis on the wider topic of representations of Appalachia. She delivered the thirteenth annual Breathitt Undergraduate Lecture in the Humanities on January 24, 2007, having been selected for the lectureship in a competitive application process. The Breathitt Undergraduate Lectureship competition is sponsored by the Gaines Center for the Humanities, and is open to all UK undergraduates. Faculty members Dwight Billings, Tom Marksbury, Shauna Scott, and Karen Tice also mentored Whitaker as she researched this subject.

[Editor’s note: the following is the text of Ms. Whitaker’s 2007 Edward T. Breathitt Lecture. During that lecture, she showed the audience various videos and still images of cartoon representations of Appalachia and Appalachians. For various reasons, including copyright considerations, those visuals are not included with this article, although references to them are retained in the text.]
For the purposes of this discussion, the first hillbilly image appeared directly after the turn of the past century, a time during which a deluge of print media informed the nation of the forgotten Appalachia, a region removed from greater middle American society. This rugged terrain, enclosed by the intimidating heights of the Appalachian mountain chain, was purported to host the country’s “modern ancestor,” direct descendants of the frontiersmen who first navigated the wilderness of the Cumberland Gap to colonize the American west. Appalachians were seen as the product of a fine, Anglo-Saxon bloodline, naturally inclined to enterprise, adventure, and a specifically American sense of Manifest Destiny. They were, in essence, viewed by many to be the purest Americans, wresting a natural way of life from a stubborn soil, triumphing over the will of a nature bent on dominating its inhabitant. It was the romance of this depiction that attracted the attention of many — romance, and the prospect of a way of life worthy of myth. Appalachia was, for many, just distant enough from the sources of mainstream media to provide the benefit of the doubt as to whether any part of the south could remain so antiquated. The reader would not know to correct the myth, to disbelieve the stories told.

However, it was difficult to fictionalize the facts of Appalachian poverty, and evidence of the region’s genuine economic struggles. Media coverage of these difficulties, and the individuals involved, then diverged into two clear perspectives. Many sources provided a benign depiction of Appalachia. In the nineteen teens Berea College president William Goodell Frost, whose plea to the Northeastern bourgeoisie for donations needed to civilize and uplift the impoverished, protestant, whites of the mountains, helped to establish a depiction of the gentle, folksy, naive Appalachian, motivation that critic Allen Batteau (1990) argues “transfixed an affluent society and sent legions of poverty warriors into the hills.”

For each benign fiction of the Appalachian, there were several sinister counterexamples intended as catalysts for, or results of, fear. Notable were the novels of John Fox, Jr., including The Little Shepherd of Kingdom Come and The Trail of the Lonesome Pine, a narrative in which the fury of eastern Kentucky natives amidst a feud is violently directed at one another and at well-meaning lowlanders. As local color genre writings began to appear in such middle-class publications as Harper’s and Cosmopolitan, Fox’s depictions of mountaineers set a standard for strangeness and threat. The natives of Fox’s narratives were feral, distrustful of outsiders, and uneducated, blessed only with the native intelligence men often attribute to the instincts of animals. Fox’s novels quickly became part of an American canon, evidence that wilderness and people of the wild yet existed in this country, and that they existed in Appalachia. The stories officially crossed the line between fiction and testament when Fox found his own work being paraphrased by both the New York Times and the Louisville Courier-Journal during the 1931 Harlan Miners’ Strike, a bloodbath largely motivated by commerce and orchestrated by northern coal conglomerates. Not only had Fox’s novels served as a primer of Appalachia, they had officially become news and, beyond that, history.

The wave of coverage concerning the Harlan Miners Strike coincided with the onslaught of the Great Depression, granting these depictions a disturbing indication of intent on behalf of publishers. Critic Anthony Harkins (2004) argues that “this reconceptualization was one result of a much broader struggle over the nature of modern America that was part of the shift from a country grounded in localized commerce and social relations to one characterized by a mass production and consumption,” Appalachia represented, then, both nostalgia for the self-sufficiency of the agrarian life and the fear of economic collapse that had made an example of the south in the post Civil War era. A nation teetering on the cusp of poverty developed a fear of destitution. Fear and its brethren, abhorrence, quickly developed. The form had been established, and now all that would complete the illustration of the hillbilly was supplied.

As an object of fear and fun, the region became a myth, a symbol “serving both as a microcosm and a distorting mirror of broader American society” (Harkins, 2004, p. 125). Appalachia was simultaneously more American than America, yet considered a sort of third world country, seemingly, on the other side of Lexington, on the other side of Nashville, on the other side of Cincinnati. Appalachia gave a face and a location to America’s fear of poverty. The existence of the symbol gave license to the widespread desire to blame poverty on the impoverished. Batteau contends that “Appalachian poverty was not so easy to dismiss. It was systemic, among people of the highest character and Anglo-Saxon ancestry, and associate with ... the nation’s pioneering heritage and traditions of rugged individualism” (Batteau, 1990, p. 6).

Integral to sustaining middle America’s faith in its own abilities to survive in the global economy was the creation of token divergences clearly delineating the “us” from the “them.” Poverty became less a static term and more a very specific state of being, inhabiting an entire spectrum of traits that became synonymous with, specifically, Appalachia and, less specifically, the American south. Misfortune and economic victimization, the copulated with the cartoon, if you will. Destitution in the sense of Appalachia now denoted slovenliness, ignorance, sexual depravity and strangeness, substance abuse, and a special hatred for outsiders, particularly...
middle-class lowlanders now mired in economic dread. Why else would those of almost pure Caucasian, western-European lineage be at the mercy of such poor circumstance? Possible causes for this acquired disability were cited as the isolation of the mountains, mental degeneration due to incest, alcoholism, and often simple sloth. Mythical Appalachia became a tool to make a social syndrome seem safely distant, to paint an inaccurate picture of mountain poverty as the fault of the people. This was one perspective, however, to which, much later, came rebuttals.

The Hillbilly figure has been an indicator of American duress, a target and a catalyst for comic relief aimed at a white other. Illustrated media depicting the mountain hillbilly, a term initially understood as a reference to those residing in mountainous areas, but later applied as a blanket label to residents of all sub-regions of the rural south, experienced peaks in popularity and cultural use during both the Great Depression and the Vietnam War. One of the first mainstream presentations was Al Capp’s wildly popular “Lil Abner.” Debuting in 1934 and running in thousands of daily and weekly newspapers for the next forty-three years, the strip told the ongoing tale of the strapping Lil’ Abner Yokum and the denizens of the town of Dogpatch. A sentimental manifestation of the myth, “Lil Abner” was later adapted into a successful stage musical and a feature length film.

More definitive was Paul Webb’s classic strip “The Mountain Boys.” Featured in the high brow periodical Esquire and directed toward an ostensibly urbane, metropolitan, male demographic, “Mountain Boys” is the cynic’s “Lil Abner:” a visual rendering of the hillbilly gone shiftless and apathetic. Webb’s strip was less quaint local color narrative and more a running gag, the primary end of which was marvel at the dense and feeble Appalachian. What would gradually become the predominant presentation of the hillbilly is derived from Webb’s work: “the long squirrel rifle, to his whiskey jug, bare feet and slouched pose” (Harkins, 2004, p. 137). Webb’s icon, a portrayal that presents the Appalachian as looking like a wizened Father Time figure, is prodded into poses of listlessness. Harkins maintains that illustrations of this variety, as well as the animation that followed, is a defense mechanism cloaked in bathroom jokes. “Cartoons mirrored the complex mix of emotions and attitudes of audiences,” he argues, supplementing a bitter humor to the “daily reports” of “social collapse...(and) the plight of the rural south” (p. 103).

The Animated Hillbilly, seen in Betty Boop and her “Musical Mountaineers,” owes much to Webb. This is, pardon the pun, the “drawn and quartered” Appalachian, who, in the words of Batteau, “stands on a stage, holding a script he did not write.” However, this image owes just as much to a specific theory of poetics, and the power of things seen, as it does to the media and the times. While the representation itself — and the pursuit of examining the representations in the light of truth and accuracy — are important considerations, the appearance of the symbol itself may be essential to understanding an image’s influence. Batteau offers insight into the significance of a simple drawing:

With rare exceptions, all of the commentary about the “invention” of Appalachia has taken place in a “myth vs. reality” frame of reference, seeing the former term as pernicious or falsifying ... there exists a small number of generative symbols that define Appalachia; with various recursions and inversions, these symbols can generate an infinite variety of texts ... one must understand the poetic values of the image. This is why [highly influential works, such as Night Comes to the Cumberlands by Harry] Caudill and his epigone will continue to be read, while their critics, attacking a poetic text on grounds of semantic inaccuracy, will not ... Every reality is constituted by archetypes ... and the interesting question is not a contrast between myth and reality, but rather the hierarchies and intersections and namings of multiple realities.

For instance, Batteau continues, a few key symbols — a floppy straw hat, a jug of moonshine garishly labeled “XXX,” a pipe, the lack of shoes, the presence of a pair of overalls or an overwhelmingly long beard — share important qualities of poetry, such as condensation of meaning, sensuous appeal, and formal perfection. At bottom, all consciousness is poetic: all forms of seeing the world are derived from, refracted from, or prefigured by mythopoeic forms. Consciousness is a social production. It can be told, it can be written, and it most certainly can be drawn. Those texts and performances that focus mass attention and condense several levels of meaning create the archetypes for other forms of consciousness. (Batteau, 1990, p. 8).

Society, in art, can be reconstructed. This variety of social production establishes, for the audience, a criterion of social expectations satisfied by the visual and the aural. This phenomenon of representation is intriguing when considering the art of animation: what we learn when we, presumably in pajamas, armed with a bowl of Captain Crunch cereal, and a host of cultural prejudices, watch Saturday morning cartoons. Animation is a realm of representation in which reality is literally redesigned — each facet is a vessel with the ability to be transformed — in order to emphasize, or eradicate, crucial characteristics of any landscape and any people. Those details deemed unimportant or of ill use are removed. Not only is the world redrawn, it is reanimated to order, designed to walk and talk in a way to serve any given purpose, displaying what animation scholar Michael Barrier (1999) dubs “the always tenuous link between design and politics” (p. 532). In this way, animated cartooning is the ideal medium for abetting or abating social fear. The true pulse of the people, then, is reflected in fun — in the genres of entertainment, which, when taken at face value, are presumed to be frivolous, unstudied, cheaply obtained.
(In a drably water colored landscape, what appears to be a tentacle reaches out to adjust the dial on an AM radio sitting atop an ashtray littered with cigarette butts. A plaintive country song begins to play:

“My dreams are all dead and buried./ Sometimes I wish the sun would just explode./ When God comes and calls me to his kingdom/ I’ll take all you sons of bitches when I go.”

The tentacle reaches into a bag of chewing tobacco, and a plug of it is placed into a sparsely-toothed mouth. The same tentacle loads a rifle and places it into a gun rack. A rearview mirror is adjusted to reveal a set of steely, narrowed eyes. As a tentacle is thrust upon a novelty foot-shaped gas pedal, the truck moves into motion. The camera pans out. Our hero, a blue squid, sits behind the wheel of a pickup truck in the midst of a junkyard, elbow cocked out the window, while a yellow squid jostles the bumper, simulating the motion of drive.)

This is the opening scene of Squidbillies, a contemporary and defining component of Adult Swim, the Cartoon Network’s successful Sunday night adult animation showcase. The title is a reference to both the chief representative of Appalachian culture in the popular imagination, the iconic hillbilly, and the presumed intention on behalf of the show’s creators to skewer this icon by redesigning it as a squid. First airing in October, 2005, Squidbillies is a sophisticated compilation of images canonical of the new south; while its predecessors are wholly defining and influential, it seems inaccurate to describe the show as an updated depiction of objectification. Squidbillies may well be an original account of a Benighted South that takes for credence the old adage, “Brevity is the soul of wit.”

Token symbols of southern degeneration such as incarceration, substance abuse, and rampant unemployment are juxtaposed by an absurdity, in both the show’s narrative and appearance, never before seen in the animated Appalachia. The myth as presented by Squidbillies ceases to offer even a remote possibility for realism, or being mistaken for realism; it becomes its own reality, reflexive to its own image in the popular culture and to its own ludicrous implications. This composition of stereotypes is mottled by an embellishment so great it acquires the nature of satire. The Appalachian myth, in Squidbillies, is hijacked and held for ransom.

For the purposes of this discussion, the term “adult animation” will refer to a genre of cartooning that in no way purports to cater to a juvenile audience, often operating on the intent of parody or satire, and including material and language not suitable for daytime viewing slots, explaining its 10:00 pm cable placement.

Squidbillies creators Jim Fortier and Dave Willis are natives of the same area of Northern Georgia in which the Squidbillies live. Together, they host a writing staff composed largely of natives of Georgia, North Carolina, and northern Florida. This is a common occurrence at Williams Street, the Atlanta-based production company where this show, along with other cult favorites such as Aqua Teen Hunger Force and The Venture Brothers are written. Admitting that “an esoteric perspective of the south — generally a standard comedic troupe” is “embedded in the show’s absurdity,” Squidbillies “transcends the banal redneck jokes long wielded by standup comics” (Huang, 2006, p. 1). On their website (www.adultswim.com), Adult Swim provides a synopsis of the show’s plot:

A family of inbred squids tears the ass out of all creation in the North Georgia Mountains. It’s not all drinking, brawling, and reckless gunplay. Occasionally, they use crossbows. There’s also hate, love, sex, a multinational drywall conglomerate, cockfighting, the penal system, and a deep-seated mistrust of authority and all things different.

Huang supplements this premise with a geographic insight: “Five million years ago, the Atlantic Ocean covered North America all the way to the Ohio Valley. As the ocean receded to form our present-day geography, a family of squids was stranded in a remote setting in the North Georgia mountains.” The Cuylers have become Squidbillies by proxy; Appalachia was cultivated around them and without them. The narrative begins fifteen years ago, when a young squid named Early Cuyler falls prey to a forbidden love — a grossly obese woman named Krystal, who lives in a junkyard where she perpetually reclines on a mattress. Early Cuyler, who is fond of both “brown party liquor” and trucker hats (that read, in varying episodes, a logo promoting country musician David Allan Coe, an emblem of a woman surrounded by a bulls eye that reads “Booty Hunter,” and the statement “Breathe If You’re Horny!”) falls in love with Krystal. She demands that he produce “one of them tape cassette player thingies” before they consummate their love, or, in the words of Krystal, “touch her front butt.”
Early holds up a convenience store in order to obtain said item, and is successful in doing so. While the cross-species romance of Early and Krystal will not last, they will conceive a son, Rusty, unbeknownst to Early. It is here that we are introduced to the Cuyler family unit, which attempts to care for young Rusty after Early is inevitably sent to the Georgia state penitentiary for his second convenience store holdup in which he attempted to obtain both money and a “Bad Company” cassette tape for Krystal's tape player. Early spends the following fifteen years in the Georgia state penitentiary, during which time his son Rusty is born, abandoned, and taken into the custody of various family members, all of whom prove unsuitable guardians for him. He is eventually raised by wolves until his father is released from custody and the family is reunited.

The extended family unit with whom Early and Rusty live is non-traditional and spans multiple generations. Granny is a small purple squid, so small she hangs from the handles of a walker. She is a veritable tome of a “home-spun,” if incomprehensible, Appalachian history:

“When I was a girl, we used to make catsup in the backyard out of possum tails, only we just called it blood … I remember when Jesus was president, he used to eat babies. Or was it Satan who ate babies? Anyway, one of them ate babies.” (Squidbillies #101).

The family matriarch is Early’s sister Lil. A weathered woman-squid, Lil smokes “high-tar slims,” garnishes meticulously manicured fingernails, and operates her own business, a beauty salon cum boiled peanut-ery cum meth lab.

The crux of Squidbillies is the family’s attempts to exist after this reunion. The primary focus is the burgeoning relationship between Early and his son following Early’s stint in prison, and Early’s repeated attempts to “learn” his son the practices of manhood. The narrator comments that “there is nothing on this earth more stupid than the love of an uneducated squid for his illegitimate son.” (Squidbillies #102). Accordingly, Early and Rusty’s bonding occurs over the teaching of Rusty how to drive (that involves Rusty crashing, again and again, a stolen Trans Am into a tree while Early encourages him, “Hell, do it again!” and how to dress as a trick-or-treater while attempting to rob homey-owners.)

The Cuylers reside in what appears to be a two-room shack, unencumbered by neighbors and set in the midst of tall pines and car parts. A requisite front porch serves as stage for much of the family’s interaction. Pivotal to the plot are the exploits of Early Cuyler, who is restrained by neither decorum nor the restrictions of his parole agreement. Like the hill-bred hero of a John Fox, Jr., novel, Early, in the words of Harkins (2004), “represents the antiliterate attitudes, rugged independence and physical prowess of the myth frontiersmen epitomized by Crockett and Boone … the theme of rebellion against class pretension is unmistakable” (p. 117). Early roughly emulates a sentimental depiction of Appalachian independence as he “rides around town, just a hollerin” in his beloved “truck boat truck — two trucks, sandwiched in a boat.” Tempered by the virtues and pratfalls of the myth, he is independent from pretension and reason alike. Much of the show’s humor is derived from the absurdity of his antics: brainless, bold, and riddled with obscenities. With a single tentacle, Early grasps a myth of Appalachian manhood and rams it into the ground.

In many ways Early follows a formula familiar to the myth. He hosts an array of unabashed and fervent prejudices. A departure from the traditional assumption of regional prejudice, however, is Early’s hatred for white people, whom he calls “honkys” or “chalkys.” He further displays his discriminatory bent by holding a bonfire ceremony in the family’s backyard, chanting while Granny, clothed in a ceremonial robe, throws the “white man’s money” into the flames. There are many ways to read this: for Early, this could be further defiance of authority, a reference to the Caucasian patriarchs who originally penned the myth of Appalachia.

Early interviews for jobs in his “formal attire” (a denim trucker hat that reads, “GROOM”) and writes his resume, in which he paraphrases Hank Williams, Jr., on another trucker hat. “I read,” says local entrepreneur Dan Halen in the episode “Office Politics Trouble,” “from your, ah, hat-shaped resume, that you can skin a buck, run a trout line, and —”

“All my rowdy friends are comin over tonight, yessir” (Squidbillies #102, “Take This Job and Love It”).

Among Early’s more noticeable characteristics is his unabashed host of prejudices, be they based upon race, gender, or technologic advancement. When asked of his work ethic, Cuyler replies, “I don’t think ethnics do no work, that’s they problem. If you ain’t like me, go hang from a damn tree.” During a job interview, he also urinates on the laptop computer of a potential employer, explaining, “I don’t care to consort with those of the robot race” (Squidbillies #102).

In one episode he even purchases a hog lagoon, a manifestation of corporate farming specific not to Georgia, but to North Carolina. “Son,” he tells Rusty, “usury is that which allows the little man to have what he desires. This is the grandest damn day of my life … why, I feel like Travis Tritt, a-struttin my fine self on down to Floridy.” Early attempts to purchase said hog lagoon with “magic beans,” exclaiming “Through Jesus’ gift of financery, we gonna own this here land outright.” He eventually turns to Lil for his mortgage payments. Lil obtains the funds through meth sales, or what Early calls “bathtub crank.”

Lil enters the local gas station for “bathtub crank” supplies.

“L: Hey darlin, lemme have a carton of them high-tar slims … this trans am keychain … and all the Nasafed you got back there. (Pause) The blister packs.
S: You must have quite a cold there, Lil, wantin all that Nasafed and all.
L: Got a tickle in m’throat.
S: Seems like you got a tickle in your throat bout every two weeks, don’t it?
L: (Pause) What’s your point?
Rusty later questions the moral rightness of meth sales, displaying the show’s awareness of the characters’ often illegal lifestyle.

R: Daddy, is that Crystal methamphetamine?
E: “Yeah.”
R: “Ain’t that illegal?”
E: “Look here, son, it ain’t like we’re buyin’ it. That’s wrong. We just make it and sell it. (Pause.) And take it.” (Squidbillies #203, “Meth O.D”).

Specific to the show’s plot is location. The county in which the Squidbillies reside is located in Northern Georgia, roughly two hours from metropolitan Atlanta, in the foothills of the Appalachian Mountains.

Welcome to paradise: a heavenly strip of nature in the North Georgia mountains. Until the damn Indians moved in. Then the settlers, then that one black family which sent everyone to the suburbs. Fortunately, it was later gentrified by gay fur trappers, who were later wiped out by the massive Gloggopuff. Then strip mines and quarries raped the land, leaving a crater that was just begging to be used as a nuclear testing site, which paved the way ultimately for Captain Kookie’s Family Style Fun Time Pizza Palace and Nudist Hog Waste Lagoon Family Resort for Lesbians Only. It didn’t last a year.

This descriptive specificity defies the traditional habit of designing “blanket gags” about a homogeneous south. Harkins (2004) argues that this phenomenon among illustrators and writers is used “to better define their subject as a people caught forever in the past, underplayed or, more often, simply ignored the racial, social and economic heterogeneity of the region ... to present all southern mountain people and locales as interchangeable ... cartoonists and filmmakers soon embraced this conflation of all southern mountain regions into a single mythic space” (p. 121). The New Myth, like the old, remains defined by its dissimilarities with the “rest of America.” What were once defining characteristics have spun into a blanket definition of regional “weirdness.” Unlike Cletus the Slack-Jawed Yokel, the token hillbilly of the The Simpsons, who seems to occupy a south just outside of the middle American Springfield, the Squidbillies are distinctive characters in a distinct location in time.

It is important to note that Squidbillies does make a case for its master-symbol nature, or as Batteau (1990) argues, “the wilderness ... presented time and again as a spectacle, a backdrop to the human action of the mountains, and ultimately a participant in that action.” However, this master-symbol is updated to include environmental exploitation as a silent, additional character. One of the clearest divergences the new myth of Appalachia takes from its predecessor is its intricate ties to the corporate economy. No longer, as Harkins (2004) argues, “outside of the larger economic nexus beyond the immediate borders of their ‘hollers,’ the denizens of the new myth are immersed in industrialism and commercialism.”

The community in which the Cuylers live is dominated by Dan Halen Sheetrock. Not accidentally aurally similar in name to Van Halen, the popular (and highly commercialized) 1980s rock group, Dan Halen Sheetrock represents outside America’s corporate mark on a region widely suspected as isolated from the greater society. A firm easily comparable with the JH Blair coal empire of 1930s Harlan County, CEO Dan Halen owns most of the Cuylers’ community. Early is eventually employed by Dan Halen, solidifying his tie, for better or worse, with the outside market.

In his own right, Early has an entrepreneurial spirit that clashes with his less vigorous traits; he wants to make as much money as possible while expending the least energy possible, and he wants to do so outside the power structure. He brews his own beloved “brown party liquor” from pinecones, which is quite popular among the college “hippies” who come to purchase it, and backyard-grown marijuana, from Early.

Perhaps the grandest facet of Squidbillies’ mythic embodiment is its willingness, with tongue firmly placed in cheek, to embrace certain pop cultural symbols emblematic of the myth. The new mythic hillbilly is not isolated from media; rather, he is hyper informed of it, particularly those elements applying to possible projections of himself — his alter ego. For example, the show is deeply informed by country music. The character of Early Cuyler is voiced by alt-country virtuoso Unheard Hinson. Instead of relying upon well-used slang clichés, Hinson often invents words and nonsensical adages for Early. He often mispronounces words containing more than two syllables, as seen here in a promotional commercial. In said commercial Early stands on his front porch, reading from a parchment:

The Industrified Resolution and its consequential actions has inflicted upon Squidfolk—“ (he falters)—“y’all have inflicted Squidfolk with unspeakable psycho-cological sufferins.” (Stops to spit a flaming wad of chewing tobacco.) “Repent, technotrons, lest ye be smote and made flaccid by the sword-like fist of righteous thunder!” (Produces bottle of brown party liquor, drinks, and then closes his eyes and sings, shape note-style.) “Sunday evenings at the stroke of twelve!”

Recognizable cultural references long identified with the south are embraced with vigor. As if taking a hint from the catalogues of George Jones and Merle Haggard, many of the episode titles refer to “trouble,” be it “Family Trouble” (Squidbillies #103) or “Chalky Trouble” (Squidbillies #104). References are made to north Georgia native Travis Tritt, Hank Williams, Jr., the bands Rush, 38 Special and the Doobie Brothers, and Dale Earnhardt, as a number three is proudly displayed on Early’s truck. An entire episode of the second season, entitled “Swayze Crazy,” explores the cultural significance of Patrick Swayze in films depicting southern culture. Early, using Swayze’s character portrayals as the highest models of manhood to which Rusty should aspire, claims that “Patrick Swayze lives his life like a real man. Asses is kicked, names is taken, love is money” (Squidbillies #205, “Swayze Crazy”).
When a legless Swayze impersonator visits their small town, the impersonator explains his missing limbs by saying: “My legs ran away to Hollywood to star in Next of Kin II. By way of weaving a narrative almost entirely constructed with the drags of the popular culture — admitting that they exist, and that the public, despite the less-than-quality level of the content, remains informed by them — Squidbillies indulges in the same hyper irony The Simpsons enjoys. By way of this hyper irony, everything, most particularly well-worn stereotypes, is called into question.

The most compelling aspect of Adult Swim is the near impossibility of categorizing it as embodying exactly anything; that is, any specific aim or function other than that of entertainment. It becomes myriad things, then — social commentary without being pointedly so. Adult Swim could never be mistaken for blatant oppositional culture. In his interview with Gelf, however, Squidbillies creator Willis does admit that the original names given to Rusty and Early Cuyler were the names of his “redneck” former brother-in-law and a family cousin, during a particularly brutal divorce. He simply changed them for fear of legal retribution. Is it straying too far from the mark to argue that this could be evidence of an oppositional culture within an oppositional culture — the “normalized” Appalachian exacting revenge upon those who embrace the more banal characteristics of the idol?

The icon is here, but now he is propped up by a multimedia tome, a historical and cultural baggage from which the “traditional” hillbilly was spared. This hillbilly walks through the age of technology, aware of his own antiquity and embracing with clumsiness the new age.

Batteau (1990) asserts that “the falseness of most of the images of Appalachia hence lies not in their substance … but in the social context of their propagation, in the manner in which their facts are presented to the audience” (p. 13). The subtext of such references changes irrevocably when a counter-reference is made; a dialogue ensues and the relationship is no longer between audience and object, but between two subjects, reacting to the other. Batteau may have an excellent point when he argues “the Appalachian region, its stock of natural resources now sadly depleted, find(s) its inventory of rituals and symbols rapidly mined for export.” However, a capability of the new myth, in accordance with regional opposition, may be a heightened awareness of the prevalence of assimilation. But, this assimilation has not taken place in the predictable manner — a new argument stands as to whether the New South has adapted the culture and style of middle America, or whether a tradition of garish, intoxicating images of a wild South, filled with “rowdy friends,” “broken hearts,” “country boys and girls gettin down on the farm,” and a mythical and god-like Boss Hogg presiding over each and every gleefully unlawful deed, have permeated the greater America. Is the country being southerized? This is a formidable argument, but only applicable to a point concerning the situation at hand. The popular Appalachia has been separated from the popular American south, deemed the weirdest neck of the woods in a very strange landscape. While the “southern” product has sold, and is selling, it appears difficult to glamorize Appalachia. A seventy-year canon of “negative press” but, more pertinently, myth-making stands in the way of this possibility.

Where Squidbillies treads familiar ground is in the clear distinction between the rural and the metropolitan, a perpetual conflict of the New South. The development of a specific body of Middle American ideals, ethics and moral codes coincided with what Batteau dubs the “invention of Appalachia” as “a state of mind.” This new and progressive class was largely confined to the boundaries of metropolitan or “town” settings — precursor to the shelter of suburbia, the new technology, and comforts available in proximity to one’s neighbor. One no longer was separated by wide expanses of farmland or forest. In the city, very little physical mobility was required in order to reach another neighbor. The Middle American discomfort with rural terrain, and willingness to except stereotypical representations of those contained therein, could well be interpreted as a wariness of the uncontrollable element of nature. Batteau (1990) agrees, arguing that those in densely populated townships were novelty and luxury destined to become necessity to millions. “The struggle with and eventual sacrifice of an external, sensuous, vivid Nature is a projection of the Puritan’s struggle to discipline an internal, sensual, polymorphous nature. The wilderness without mirrors the wildness within … [these are] some of the most powerful symbols of American society” (p. 5).

No wonder, then, that the hillbilly image has traditionally been one with remarkably animalistic traits: an excess of body hair, snaggled or enlarged teeth, and bare feet. The benign “son of the soil” remains close to nature, unencumbered by the sophistication of the outside world; conversely, the demon hillbilly’s habits are close to feral, his proximity to nature rendering him less than responsible for his own uncontrollable urges. The more distinct the landscape — in this case, imposing chains of mountains concealing dark, hidden valleys — the greater the environment’s propensity to shape human will.

The son of the soil, then, ostensibly finds a counterpart in the bear, the panther, or if you’re Rusty Cuyler, wolves, whereas the city dweller finds his counterpart in his neighbor. The isolation of the mountains causes an inadvertent copulation with the wiles of nature. “Cultural cabin fever” becomes imminent for he who is unaware, separated from the higher man that technology represents.

Yet in their non-humanism, the Cuyler family departs further from this mythical aspect. They are neither human nor animal. They are cephalopods, and far closer to nature than any son of the soil could hope to be, as they have no spines. In fact, few of the show’s primary characters are human: entrepreneur Dan Halen appears to be a chin with feet, while the Sheriff, it is revealed, is a genetically engineered product of Dan Halen Enterprises. Any affinity the characters hold for their specific culture has little to do with their physical attributes. The Appalachian myth of this program is grounded in great unreality. An important mythopoeic point of reference — overalls, floppy hat, long beard, the “traditional” cartoon hillbilly — is removed. The
New Myth, then, is reflexive of the old myth — it is entirely aware of, and free to make commentary on, its predecessor and itself. Squidbillies finds its power in this ability to make commentary by propelling a very real belief system into a world that is not mythical, but fantastical.

The dialogues of Early Cuyler stem from the perception that they are objects of poetic intent; that is, they embody symbols that stand for both specific histories and specific present times. Their lifestyles, and in Early’s case class and race constructions, are often referred to from an outside perspective, hence the presence of a narrator in Squidbillies. Early Cuyler is a man (or squid) outside himself. He often seems oblivious to the fact that he is a squid. He is the poetic symbol of a comment on a symbol, reflexive of years of speculation on Appalachian manhood. Where a hokey sense of adventure once presided, a disregard for the laws of nature now resides; an appetite for devilish fun, now rampant alcoholism. The key to interpreting Squidbillies lies in the viewer’s ability to recognize the show’s reference to cultural understanding, or at least an openness to admitting that it exists. As cartoon critic M. Keith Booker (2005) observes, Adult Swim “in some ways exemplif[ies] the fragmentation of postmodernist culture.” While the shorter, fifteen-minute format minimizes the opportunity for background information and a fuller plotline, it allows these programs “a brevity…an opportunity for an episode to be played out between commercial interruptions” and hence remain “less fragmented” (p. 167). This format, while seemingly tailored for a generation afflicted with a lamentably short attention span, “requires a certain amount of sophistication, and especially familiarity with television” on behalf of the viewer” (p. 169).

Adult cartooning is becoming a mainstream cottage industry. No longer restricted to “blue movie theaters” in the way many of its predecessors, such as R. Crumb’s definitive “Fritz the Cat” products, it is aired on late night television and available to anyone with cable. As an underground and taboo industry, adult cartooning once embraced the baser instincts of a culture, often bordering on soft-core pornography and indulging in depictions far too violent for a “real-action” production.

Animation presents a visual fiction. What is verbalized and visualized by print media and photography is brought into hulking motion, inaccessible to any other medium by the nature of its own “drawn” reality. Squidbillies represents a time when, more than ever, the face of the icon has become an animal with a complex self-awareness.

The notion of high culture is a form of static. It freezes things. It jams up your head from working through something because work gets made much more organically than that. —Spiegelman (Moore, 2003, p. 14)

Cultural origin is a matter of perspective and exposure; dependent upon a) one’s background and store of knowledge, which informs reaction to media, and b) exposure to preexisting media and events. Admitting this, it is all-important to acknowledge that many of the early cartoons we have discussed were once created as entertainment prior to public film screenings. Most of the Warner Brothers catalogue, particularly the popular Bugs Bunny shorts, have been made available to the mainstream audience through DVD compilations. One is no longer forced to enter the public setting in order to watch these cartoons. It is safe to say that those exposed to syndicated cable television in the past thirty years have been exposed to such cartooning from the privacy of the living room. One can now own these presentations, and bring them closer to their home experience; the cartoons play as a background to the private life.

One who is familiar with the last century’s body of local color writing might compare Squidbillies’ Early Cuyler to the Red Fox of John Fox, Jr.’s The Trail of the Lonesome Pine. Those informed by the media canon of cartooning would compare Cuyler with the tenacious locals of Hillbilly Hare. The wider exposure a vein of media is allowed, the more intellectual influence it will be granted in the zeitgeist. And the older the medium, the more it will later be informed by itself, become a comment on itself. Cartooning has become reflexive; otherwise, a series like The Simpsons, and certainly programming like Adult Swim cartoons, would not exist. It follows, then, that icons and images contained therein would also become reflexive.

The best argument is that the Hillbilly of the turn of the last century has endured. His existence, however, has been reconfigured by recent animation’s tendency toward higher-concept forms of humor. It is the bitterness of hyper irony, its proclivity toward a humor of exclusivity in which many will indeed fail to “get the joke,” which lends credence to a theory of counterargument, as far as the nature of these icons is concerned. The cynicism of hyper irony reveals a doubt in the very social systems that invented the Hillbilly in the first place.

Hyper irony — whether it works through sarcasm, topical humor or even high-concept bathroom gags (that exist aplenty in The Simpsons) — works to disassemble no particular cultural force. Rather, it disassembles all cultural forces by revealing power structures as largely ridiculous. Absurdity is a great distraction, but hyper irony is the ultimate in seriously funny cynicism. Evident again and again in Adult Swim productions is a genuine discreditation of cultural influences that we, as self-important viewing audience, do not believe actually touch our sensibilities. To watch a cartoon Patrick Swayze become decapitated on Squidbillies is to lose complete faith in films such as 1988’s Next of Kin. In turn, Next of Kin’s predecessors are discredited as well. Were Deliverance converted into the animated form and starred squids, would it still carry its cultural weight?

There have been volumes of very fine criticism published in the past twenty years that systematically debunk the myth of Appalachia as a cultural construction. Cartooning, however, can make this process easier for a very simple reason: cartoons are fun to watch. Moreover, cartoons can be multifaceted works, operating on verbal, aural and visual levels. Cartooning
brings the mythopoetic to life. Art Spiegelman, creator of the hugely popular graphic novel Maus, makes a formidable argument for cartooning as an informant, in his interview with Theater (Moore, 2003):

Some things are about perception rather than symbol manipulation ... (cartoons) work the way the brain works — in bursts of language and high-definition images ... that’s why they have a certain kind of hold on us that moves past our critical defenses. Comics mix theatrical realities and musical realities, verbal realities and visual realities. They are able to make a very complex gesamtkunstwerk — one that’s often very taboo (pp. 18-19).

Animation, because it inhabits a world of semi-live action, toes a line between fantastical substance and active influence. The figures move and function across the screen, creating a path for the eye to follow. Spiegelman (Moore, 2003) admits that dismissing media as juvenile fare is a mistake; the forces at work in animation are complex and consuming. “Animation resolves itself very quickly. For kids that’s a great help, although these cartoons are now seen as pernicious, not suitable for kids. They’re not available in prime kid viewing hours,” he contends. “We project things onto kids in order to protect ourselves. Those Daffy Duck cartoons are potent. We’d rather have dopey bland stuff around for ourselves and our kids deal with that fireball of energy that comes from vital work” (p. 20). There is a reason why Warner Brothers was contracted to make a series of instructional shorts for the U.S Navy during World War II. Cartoons require an audience to look, listen, and pay heed without having to spoon-feed information.

It is the non-reality of the cartoon that holds our attention so closely. It is a broken mirror to which we can hold social systems. The image we receive is a distorted one in which issues, seemingly pithy in the everyday, are magnified and given close-range inspection. Having been a cartoon regardless for decades prior to his animated debut, the hillbilly has found his best home in cartooning.

**Works Cited**


Fox, John, Jr. The little shepherd of Kingdom Come. New York: C. Scribner’s Sons, 1903.

Fox, John, Jr. The trail of the lonesome pine. Toronto: McLeod & Allen, 1908.


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Every top-twenty university has, as a fundamental component, an outstanding undergraduate program. At the University of Kentucky, The Chellgren Center for Undergraduate Excellence is not only the symbol, but the embodiment, of its commitment to the finest undergraduate education. The Chellgren Center embraces a comprehensive array of teaching and research programs, professors, and services designed to enhance, develop, foster, and deliver the exceptional undergraduate experience that is one of the major components of the University’s mission.

Chellgren Fellows Program

The Chellgren Fellows Program is for students with exceptional academic potential and aspirations who are eager to participate in a special learning community designed to cultivate extraordinary achievement. Fellows are students who have the potential not only to excel at UK but also to compete successfully for the highest honors and awards within and outside of the University. The learning community consists of the collaborative interactions among students, faculty, and staff that create an intellectually stimulating environment, nurture high academic aspirations, and foster scholarly and personal development reflective of undergraduate excellence. Each spring, a new class of Chellgren Undergraduate Fellows is selected, while returning fellows serve as models and mentors to incoming fellows.

Mentoring

Outstanding faculty from across campus serve as individual mentors for the Fellows. Through regular meetings and conversations, mentors help students develop strategies for engaging in the intellectual life of the University with an emphasis on opportunities available to them both within and outside the UK community, such as service learning experiences, internships, education abroad, undergraduate research, community service, and leadership opportunities. Mentors may elect to invite students to participate in sessions with their graduate students, attend lab meetings, review and discuss papers or projects being planned, and attend scholarly talks. Mentors help Fellows identify external scholarship opportunities and assist them in preparing applications and developing skills used to acquire these awards (e.g., writing personal statements, successful interviewing).

The Chellgren Center Community Experience

The learning community consists of Fellows, faculty mentors, and professional staff affiliated with the Chellgren Center for Undergraduate Excellence, all working together to make the Fellows’ undergraduate experience one of an exceptionally high standard.

Fellows are expected to attend regular meetings with mentors and peers as well as other pertinent events organized by the Center such as lectures at local colleges and universities, musical performances on and off campus, and art exhibits. At regularly scheduled meetings, Fellows learn about special educational programs and opportunities such as undergraduate research experiences, education abroad, internships, and volunteer activities. Fellows are also expected to submit brief, self-reflective progress reports and program evaluations once or twice each semester. Starting with the Fall semester, 2008, all incoming Fellows will register for DSP 200, Research Skills Orientation, and will actively engage in a research, creative, or scholarly project.

The Chellgren Fellows Service Learning Project

To help extend learning to the real world and foster responsible citizenship, each Chellgren Fellow participates in an annual service learning project or projects designed by the Fellows themselves with guidance from faculty affiliated with the Chellgren Center.

Selection Process and Timeline

Fellows are accepted through a competitive application process. Students are eligible to apply to the program after their first semester at UK. Applicants must have a 3.75 GPA or above. A committee of faculty evaluates and selects Fellows based on the following criteria:

- Academic credentials and extracurricular activities from junior year in high school
- Academic performance at UK (GPA, course selections, extracurricular activities)
- Essays completed as part of the application
- Letters of recommendation
- Performance in an interview
Chellgren Center Highlights from 2006-2007

On the following pages, several of the highlights of Chellgren Center-associated programs during the previous academic year are described. Students from several eUnreKal programs relate their research, including the Beckman Scholars Program, the summer research and creativity awards, the UKURP (UK Undergraduate Research Program), support for undergraduate travel to scholarly conferences, and the Oswald Research and Creativity Program. Finally, a gallery of images from the second annual UK Showcase of Scholars, an event sponsored by the UK student Society for the Promotion of Undergraduate Research (S.P.U.R.), is presented.

Paul W. Chellgren

The benefactors of the Chellgren Center for Undergraduate Excellence are Paul W. Chellgren and his family. A UK graduate, Mr. Chellgren was an Honors Program student and star intercollegiate debater. He subsequently earned a Harvard MBA and a D.D.E. from Oxford University, where he has been named an Honorary Fellow. In addition to a celebrated career in business, one that included service as the CEO of Ashland Inc., Mr. Chellgren has been a very active UK alumnus, having served for eleven years on the UK Board of Trustees. The generous gift from Mr. Chellgren and his family helped establish the Chellgren Endowed Chair and five named professorships.

Beckman Scholars Program

The Beckman Scholars Program, established in 1997, is an invited program for accredited universities and four-year colleges in the US. It provides scholarships that contribute significantly to advancing the education, research training and personal development of select students in chemistry, biochemistry, and the biological and medical sciences. The sustained, in-depth undergraduate research experiences and comprehensive faculty mentoring are unique in terms of program scope, content, and level of scholarship awards. The University of Kentucky has been invited to apply for the program three times, and was selected to participate for three years beginning in 2002 and again in 2005. UK’s application for 2008 has recently been approved by the Foundation.

The Beckman Scholars Program provides support for no more than three outstanding undergraduate researchers per year. Scholars receive support for two summers and the intervening academic year, including a generous scholarship award plus stipends for supplies and travel. Scholars must conduct their research in chemistry, biochemistry, the biological and medical sciences, or some interdisciplinary combination of these disciplines, in the laboratory of and under the mentorship of a University of Kentucky faculty member approved by the Beckman Foundation.

Being named a Beckman Scholar is an extraordinarily high honor. The process by which a scholar is selected is quite rigorous. The selection is conducted by a committee of research faculty members each with a strong record of mentoring undergraduate researchers. The selection process evaluates 1) the ability of the candidate in both written and oral communication by considering a required research essay and conducting an interview of each finalist; 2) the past achievements of the candidate by reviewing the entire undergraduate transcript, academic honors received, and all previous research experience; 3) the candidate’s intellect, character, and potential to excel as a researcher by appraising a required
written research plan and at least three letters of support from current and
prospective faculty mentors and 4) the candidate’s potential for a career
in research by evaluating a required written statement of educational and
career plans.

To apply to become a Beckman Scholar, a student must be a sophomore
or junior at the University of Kentucky, majoring in Chemistry, Biology, or
a closely related discipline (such as chemical engineering or agricultural
biotechnology), and have already completed at least one semester of
research experience.

The Beckman Scholars for the year 2006-2007 were Megan Culler
(mentored by Professors Rebecca Dutch and Diane Snow) and Kathryn
Schweri (mentored by Professor Chris Schardl). The Beckman Scholars
for the year 2007-2008 are Andrew Lynch (mentored by Professors Dibakar
Bhattacharyya and Allen Butterfield) and Eddie Kobraei (mentored by
Professor Diane Snow). In the following articles, the 2006-2007 Scholars
explain and discuss their research.

For more information on the Beckman Scholars Program at the
University of Kentucky, visit www.uky.edu/beckman.

I am a junior at the University of Kentucky majoring in Agricultural Biotechnology. I am a Singletary Scholar and a Beckman Fellow and plan to attend
an MD/PhD program. My experiences with undergraduate research and the Beckman Fellowship have definitely prepared me for the kinds of research
and higher learning I will be doing in the future, through being independent in the lab and learning to collaborate with others. I enjoy participating in
community theatre, mainly musicals, traveling, French language and culture, and reading about viruses.

My experiences at the University of Kentucky have been shaped not only by my personal interests and motivations, but also to a great extent by the
suggestions and encouragements of my advisor, Dr. Glenn Collins. Within the first ten minutes of meeting Dr. Collins, before I had started my undergraduate
career or decided on which University to attend, I shared with him my love of science and interest in research. He successfully convinced me to enroll at
UK as an Agricultural Biotechnology major. Since that first meeting, Dr. C, as most of his students call him, has contributed numerous suggestions
involving my educational experiences, each of which I take without hesitation.

Dr. C knows what I enjoy and need to do often earlier than I do. He nominated me to be an ambassador for the College of Agriculture, which has been one of my favorite activities during my
time at the University. He told me from the beginning that I would want to continue my education as an MD/PhD student, although I thought otherwise. I even attempted to use high school AP credit for my physics classes, a step that would have met my degree requirements, but left me shy of requirements for some medical schools. I ended up taking the classes and, years after his original suggestions, I am asking him for recommendation letters for MD/PhD programs. Dr. C supported me when I wanted to take French or dance classes and do community musical theatre in addition to my biotech schedule. Most importantly, Dr. C arranged a meeting for me with Dr. Becky Dutch as a potential research mentor in the spring of 2005. Two years later Dr. Dutch is still graciously allowing me to work in her lab in the Biochemistry department on my independent research.

Dr. Dutch’s laboratory deals primarily with membrane fusion events promoted by the viruses of Paramyxoviridae, a family of negative-strand, enveloped, RNA viruses. These include several important human pathogens such as measles, human respiratory syncytial virus (RSV), as well as the newly emerged Hendra and Nipah viruses, making the study of these viruses important to human health. My research focuses on identification of novel interactions between cellular proteins and the cytoplasmic tail region of the fusion proteins from simian virus 5 (SV5) and Hendra virus, two distantly related viruses within the same family.

Throughout my time in this laboratory I have experienced a great deal of educational and personal growth by working on my project. I have had the opportunity to learn a great number of techniques and tests, in working with tissue and cell culture, molecular biology techniques, gel electrophoresis, and Western blotting. I have begun to acquire a sense of independence and confidence in moving about the laboratory, following protocols, and troubleshooting.

My current comfort level in the laboratory greatly contrasts with my first research experience. During my junior and senior years of high school, I completed an independent research project under the mentorship of Dr. Ernest Bailey at the University of Kentucky’s Gluck Equine Research Center. As a part of the Equine Genome Project, I had the opportunity to identify two microsatellite markers in the genome toward the advancement of the project. Though at the time I felt completely comfortable in the laboratory and my project was successful, in retrospect, I realize how much I stumbled and how much I have grown.

After about a year in Dr. Dutch’s lab, Dr. C encouraged me to apply for the Beckman fellowship, a prestigious award that supports undergraduates for two summers and the intervening academic year. The Beckman foundation encourages creativity and conversation among their scholars, inviting the scholars from across the nation each year to the Beckman Symposium, which allows them to learn from each other and share their passion for laboratory science.

My time as a Beckman scholar has allowed me to grow both in science and in other areas of my life. It has been an unparalleled opportunity to help prepare me for my future as a scientist, allowing me not only the chance to continue in my research, but to travel and present my findings. I have had the opportunity to present my work at Posters at the Capitol in Frankfort, KY, as the University of Kentucky’s oral presenter; at the 21st National Conference for Undergraduate Research in San Francisco; and at the Showcase of Undergraduate Scholars at the University of Kentucky. Over the summer I was able to attend the American Society of Virology conference and also the Annual Beckman Symposium, where I was able to learn from other virologists and also from the other Scholars from across the nation.

An integral part of the success that I have had as a Beckman Scholar has been the support of my two mentors. Dr. Dutch is always available to confer with me about lab techniques, fixing problems, new directions for projects, and life in general. From day one, she encouraged me to be independent in the lab. This is one of the most important things I think I could have learned as an undergraduate and emerging scientist, enabling me to notice and correct my own mistakes as I made them before asking others for help. Dr. Diane Snow has also been extremely supportive of my research and constantly reminds me that the world needs more women scientists. Both Dr. Dutch and Dr. Snow have provided excellent examples of people who excel in their fields, and I aspire to one day be their collaborator.

Although I have made great progress in my ability to do research and problem solve, I openly recognize that in science, there is always more to learn. After I become a “Beckman Alumnus” this summer, I will have a year remaining of my undergraduate career at UK. I would like to continue with my research and my coursework while applying to MD/PhD programs. I would also like to be involved in community theatre productions and continue being involved with campus activities.

I have always loved challenges, and laboratory research provides me with an endless number of challenging opportunities; as soon as one problem is solved, another completely different problem arises. One of my very favorite philosophies that Dr. Beckman lived by was, “don’t be afraid of making mistakes. If you’re not making mistakes, you’re probably not doing very much.” During my final year at UK, I know I will make mistakes, but I also know I will continue to learn from and grow with each one.
Research Experience Prior to Beckman
I started the University of Kentucky declared as majoring in Agricultural Biotechnology, because I thought I wanted to be a vet, and the Agricultural Biotechnology major was much more rigorous and much more flexible than an animal sciences degree. I first decided to give research a try the summer after my freshman year at UK. I was looking for a summer job that would look good on my résumé, and I remembered that I would need to find a mentor for my ABT 395 (Independent Research) project my junior year. I went to my then advisor, Dr. Glenn Collins, and he helped me find a job in Dr. Christopher Schardl’s lab. I was immediately immersed in the research process on a project studying the phylogenetics of many different fungal isolates from various grass species.

During that first summer I learned how to go from grass material to fungal culture, how to isolate fungal DNA, and run PCRs (polymerase chain reactions) and sequencing reactions of the DNA I had extracted. I found it rewarding that I could take a piece of grass and end up with a DNA sequence from the fungus inside, all on my own. After that first summer I was sure that I wanted to go into research instead of becoming a vet because it was something I was good at and I found that I really enjoyed the problem-solving nature of lab work. I continued working in Dr. Schardl’s lab during my sophomore year, and I became skilled at balancing work with school because I decided to continue working in Dr. Schardl’s lab during the academic year.

The summer between my sophomore and junior years I applied for an internship at Alltech, a biotechnology company, in order to gain a feel for the differences between research in a university setting and research in a corporate setting. There, my work involved extracting mannoproteins from yeast cell wall material, under my supervisor, Colm Moran. I learned how to use scientific articles to further my research, because my project there was to perfect methods of mannoprotein extraction and determine the best method of analyzing the extracted material using SDS-PAGE and Western Blots. Another benefit was that I learned how to write a detailed research paper for a company, and give a presentation about this research in a company setting. That experience was invaluable, and I have used what I learned about writing scientifically many times since then. I then went back to work in Dr. Schardl’s lab during my junior year, and decided to do my ABT 395 project in Dr. Schardl’s lab. I presented my research, “Testing for a Correlation Between the Size of the Host Genome and the Endophytic Fungal Species Inhabiting Various Species of Tall Fescue,” in the spring of my junior year.

The Beckman Scholarship
I applied for the Beckman scholarship in the spring of my junior year, and was ecstatic when all the long hours working on my proposal paid off and I received the scholarship. This scholarship has allowed me to focus on my research without worrying about a second job. Also, along with the monetary benefits of the Beckman, I was able to attend the Beckman Scholars Conference last summer, where I was able to see presentations on cutting edge research in diverse fields including stem cell research and solar power. This conference was one of the most rewarding experiences of my life, because it was attended by professors at the top of their fields from all over the nation, as well as other Beckman Scholars. I was able to make many friends there, and am impatiently waiting for the conference again this summer, when I get to present my research.

Another benefit of the Beckman Scholarship is that it has provided the funds and support necessary for me to attend and present at several conferences other than the Beckman conferences. This spring I presented at NCUR (the National Conference for Undergraduate Researchers) at Dominican University in San Rafael, CA. This was also a great opportunity to meet other
students interested in research and a great place for me to be able to share my own research. I also presented at the Showcase of Undergraduate Scholars here at UK, a wonderful experience I recommend to any UK undergraduate researchers. This summer, along with the Beckman Scholars conference, I am excited to be able to attend and present at the American Phytopathological Society (APS) meeting. This meeting will be an excellent place for networking as well as a great place to learn about what is currently happening in my field, Plant Pathology. I don’t think that I would have been able to attend any of these conferences without the support of the Beckman Scholarship.

Future Plans
I graduated this spring from UK with a BS in Agricultural Biotechnology and a minor in Plant and Soil Science. I will be attending my first choice graduate school, North Carolina State University, in the fall in their Ph.D. program in Plant Pathology, one of the top Plant Pathology Programs in the nation. This summer, before I go to graduate school, I will be finishing up my Beckman research project in Dr. Schardl’s lab.

I think that undergraduate research is a wonderful experience that I would recommend to any student who is at all interested in research. I have loved working in both the labs I have been in, and think that it is a great learning opportunity. Also, my research experience together with the Beckman Scholarship made it much easier to get into a top graduate school.

My Research
The following is an abstract for the research I am still working on as my project for my Beckman Scholarship:

Ergopeptide alkaloids are peptide mycotoxins that are produced by many different species of fungus, including various grass endophytes such as Neotyphodium coenophialum, and several grass pathogens, such as Claviceps purpurea. They are important for their pharmaceutical properties as well as their toxicity to humans and livestock. They are synthesized from D-lysergic acid by a lysergyl peptide synthetase made up of two polypeptides, LPS1 and LPS2. Variations in the 3 modules of the LPS1 protein are responsible for which 3 amino acids are bound to the D-lysergic acid in ergopeptide alkaloid synthesis. These three modules also contain three domains: A, T and C. The A domain is the domain responsible for recognizing the next amino acid to be bound. The gene responsible for encoding the LPS1 in Neotyphodium coenophialum, which produces ergovaline, is known to be the lpsA gene. Claviceps purpurea, which produces both ergotamine and ergocryptine, has two genes, lpsA1 and lpsA2 that encode two different versions of LPS1.

We have characterized a cluster of ergot alkaloid biosynthesis genes in this strain that includes 2 homologues lpsA1 and lpsA2. We determined the order and orientation of these genes, and identified regions of sequence identity and dissimilarity between lpsA1 and lpsA2. We are now transforming lpsA-minus endophytes with clones of lpsA1 and lpsA2 to determine which gene in C. purpurea is responsible for the production of which ergopeptide. We are also investigating whether recombination between lpsA genes in C. purpurea contributes to the diversity of ergopeptides produced by different strains of this fungus. We also plan on recombining the lpsA genes to determine if the three modules encoded by the genes act independently. This possibility will be tested by switching the first module from one LPS1-encoding gene with the first module from a different LPS1-encoding gene, which will result in the production of a different LPS1, and therefore a different ergopeptide, if our hypothesis is correct.
eUreKa! (Experiences in Undergraduate Research and Kreative Activities) is one of the units comprising the Chellgren Center for Undergraduate Excellence. The purpose of eUreKa! is to provide coordination and leadership for the many programs designed to encourage and support undergraduate research, scholarship, and creativity at the University of Kentucky. When united, these programs benefit from the symbiosis of cooperation, and the University receives strengthened programs and more efficient administration.

eUreKa! Includes the following programs:
- The UK Undergraduate Research Program (UKURP)
- Society for the Promotion of Undergraduate Research (SPUR), undergraduate research club
- The “Bucks for Brains” summer research mentorship
- Kaleidoscope
- The Oswald Research and Creativity Awards Program
- The Summer Research and Creativity Awards Program
- The undergraduate research support and travel fund
- The Beckman Scholars Program
- The Showcase of Scholars
- The “Posters at the Capitol” program
- The NSF-funded AMSTEMM program (see www.uky.edu/amstemm)
- Coordination with undergraduate recruitment of students having an interest in research, scholarship, and creativity experiences

Each of these programs provides students with special opportunities and support for extended scholarly experiences, beyond the classroom. A number of students who have participated in these programs are represented in the following pages. For more information about eUreKa!, please visit www.uky.edu/eureka.
On April 25, 2007, eUreKa! and SPUR (the Society for the Promotion of Undergraduate Research, UK’s undergraduate research club) presented the second annual Undergraduate Showcase of Scholars, organized and run entirely by students. All of the refreshments were prepared and served by undergraduates in nutrition and food services, and a bound volume of abstracts was prepared and distributed by SPUR. Over 120 students made poster presentations, approximately 20 students gave oral presentations, one student performed a one-act monologue and another student gave a vocal performance.

A number of students who participated as presenters at the Showcase have articles or abstracts published in this issue of Kaleidoscope. The gallery below includes scenes from the Showcase. An extended version of the gallery is available in the on-line edition of the journal at www.uky.edu/kaleidoscope.
Since starting the research for my thesis, I’ve started to look at men differently. Two young men sitting together at lunch, talking to one another without words: head nods, half-smiles. A high school student I taught this summer gets frustrated, says “F*ck this!” as he huffs in his seat. Another young man recounts a story about when he had too much to drink: “I hit her. Like, I didn’t mean to; I really didn’t, man. It was like I wasn’t in my body anymore. I feel so bad, because what I did was really, really, really, really, really bad.” Men so physically nuanced without the full vocabulary to express and articulate how they feel.

A hand gesturing conviction; the nervous fidget with a beer bottle; a quick swig after letting loose a description of an emotion, a weak spot: a constant dressing and redressing of wounds only makes them more obvious. I cannot help but wonder if some men — men typically blamed for sexism, for homophobia, for racism, for oppression — are not also oppressed.

I used to scoff when asked: “So, if there’s a campus production of The Vagina Monologues, when is there going to be The Penis Monologues?” Guys who said they were victims of heterophobia, of sexism, too. It hasn’t been until recently that I have noticed that there is truth in what I once ridiculed. Scapegoating is an easy way out, but problems are so much greater than one person or group.

As a gay pro-feminist, I am not advocating insensitivity toward victims of oppression, nor condoning oppression. But instead my research is shifting to find the source of these warped ideas: how do these men get to this point where “—isms” are options — where their vocabulary lacks the words they need most?
Experiencing the Viennese Hand Horn: Performance Practice and Historical Insights
John-Morgan Bush
Music
The University of Kentucky School of Music offers a wide variety of studies for young student musicians. Among these however, there is little emphasis on the early performance practices of musicians of the 18th and 19th centuries. As both a Horn Performance (BM) and Music Education (BMME) major, I felt that the opportunity to study a topic so intrinsic to the history and literature of my own instrument, the horn, would expand significantly my own performance ability and understanding of a composer’s intent in the music that I play. These main elements of my project go hand in hand with one another, and as I am increasing my understanding of 18th and 19th century performance practice by learning to play the hand horn, I am also developing a deeper insight into the compositional techniques of the composers of the Classical and early Romantic eras.

Both academic study of hand horn history and creativity through actual performance are the primary motivators of this research. The main focus of the research is to learn the lore and technique of playing the Viennese hand horn through study of primary sources and current scholarly research coupled with hands-on playing experience. The greater part of my findings in this research comes from private study with an experienced player and public performance. The public performance aspect will be a display of my findings in the form of a public lecture recital to be given in October of 2007. Additionally, I am learning how early horn performance practice affects the modern valve horn player’s approach to the works of Mozart, Beethoven, Schubert, and Brahms. This specific form of an undergraduate research project is unique to the School of Music in the College of Fine Arts.

Role of Interleukin-17 in Intestinal Inflammation
Patrick Craft
Agricultural Biotechnology
Graft-versus-host-disease (GVHD) is a common complication of a genetically different or allogeneic bone marrow transplantation (BMT) in which graft cells elicit an immunological response that destroys host tissue. To inhibit the development of GVHD following allogeneic BMT, immunosuppressive agents such as cyclosporine A (CsA) are administered. Interestingly, CsA is also used to induce a GVHD-like disease in mice that have received a syngeneic or genetically identical bone marrow transplant. Syngeneic GVHD (SGVHD) is induced following lethal irradiation, reconstitution with syngeneic bone marrow, and treatment with a 21-day course of CsA. The clinical symptoms of SGVHD are characterized by weight loss, runting, hunched posture, and severe diarrhea with target organs being the liver and colon. This model is utilized to study immune regulation and intestinal inflammation.

Syngeneic GVHD is thought to be driven by the enhanced expression of specific pro-inflammatory cytokines. Cytokines are a group of proteins and peptides that are used in organisms as signaling compounds, allowing one cell to communicate with another. The complex differentiation pathway of the naïve CD4+ T-helper cells involves a number of cytokine interactions. Until recently, it was thought that only two subsets of effector T-helper cells existed. However, recent studies have demonstrated the discovery of a third helper T-cell population, Th17, that produces the cytokine interleukin 17 (IL-17). IL-17 producing T-cells can drive various pathologies including intestinal inflammation. Preliminary studies in Dr. Scott Bryson’s laboratory have suggested involvement of Th17 T-cells in the pathology associated with SGVHD. Furthermore, recent proteomic and molecular studies have demonstrated a marked increase in the cytokine IL-17, associated with a Th17 Immune response. Together these data enhance our understanding of the mechanisms underlying the pathology associated with SGVHD and point to a potential role for Th17 cells in the pathology of SGVHD.
Iron Works
Walter Early
Fine Arts
I am working with Pam Brown, the Director of the Ironbridge Open Air Museum of Steel Sculpture in Coalbrookdale, England, to organize a traveling exhibition of cast iron sculpture. We invited five American and five British sculptors to attend the Museum’s 7th annual summer Workshop series and produce original works for this exhibition.

The exhibition is well on its way. All of the pieces are cast and seven are completed and in storage waiting patiently for the first date. The other three only require a minor amount of fettling and patination.

My grant monies have been used mainly for travel expenses during my six weeks in England. While here, I have helped the participating sculptors in the production of their finished products. Ms. Brown and I also visited the three participating venues and paid a visit to a potential fourth. The exhibition will travel to the Shire Hall Gallery in Stafford; the Museum of Iron, in Ironbridge, as part of their 300th anniversary celebration of Abraham Darby’s historical innovation that sparked the Industrial Revolution; and the Royal British Society of Sculptors will host it at their London gallery. Another exhibition of large-scale, outdoor sculpture will be produced next summer in conjunction with the Museum of Iron exhibition.

With the support of the Henry Moore Foundation, work has also begun on a book of sculptor’s drawings to be published in time to accompany the exhibition. Jon Wood from the Henry Moore Foundation will write the introductory essay and Sam Cornish will be doing the text for us. Mr. Cornish visited the Museum three times to interview the participating sculptors regarding the use of drawing in their working process.

The search for the successful psychopath
Natalie G. Glover
Psychology
“Psychopaths” are social predators who charm, manipulate, and ruthlessly plow their way through life… Completely lacking in conscience and in feelings for others, they selfishly take what they want and do as they please, violating social norms and expectations without the slightest sense of guilt or regret” (Hare, 2003, p. xi). Quite a bit of research has been conducted on psychopaths within prisons (Patrick, 2006). However, throughout the history of psychopathy research there have been repeated references to a “successful psychopath” — persons who presumably share the personality traits of the inmate psychopath (e.g., callousness, lack of empathy, and a remorseless exploitation of others) but are largely succeeding in their remorseless exploitation of others (Hall & Benning, 2006).

Being a prison inmate implies a fundamental degree of failure as a psychopath, because the person was unsuccessful in avoiding arrest and must now spend a considerable amount of time incarcerated. In contrast, anecdotal descriptions exist of psychopathic businessmen, lawyers, professors, and politicians (Cleckley, 1941; Hare, 2003), but there has never been a compelling systematic study of the personality structure of these supposedly successful psychopaths or even an adequate documentation of their existence, despite their importance to theory and social welfare (Hall & Benning, 2006). The major difficulty has been the cost in finding them and obtaining their willingness to participate. It would be a very expensive project to sample enough lawyers or politicians to find the rare psychopath, and, once found, it is possible, if not likely, that the psychopathic person would not participate or be forthright.

My present study used an alternative methodology. This idea grew out of meetings last year with Dr. Donald Lynam, a professor of psychology at the University of Kentucky, whose primary focus of research was psychopathy (e.g., Lynam & Dereffanko, 2006). Dr. Lynam is now a professor of psychology at Purdue University. However, the further development of the methodology for the study continued through conversations with Dr. Thomas Widiger, whom I approached to be my mentor for an Honors Thesis in psychology (PSY 495) during the academic year of 2007-2008.

The key feature of this study (actually a series of studies) was the use of “informant reports” (Vazire, 2006). Although a successful psychopath is too rare and unwilling to participate in research, it is possible that persons who were (or are) closely familiar with him or her would be able to provide useful information
concerning personality structure. It was hypothesized that criminal lawyers, forensic psychologists, and self-identified criminals will have known at least one person whom they would describe as a “successful psychopath,” and that this person would share most (but not) all of the traits that have been identified by psychopathy researchers as being characteristic of the prototypic psychopath.

Drs. Widiger and Lynam developed a description of the prototypic psychopath in terms of what is referred to as the five-factor model (FFM) of general personality structure (Widiger & Lynam, 1998). At the broadest level, the FFM consists of five broad domains (i.e., extraversion, agreeableness, conscientiousness, emotional stability, and openness). Each broad domain has been further differentiated into more specific facets (e.g., agreeableness versus antagonism includes facets of trust vs. mistrust, straightforwardness vs. deception, altruism vs. exploitation, compliance vs. aggression, modesty vs. arrogance, and tendermindedness vs. callousness).

The FFM has substantial support as a dimensional model of general personality structure and has been previously successful in describing and understanding personality disorders (Widiger & Trull, in press). It has been predicted that the successful psychopath, as experienced by persons who have known him (or her) well, would have most of the core FFM personality traits of the prototypic psychopath (e.g., deceptive, exploitative, arrogant, and callous). The prototypic psychopath has also been found to be low in deliberation, dutifulness, and self-discipline, consistent with being irresponsible, lax, and impulsive (Miller & Lynam, 2003). However, it has been predicted that the successful psychopath would be high rather than low in deliberation, dutifulness, and self-discipline, a finding that could go far in understanding the distinctive features of the personality structure of the psychopath who is successful.

Prospective participants were first given a brief description of a psychopath (e.g., the quotation provided in the first sentence above). They were then asked if they have ever known someone who had these traits and was actually quite successful in his or her psychopathic endeavors. Those with affirmative responses were then asked open-ended questions regarding why they considered the person to be psychopathic and successful (to document that they understood the concepts) and to then complete two brief questionnaires that assess for psychopathy and the FFM.

Forensic psychologists across the United States (obtained from membership in the respective division of the American Psychological Association) have been surveyed. We plan next to include samples of University of Kentucky law professors, criminal lawyers from the state of Kentucky, and self-identified criminals sampled through an advertisement placed in the Lexington Herald Leader. It is predicted that comparable findings will be obtained across each of these populations. The summer of 2007 project was devoted to the sampling of the forensic psychologists. Approximately 800 forensic psychologists were sampled to obtain a goal of at least 100 participants. So far, 70 completed surveys have been returned, which is a much higher response rate than is normally found in studies of this nature. Once all of the data has been collected, we will analyze it and provide a summary of our findings.

Experience with regard to the methodology and results of this project served as pilot and initial data for my 2007-2008 Honors Thesis project, which will include the sampling of lawyers, law professors, and self-identified criminals. I intend to present the results of this project at the Annual Meeting of the Kentucky Psychological Association, and Dr. Widiger has indicated that the results will likely be publishable in a scientific journal.

References


Behavioral Modification: The Effects of Peer Victimization History on Verbal and Nonverbal Behavior in Young Adult Interactions.
Andrew Hancock
Psychology

This study investigated the consequences of peer victimization in young adults, specifically in verbal and nonverbal cues of behavior. College undergraduates (N = 122) were placed into same-sex dyads to participate in a 2 (victimization history: victim vs. nonvictim) x 3 (power manipulation: boss vs. employee vs. equal status individuals) design to explore the effects of history of childhood victimization on performance in a power role, and in particular the verbal and nonverbal cues displayed by individuals while interacting.

Sixty-one participants pre-selected for a history of childhood victimization were randomly assigned to boss or equal status roles and...
then videotaped while group problem solving with a same-sex peer who did not have such a history. The videotapes of the interaction were then coded for a variety of verbal and nonverbal cues. Analyses revealed that even a mild history of victimization early on in childhood might affect performance in a position of power in adulthood. As expected, victims appeared most threatened when assigned to the boss role and appeared least threatened when assigned to an equal status role. Participants also sat closer together when assigned equal status roles than when assigned to the boss or employee condition.

Interestingly, results showed that victims who were assigned to the employee role sat significantly farther apart than when assigned to boss or an equal status position. Analyses of sex differences showed that male victims also had more head nods than male non-victims, perhaps indicating greater submissiveness.

Asperger’s Syndrome at Kentucky’s Universities: Assessing the Needs of a Hidden Population
Bev Harp
Social Work
Asperger’s Syndrome is an autism spectrum disorder, one of a distinct group of neurological conditions characterized by a greater or lesser degree of impairment in language and communication skills, as well as repetitive or restrictive patterns of thought and behavior. More than a decade has passed since the introduction of Asperger’s syndrome (AS) into the American Psychiatric Association’s Diagnostic and Statistical Manual (DSM-IV). Since that 1994 publication, the number of individuals identified with the disorder has increased significantly each year. The proposed study will investigate the presence of Asperger’s syndrome at four Kentucky universities. Interviews with students and resource providers will examine perceptions of services available, needs, and factors that may prevent students from disclosing the disability or seeking services. Ultimately, the information gained may be used to implement programs designed to enhance the independence, employability, and quality of life for this population.

Students from the University of Kentucky, Eastern Kentucky University, and the University of Louisville are participating in qualitative interviews throughout the summer months. Data will also be collected from the Kelly Autism Program at Western Kentucky University, early in the fall. Questions are directed toward availability of resources and accommodations, self-identified needs of the group, other sources of support available, and general knowledge regarding Asperger’s syndrome.

A second phase of the study incorporates data collected from service providers at disability resource centers at the same universities. The two sets of data will be compared, along with information obtained from the literature review, and analyzed to identify knowledge and service gaps. The study findings will be presented in a seminar at UK’s Interdisciplinary Human Development Institute in the fall of 2007, and will also be made available for use in other forums. Information gained may be useful in meeting the needs of this growing population at the university level.

Effects of MMP Induction or Inhibition in the Ovulatory Follicle
Brian Kelty
Biology
Ovulation is the process in which an oocyte is released from its ruptured ovarian follicle to later be fertilized. The pathway is set into motion by luteinizing hormone (LH) that initiates and synchronizes a series of biochemical events that increase proteolytic enzyme activity. The matrix metalloproteinase (MMP) family is a 28-member group of enzymes that include gelatinases and collagenases and have been proposed to degrade connective tissue at the apex of the follicle, allowing the oocyte to be released. One focus of the Curry lab is to understand the process of ovulation and the role that the MMPs may play in it.

Currently I am developing a method for rat ovarian follicle culture in the lab. Follicle size and maturity can vary greatly depending on the age of the rat and whether the rat has been pretreated with PMSG, a hormone that acts like follicle stimulating hormone (FSH), which would speed up follicle maturity. In addition to studying MMP action in ovulation, I am studying the significance of follicle size in culture by comparing growth and survival in different sized follicles at the start of culture. Results thus far show larger follicles (350-400µm) tend to grow very little and do not survive very long, whereas smaller follicles (250-350µm) grow at a higher rate and survive longer. Smaller follicles (100-200µm) are also being studied.

Along with follicle starting size, differing FSH levels in the culture media also seems to have an effect. While culturing with an FSH concentration of 1 IU/mL, follicles would often rupture and release the oocyte prematurely or the granulosa cells of the follicle would darken, two definite signs of follicle death. By scaling back the FSH concentration to 100mIU/mL, early data shows the follicles remain healthy for a longer period of time.

The goal of this study is to successfully induce ovulation of the ovarian follicle in vitro. Once in vitro ovulation is reliable and repeatable, we will be able to induce or inhibit MMP activity and observe the physiological effects it has on ovulation. The study may also shift from a 2-D culturing system of a 96-well plate to a 3-D culturing system using calcium alginate, which would mimic the 3-D support system of the ovary.
One is tempted to define satire as an art form of the “I know it when I see it” variety, but this of course ignores how often subtle satire goes unnoticed by a large percentage of its audience. A better definition might be a work whose intentions for a target fall somewhere between gentle ribbing and wanton scorn. Satire’s aim, to mock without necessarily destroying, makes it an excellent vehicle for social critique when authors do not wish to broach their subject directly. Regardless of the setting, political satire is always able to find plentiful material with which to work; because, if life is filled with hypocrisy, foolishness, and pretension, politics are only more so. Political satire is a voice against complacency, which fights the toleration of injustice by suggesting ideals and accepting the world as it is reported by presenting old news in new ways. Successful political satire is a dissenting voice that inspires new modes of thinking.

Not well known in the United States, *Le Canard enchaîné* is a French satirical weekly. Founded in the years preceding WWI, *Le Canard enchaîné* (literally “The Enchained Duck,” a play on its contemporary, *L’Homme Libre*) developed a reputation for unfailingly dissecting the news in the most serious of circumstances and critiquing and poking fun at anyone in power, while reserving a slightly sharper stick for those on the right. If one looks beyond the irreverent smirk, the *Canard* can still be relied on for piercing analysis and even stories and scandals that the “unchained” press has failed to uncover.

In May, 2007, French voters went to the polls after an often bitter campaign that pitted Nicholas Sarkozy, the candidate of the incumbent conservative party and advocate for major reforms, against Segolène Royal, the Socialist Party candidate and first woman to be competitive for the French presidency, who was urging restraint. The importance of the election and the strong personalities involved offered a wealth of material for the *Canard* and the rest of the satirical press with which to work. But nearly one hundred years after its first issue, the proud duck’s readership, while still strong, is aging. Like France as a whole, the *Canard* is confronting challenges to its relevance in an evolving world.

My research has focused on coverage of the 2007 French presidential election and the ensuing legislative elections by *Le Canard enchaîné* and, to a lesser extent, other sources of political satire. I am spending the summer in France to examine the satirical coverage and also to be immersed in the environment in which regular media coverage and the public’s reception of news can be weighed appropriately. The Bibliothèque de France-François Mitterrand has provided me with archived copies of the *Canard* and I am in the process of critically reading issues for such topics as the choice of news stories, the literary techniques employed, and the intentions of the authors. The goal of this analysis is twofold: to explore how satire affects or attempts to affect the fashion in which events are remembered, and to understand how the *Canard* itself has managed to stay relevant (and popular) for so long. I am investigating the idea that by offering alternative ways of thinking about subjects that initially appear unambiguous, satire encourages competing narratives that undermine a monolithic memory of events.

Painting is a thundering collision of different worlds, destined to create a new world. Technically, every work comes into existence as the universe comes into existence, namely through catastrophes.

- Kandinsky

As a conclusion to our summer research project, we present the digital animation titled “Monopole Catastrophe.” This title refers to a scientific theory that proposes that we live in a false vacuum. Upon decay of this vacuum, caused by a lower energy vacuum, the earth would be instantly destroyed, and a new vacuum would emerge at light speed with fundamentally new constants of nature. Some theorize that this event may even be triggered by experiments using high energy particle accelerators. Such an event seems to be highly unlikely, though as a possibility open for consideration, it points to the vast transformable underpinnings of reality.

In relation to our work, we considered this notion not in a destructive sense, but as a way to be open to the awareness of the infinitesimal conditions that our existence is dependant upon. Since the first moments after the big bang, it appears the universe has followed a narrow path eventually leading to life emerging on this planet. Whether we consider this to be the work of a Creator, higher intelligence, or simply random processes, it is hard not to be in awe of our place in the universe in view of all that our existence is founded upon. In our day to day lives, we live unaware of this foundation as we attempt to secure our existence and meet the demands of our self-image.

In primitive times, myths and rituals were created out of the wonder of the life-giving aspect of reality and the terror of the destructive aspect of reality, providing a space for directly being in tune with the flow and rhythm of the life-giving aspect of reality and the terror of the destructive aspect of reality.
of creation. Progressively in modern times, as myths and rituals fade from our attention, we are becoming atomized, fragmented into specializations, and led by a partial segment of our self. Our elementary schools and universities are increasingly driven by measurable interpretations of retained knowledge and arbitrary ranking systems. How devastating this has been to those qualities of self that can not be measured! An over emphasis on rankings by outside agencies is reflected in students’ lack of self awareness. This approach is as doomed to fail as individuals who base their understanding of themselves on the opinions and credentials of others. To be sure, curiosity, creativity, originality and vision have not been completely suppressed, but rather than being used as instruments to gain deep insights into the nature of oneself and reality, they are twisted to manipulate oneself within the technocratic system. It is no wonder that this lack of curiosity and depth is reflected in some of the nation’s foremost leaders.

The point we are making here is that as we are increasingly becoming detached from the interdependence of reality, we become excluded from the creative depths of reality that make available both fundamental physical transformations and psychical transformations. For a monopole catastrophe can also be seen as a metaphor for an inner spiritual or self-catastrophe.

Just as the limitless abundance of physical reality from the quantum to the chemicals that compose our being in the world evades the narrow scope of our conscious interaction with the world, the depths and components of our inner psychical reality that form our viewpoints go undiscovered, ignored, or concealed. There is a discernable anesthetic effect that credential-centered society produces in relation to ancient human enigmas and the rawness and vitality of life lived without obstruction. Subtle barriers are erected through body language, inflection, and what goes unsaid that guide a world view in which the invisible, numinous qualities of reality are placed out of bounds, or studied in the form of powerless and distant representations. In turn, hidden aspects of the self are left stagnant, thus eroding the connection to the inexhaustible depths of mind. As this connection is minimized, creative potentials ready to be awakened within one’s self command little attention, and the mist of pervasive diversion clouds our inner vision.

As artists, there is no more a vital impulse than to reconnect our selves with the original life giving nature of reality in its fullness of spirit and eternal unity. This has been one of the primary missions of art throughout the ages, although now, when the disconnection to the numinous is growing, it seems to be an all the more needed yet increasingly insurmountable task. As products of this modern era, we can not separate ourselves from it, or simply revert to earlier modes of expression. We must face this apparent disconnect head on, and create ways to reunite with reality through re-envisioning and recycling the outputs of our technologically immersed society.

The visual material for “Monopole Catastrophe” originated from abstract acrylic paintings. Portions of the paintings were digitally photographed and manipulated on a computer. The program Studio Artist was acquired with our grant funds and allowed us to animate the painting manipulations. We then composed the animation with original music using Final Cut Pro.

Through an interweaving of digital processing, the initial paintings took on utterly new forms, expanding and contracting within various levels of abstraction. The world of the paintings collided with the realm of the digital, creating a new totality not reducible to the two. As a result of this impact, the images were brought back to life, surging forward rhythmically moment by moment. The viewer is left grasping at the images as they inextricably flow by. Memory, conceptualization and anticipation fail to take in the fullness of the movement. One may however, if one chooses to open oneself, step into the stream of experience, letting the transformations of light and sound surround him or her.

Rather than side-stepping the issue, this film takes on the modern day atmosphere of disjointed reality directly, bringing it to its logical conclusion in catastrophic terms. Whether the dynamism of movement and the surplus of color merely mirror the excesses of our times, or break free toward an exuberant beauty, it is hard to say. The film poses not as an answer to the dilemma, but highlights what is at stake. As we find ourselves searching for the lost connections and hidden dimensions of human experience, the fragments of the self may need to be broken free from their rigid enclosures rather than simply rearranged. In seeing through the transitory nature of forms, exterior identifications, images and labels, a remembrance of interdependence with the world may emerge. Freed from the limitations placed upon one’s self, and out of closeness to creative reality, unified being and true individuality may be possible. It is our hope that this may be brought to the fore in the realm of art, for otherwise, the unity of reality, and of our dependant existence within it, may make itself known through outer catastrophe.

We both would like to express our gratitude to eUreKa! for the opportunity that this grant has provided. The present film is our initial attempt at digital animation, and is a first step toward hopefully many more creative projects applying the skills and insights we have learned from this experience. We also would like to thank our faculty sponsor, Professor Rozenberg, for his support and critical views along with the time he was able to share with us. Overall, we feel that we learned a great deal and have grown as a result of this project and hope that you may find it of some value.
The determination of the relationship between neural function and behavior is the underlying challenge faced by the entire field of neuroscience. In order to effectively assess this relationship, associative learning serves as the animal’s basis for lifetime preparation of major events, just as in humans. However, the functionality of the Drosophila melanogaster is much simpler and more reasonable for assessment. With the progression in biological integration between fields, Drosophila are not limited to behavioral assays only, but can be examined via genetics and molecular biology in relation to behavioral results.

At present, particular olfactory paradigms are developed for associative learning in assessment of larvae. The assays of chemosensory function in relation to behavioral function have just recently become a primary focus in the field. As recent as this January, 2007, the first review of literature was published on chemosensory learning in Drosophila larvae. This literature provides a means to the first mechanistic understanding of reception of olfactory and gustatory sensory neurons related to learning in larval Drosophila. Insights such as these provide a bridge in the gap between behavior and physiology.

Another bridge to cross is that between flies and humans. To many it may seem remarkably distant, but upon further investigation, Drosophila melanogaster is a wonderful basis for understanding more complex species. It is not only that humans share many of the same genes, but also share numerous metabolic and cell signaling pathways at a cellular level. Most interesting is the consistency between behaviors of organisms. It is this basis for investigation that must be held in mind to understanding the underlying question of relationship between cellular level mechanisms and behavioral responses conserved throughout increasing echelons of species.

The development of this project stems from previous work in this laboratory. I am conducting research as part of Dr. Cooper’s Lab in the Department of Biology, but with novel methodology and more precise theory. Previous published works were indicative of respectable learning that provided further insight in developing more precise means of addressing larval learning in Drosophila. The supportive preliminary evidence obtained has opened endless areas of experimentation. At present, the approach published in the literature is lacking the proper thought to best assess learning in larvae due to what I view as an experimental design flaw.

The novel design of dark and white strips instead of pie shaped quadrants allows light versus dark preference to be more readily available to larvae being tested for light or dark preference. The width of the strips is twice the body length of 3rd instar larvae. This method allows for the larvae to be more readily exposed to the different environments, and thus eliminates any spatial bias of being in the middle of a pie shaped quadrant.

During the assessment of learning assays, the specimens experience three specific preparation processes. Assessment of impartiality is examined within control groups to determine if the Drosophila has a prior preference to light or dark environments. Next, the animals undergo positive and negative reinforcement training conditions with fructose (FRU) and Quinine (QUI) paired specifically with dark and light environments respectively. Evidence for learning can then be assessed by the new preference to areas of the Petri dish. In particular, a preference for dark (+)/light (-) is expected to format an obvious partiality to the areas of darkness located along the strips where light was unable to penetrate the dish. These results are compared to the quadrant systems used in previously published experimental assays.

Due to the ongoing nature of this project the results are pending peer review in a scientific journal so I am unable to discuss the specific results. In summary, the direct comparison between the previous works that were conducted with the quadrant assay, the new strip assay results appear to be indicative of a more efficient method to examining learning and to collect meaningful data. The prominent issue that is being addressed is not the question of learning, but if the new assay will provide a more opportunistic environment for the larvae to choose between light and dark. The data being collected is supportive of this hypothesis, but more statistical analyses will need to be completed in order solidify these observations. The learning assessments interestingly show a level of learning in these larvae that is even higher than expected. The hope is to continue this project and further investigate other areas within learning to understand more completely the ever-present gap between neural function and behavior.

The focal point of this research is to assess learning and retention in Drosophila larvae. Much work has been done in the area of adult fly learning and retention, but minimal work has been done in the pre-pupation larval stages.
A Comparative Analysis of Germany and America: Patterns of Substance use in Adolescents
Ashley A. McFarland
Sociology

Adolescent drug use, particularly with alcohol, tobacco, and marijuana, is an international problem. Cross-national comparisons allow for the investigation of such health-risk behavior in different cultural contexts and can aid in the creation of educational and policy measures to curb adolescent substance use globally. While extant studies have focused on North American adolescent populations in their quest for finding patterns and correlates of adolescent substance use behavior, only a few studies have widened the net to include other countries and cultures. Germany, a country with many similarities as well as differences to the United States, falls into the category of understudied populations with regard to empirical analysis and cross-national comparison. The present study uses 2003 self-report data from the Monitoring the Future (MTF) study as well as data from the European School Survey Project on Alcohol and Other Drugs (ESPAD) to analyze similarities and differences in adolescent substance use in Germany and the United States. In particular, social and contextual factors typically associated with substance use between German and American adolescents are discussed.

The Kentucky African American Encyclopedia: Black Life and Culture in the Commonwealth

History
Kentucky — Not the oldest nor yet the youngest state; not the richest nor yet the poorest; not the largest nor yet the least; but take it all and all, for men and women, for flocks and herds, for fields and skies, for happy homes and loving hearts, the best place outside of Heaven the good Lord ever made.
—Ermina Jett Darnell

Before and since the Commonwealth of Kentucky’s inception in 1792, African Americans have made significant contributions to the life, culture, and history of the Bluegrass state. As builders of Kentucky, the fifteenth state in the Union, it is hard to grasp how such a rich and diverse history has been pushed aside. Kentuckians of African American descent have played major roles in many facets of life in local Kentucky communities, as well as on state and national levels.

The Kentucky African American Encyclopedia will serve as a comprehensive study of black life in Kentucky as well as a major reference tool for those interested in studying Kentucky and southern history. This summer I have been given the opportunity to conduct research with University of Kentucky professor Dr. Gerald Smith and the other co-editors of The Kentucky African American Encyclopedia Project. Dr. Smith has served as an excellent mentor and instructor guiding me in my research with proper research methodology and also with enhancing my knowledge of the African American experience in Kentucky. I have explored the political, social, and economic impact African Americans have had on the Commonwealth of Kentucky. In my research I have reviewed several primary and secondary sources, including past newspaper articles, microfilm, listening to oral histories on tape, watching interviews on film, and reading journals, among countless other sources. The knowledge I am gaining will serve as a solid base for me as I continue my history research while at UK.

My primary focus this summer, beyond general office work on the Encyclopedia, has been to perform extensive research in order to write my own entry for the encyclopedia. I am researching Cynthia, Kentucky, native Louis Stout, one of Kentucky’s leading administrators, educators, and coaches. Mr. Stout has received numerous accolades and honors in his lifetime. He was inducted into the 10th Region Basketball Hall of Fame, the AAU Hall of Fame, the KHSAA Hall of Fame, and the National High School Athletic Hall of Fame.

Beyond these prestigious honors, Stout is most proud of the impact he has had on students’ lives. After playing college basketball at Regis College in Denver, Colorado, under the guidance of one of the University of Kentucky’s past great coaches Joe B. Hall, Stout returned to Kentucky to become a high school basketball coach. He coached Lexington Dunbar High School and Tates Creek High School. He became the assistant commissioner of the KHSAA in 1971. In 1994, he was named the commissioner of the KHSAA, becoming the first African American to head a high school athletic association in the United States. He also worked twenty-seven years as a high school and college umpire and referee for basketball, softball, and baseball, working on the college level in both the Ohio Valley Conference and the Southeastern Conference.

Since his retirement in 2002, Mr. Stout has published a book, Shadows of the Past, chronicling the history of African American high school athletics in the state of Kentucky. He also hosts a high school sports radio show and the Scholastic Ball Report, a television program dedicated to honoring students who excel in the classroom as well as in athletics.

My research experience has fulfilled and surpassed all my expectations. I love Kentucky history and especially enjoy the opportunity to do research on people, places, and events that have not been researched extensively.
Isolation of Lines Carrying Homozygous Knockout Mutations in Target Genes
Lev Orlov
Plant Pathology

Seeds for Arabidopsis thaliana lines carrying T-DNA insertions in target genes were ordered from the Arabidopsis Biological Resource Center (ABRC, OH). These lines were screened for T-DNA insertions in the target locations in the genome. Genotypic screening was carried out using primers that anneal in regions spanning the putative site on T-DNA insertion (LP and RP), as well as a T-DNA-specific primer (Lbb1). DNA from wild type plants with no insertion (wt) yields an ~ 900 bp PCR product with primers LP and RP, and no product with primers Lbb1 and RP. If insertion is in both copies of the target gene (Hm), then PCR with LP and RP primers do not amplify any product, while PCR with Lbb1 and RP primers yields an ~ 500 bp amplicon. Plants carrying insertions in a single copy (Hz) yield both the 500 bp product with Lbb1 and RP as well as the 900 bp product with LP and RP.

Genomic DNA from approximately 60-80 plants for each line was extracted and used for PCR analysis with the corresponding LP and RP primers along with Lbb1. Thus far I have screened a total of 400 plants with putative T-DNA insertions in three different genes, using this strategy. All three genes instruct for proteins that participate in the fatty acid metabolic pathway of A. thaliana and have been designated 1, 2 and 3. I have isolated two plants in line #1, and nine plants in line #2 that appear to be Hm for the target genes. These plants will be further screened for T-DNA insertions by RT-PCR/Northern analysis of RNA. No Hm plants were obtained for line # 3, however 11 Hz plants were isolated based upon DNA analysis. These plants have been coned to allow self-fertilization. Seeds obtained from these Hz plants will be sown to obtain seedlings, which will be screened using the above described method for Hm plants, followed by RNA analysis.
Summer Research and Creativity Grants (CONT.)

You Are Here
Rebekah Schaberg

Design
Lily pads of land float on top of the North Sea, bumping into each other gently, greeting other lily pads with light kisses before separating again … slowly … serenely. This is not the image that every newcomer to Holland recalls, but it was my very first impression of the country. The Netherlands offers a unique setting, one continually growing and changing, a setting of co-dependence between land and sea. It seems that this initial cooperation of natural elements inspired the Dutch to create a society of interdependent systems. It is this collaboration that has given birth to one of the most enjoyable way-finding systems in the world.

American cities are comprised of destinations. This is not as true of Dutch urban spaces. In a place such as Rotterdam — a city that seems to have more building icons than trees — you cannot travel from point A to point B without passing through an enjoyable space. This is most important to understand: for the Dutch, the journey is as significant as the arrival.

What makes the journey so enjoyable? It could be as simple and as broad as consciousness: the Dutch are aware of the spaces in-between spaces. Each of these zones is designed with a sense of scale that we in America so often neglect. For us, the scale of the vehicle is the measure of space. For the Dutch, the vehicle is a less important way to travel. It is, more importantly, not the only way to travel. The measure of space must happen in multiple volumes.

Analyzing the section of a normal urban street begins to tell a story about the city and how its inhabitants use the space. Starting from the left, a building creates a boundary. The space next to the building provides a buffering zone, usually furnished with a precise line of trees that create the sense of repetition within the city. It is here that the human scale can become significant. Appropriately situated next to this buffer is the pedestrian zone, indicated by specific pavers in the sidewalk. Jumping down a short curb, we move into the bike lane. This is the busiest and (perhaps) most important mode of transportation within Rotterdam. Again, the zone is indicated by specific paving patterns, and is almost always painted the color red. Jumping up another short curb, we encounter another buffering zone between bike traffic and vehicular traffic. This zone is also usually furnished with a line of trees, and uses the same paving pattern as the pedestrian zone. It is used as intermediate sidewalk territory by people on foot. Passing through this barrier, you truly feel that you are leaving the place for people and entering the place for machines. Down another short curb, we now enter the roadway. Vehicles and street cars (trolleys) function in this zone of the street.

These modes of transportation function quite differently than the norm in the U.S. Instead of the car having almost total right-of-way, bicycles seem to have the greatest claim to the system. After bicycles, pedestrians have privilege, after pedestrians, cars. The systems have understood responsibilities toward one another. They work. Because the individual person is put before the machine, the street becomes a place to experience. People live their lives outside of buildings.

This sets the stage for the Dutch phenomenon: a sense of ownership and of a personal moment in the public and busy realm. If you are in route, you are forced to experience the city. You exist in a network that is larger than your own transient. Thus, the experience of the journey is gauged by the passing of time: time is not meant to be saved by short-cuts and conveniences; time is meant to be enjoyed. You know that you are here; you are in a city of design, a city with culture, a city with life. In this city, you become aware of the rhythm of passing trees and street furniture, the colorful flecks of fabric and graphics that catch your eye and draw attention to things you may not have noticed if you had been in a hurry, the smells wafting from snack stands and the sounds of people amusing themselves. You can’t help but enjoy the journey to your destination.

Synthesis and Characterization of Biocompatible Hydrogel Nanocomposites
Mehul Suthar
Chemical Engineering

Modern medicine has found revolutionizing roles for polymers and, in particular, hydrogel polymers have found many applications. Currently, the medical field uses hydrogels for contacts, artificial dental components, and in implants. These hydrophilic polymer networks hold unique properties of biocompatibility, controlled solute diffusivity, and pH and thermal responsiveness.

Poly(N-isopropylacrylamide) (PNIPAAm) is a commonly studied biocompatible polymer and holds particularly unique thermal characteristics. In aqueous environments and under low temperatures, this polymer hydrogel has a strong affinity for water, resulting in significant swelling. At higher temperatures the polymer has decreased affinity for water and resists swelling.

Iron oxide nanoparticles have also gained interest in the medical field. These unique nanoparticles have been studied for cancer targeting, MRI tracers, and hyperthermia treatments. A particular interest in these studies is the superparamagnetic property of the particles. Under an alternating magnetic field, these particles are capable of creating tremendous heat.

By creating PNIPAAm based hydrogels loaded with nanoparticles, this study aims to utilize the temperature responsive properties of PNIPAAm hydrogels in combination with heating capabilities of...
Articular cartilage is a connective tissue located on the surface of two or more adjoining bones within synovial joints. Its major functions are to assist joint motion by minimizing the coefficient of friction, to provide strength to resist shear stress between bone surfaces, and to provide a cushion that reduces weight-bearing compressive stress. The unique biomechanical properties of articular cartilage are a function of molecules in the extracellular matrix and how they are structurally organized. The focus of my project is a large matrix glycoprotein called fibronectin found at high levels in cartilage.

In 1995, my sponsor, Dr. James MacLeod, identified and characterized a unique isoform of fibronectin restricted to the cartilaginous tissues of mammals. Designated (V+C)- fibronectin, this glycoprotein has a cartilage-restricted expression pattern, which implies that it has an important role in cartilage function and possibly in chondrocyte differentiation. I have been participating in experiments designed to test the hypothesis that the unique structure of (V+C)- fibronectin produces altered binding affinities for some cell surface receptors leading to differential regulation of chondrocyte gene expression.

My current experiments use a technique called quantitative polymerase chain reaction (qPCR) to evaluate changes in the expression of targeted genes that were initially identified using microarray-based transcriptional profiling screens. The first set of target genes include Syndecan-4, MMP-3, VCAM-1 and BOC. MMP-3 is an enzyme in the matrix metalloproteinase family that catalyzes the degradation of certain extracellular matrix molecules. MMP3 is involved in normal matrix turnover as well as diseases including arthritis. The Syndecan-4 gene encodes a protein involved in intercellular signaling and VCAM-1 is linked to cell adhesion and signal transduction. A new gene of interest in the MacLeod lab, BOC (Brother of CDO) is a cell surface receptor that has been studied for its role in myogenic differentiation.

Specific primers and fluorescent-labeled probes for each targeted transcript are developed based on the primary nucleotide sequence and structural annotation of the gene being studied. Primers are designed to span adjoining exons and the probe sequence is centered over an exon-exon junction in order to avoid amplification and detection of any contaminating genomic DNA in the sample. Controlled experiments are used to test the quality of these primer-probe sets.

Total RNA samples isolated from articular chondrocytes cultured for 24 hours in the presence of different fibronectin preparations such as plasma and cartilage first have to be reverse transcribed into their complementary DNA (cDNA) with a DNA polymerase enzyme. I am then able to evaluate gene expression changes in the cDNA samples on a 7500-Fast quantitative “real-time” PCR system (Applied Biosystems). The amplification of the cDNA takes place over 40 cycles each set for 3 seconds at 95°C to separate DNA strands and 30 seconds at 60°C to anneal the primer to its matching segment and for the DNA polymerase (Taq polymerase) to synthesis the complementary DNA strand.

Our preliminary data have not indicated consistent differences in gene expression of Syndecan-4 between biological replicates. Our current priority in this research includes running more qPCR experiments with the other genes mentioned above.
Undergraduate Research and Travel Fund

eUreKa! offers undergraduate students travel support. The purpose of this support is to help students gain experience in showcasing their work at and participating in professional conferences on a national and international scale. Keep in mind that research takes place in many different forms and in all disciplines. The study of social problems, the creation of a piece of fiction or poetry, the study of a scientific theory or a historic period of time, and the solution of engineering and mathematical problems all qualify as research, among many other activities.

Students may apply for travel scholarships to attend national or international professional conferences or competitions. To be eligible, a student must:

• be a full-time undergraduate student at the University of Kentucky
• have a faculty sponsor
• be registered for the conference or competition
• present (i.e., paper, poster, research, performance) and/or participate (orally)

One of the students whose travel was supported during 2006-2007 is highlighted here.

Brazil, South Korea
William Faulkner
Chemical Engineering

“I already know what you are going to do next summer.”

After my mother made this statement, she noticed a long and silent pause on my end of the phone. She then added on with a rhetorical question, “You are going abroad next year aren’t you?” Based on my personality and past experiences, my parents knew I would be up to something mischievous. Here I was in the summer before my junior year of college and I had already completed a Chemical Engineering co-op with Marathon Petroleum in Detroit, Michigan. With already a year of experience in Chemical Engineering under my belt, I had a leg up on most of my competition for jobs when it came time during my senior year. This only meant one thing; I had a free summer to do whatever I wanted to before my senior year of college. Most students would complete another co-op term in order to gain more technical experience but I wanted to do something not many college students have done before. I wanted to gain international experience in the field of Chemical Engineering.

The only goal I had for the summer of 2007 was to go somewhere outside North America, I did not care where. Just like my co-op, I started planning early in order to accomplish my goal. At the beginning of the school year I met with just about anybody and everybody who dealt with international relations in some sort of fashion. I met with people from the Education Abroad Office to Professors in the College of Agriculture about how I could go abroad. I even interviewed for an internship in Georgia (the country not the state) in order to teach local farmers how to farm based on the economy, that is how eager I was to go abroad.

Finally, Ilka Balk from the College of Engineering contacted me about a national organization that helped technical majors find short-term programs and internships abroad. The name of the organization is the International Association for the Exchange of Students for Technical Experience (IAESTE). There was not a student chapter here at UK, therefore one needed to be set up. IAESTE is an exchange program in which students from the United States go abroad for internships and research positions and international student come from abroad to the United States for an internship or research position. This program was exactly what I needed. Through IAESTE I was able to participate in the EMPOWER program through the University of Pittsburgh in Brazil for eleven days as well as complete a research internship in South Korea for two months.

William Faulkner in Korea
BRAZIL — EMPOWER

The main purpose of the EMPOWER program was to investigate renewable energy resources such as hydroelectric, wind, and alternative fuels, by exploring Brazil’s utilization of sustainable and clean power. The Universities represented during the EMPOWER program included students from the University of Pittsburgh, Carnegie Mellon University, University of Illinois, University of Minnesota, University of Wisconsin, Rice University, as well as the University of Kentucky.

While in Brazil, the group visited Rio de Janeiro, Sao Paulo, Campinas, and Foz do Iguacu. During the stay in Brazil multiple company and government sites were visited in order to discuss sustainable and renewable energy with top officials. One of the sites visited was a Caterpillar landfill in which methane gas produced by decomposing municipal waste was used in order to supply power to on-site generators to create electricity for the surrounding communities. Another site visited by my group during the trip was a DuPont sugar mill. Supplied by local farmers, DuPont sequentially broke down the sugarcane to create ethanol to use as a fuel source for automobiles. Also during my stay in Brazil I met with government officials such as the attorney general of the Rio de Janeiro state in order to discuss sustainable engineering. I was lucky and met with the Association of Sugarcane Producers who had met with President Bush and his advisors during their trip in March of 2007.

Not only did I meet with various top government and industry officials in Brazil, but I also experienced Brazil through a diversity of cultural and historical tours. Some of the historical and natural sites visited included Christ the Redeemer, Sugar Loaf Mountain, Itaipu Dam, and Iguacu Falls.

SOUTH KOREA — RESEARCH

“Create whatever type of nanofiber composite you think will be conductive by electrospinning and then get back to me.” This was one of the first instructions Dr. Hong-Sik Byung gave me during my research internship at Keimyung University in Daegu, South Korea. With scarce time to conduct my research, I had to get moving quickly, even though I had minimal training.

My research at Keimyung University consisted of creating and evaluating the electrochemical characteristics of different weight ratios of the composite fiber polyvinylidene fluoride (PVDF)/polypyrrole (PPy) prepared via electrospinning. Electrospinning is a process that creates nanofibers that have a diameter of only a few hundred nanometers. Because electrospinning is a fairly simple and versatile process to create nanofibers, it has received a great deal of attention in the past decade. When a high voltage electrostatic field overcomes the surface tension of the polymer composite solution droplet, a liquid jet of the polymer composite solution is ejected onto the collector. As the liquid jet of the polymer composite solution is ejected from the syringe, the solvent used in the solution is then evaporated by the surrounding air stream. Due to a high surface area-to-length ratio, the electrospinning process can have a major impact on the electrical conductivity of a polymer composite solution.

As the world’s energy consumption continues to grow at the current pace, there will be a need for alternative energy such as wind power. The main problem with wind energy is where to store the energy generated by the wind turbine during low energy consumption hours by consumers. During the low energy consumption hours, the power generated by the wind turbine is typically stored in some sort of battery. The batteries that store this energy do not have a large capacity. The research in which I participated in South Korea targeted this type of problem, which was to maximize electrical chemical capacity such as in flexible batteries to use for many different applications.

My short stays in Brazil and South Korea during the summer of 2007 have been and will be necessary for my growth as a Chemical Engineer in the new energy-crunch, globalized world. My prior education here at the University of Kentucky prepared me to interact with highly intellectual students from across the globe. These two international experiences provided me with an important foundation in the new world of Chemical Engineering.
CO₂ Environment: How Bad Could It Be?

Tyler McLaurine
Faculty Mentor: Robin Cooper, Ph.D., Department of Biology

Studies examining carbon dioxide (CO₂) effects on behavior and physiology may give insights into organisms most likely to be strongly affected by toxic CO₂ levels. When an animal remains in a hypoxic (oxygen-deficient) environment, it must compensate for the reduction in the availability of oxygen (O₂). In an environment saturated with carbon dioxide, an oxygen-dependent organism will eventually become hypoxic and unable to survive. Adaptations to hypoxia vary depending on the duration of exposure. Some adaptations seen with a decrease in oxygen are the organism’s response of increasing ventilatory rate (VR) and heart rate (HR). These respiratory adaptations are noticeable in crayfish. This study examines whether crayfish experience a known behavioral anesthetic effect seen in insects upon CO₂ exposure.

One foundation for this research is a previous experiment on Drosophila (fruit fly) larvae exposed to carbon dioxide, which become non-responsive to stimuli. To understand this effect in crayfish, their behavioral and physiological states were monitored while they were exposed to an atmosphere saturated with CO₂. By examining external and internal responses, we gained insights into behavioral and cellular mechanisms of carbon dioxide. In this study, heart and ventilatory rates were monitored to correlate to behavioral changes, before, during, and after exposure to CO₂.

We observed a dramatic decrease in heart (HR) and ventilatory (VR) rates, which directly corresponded to CO₂ exposure. HR dropped almost immediately after exposure, which correlated with effects seen in Drosophila larvae. Furthermore, we observed that VR dramatically decreased during exposure, but continued sporadically. Upon reentry into the O₂ environment, VR increased almost immediately and remained higher than the baseline for an extended period of time. This increase in VR most likely occurred in order to compensate for the lack of oxygen experienced by the crayfish during CO₂ exposure. This finding suggests that ventilatory rate may be controlled voluntarily to compensate for hypoxic conditions. However, HR had a much slower transition back to its normal level than VR in oxygenated water. This finding suggests that crayfish HR is inhibited by CO₂ at the molecular level. It is likely that CO₂ molecules...
The Effect of Temperature on Closely Related Organisms
Olivia Ringo
Mentor: Stephen M. Testa, Ph.D., Associate Professor of Chemistry, Biological Chemistry

The *Bacillus*, *Lactobacillus*, and *Streptomyces* genera all have species that grow in three temperature classes: psychrophile, mesophile, and thermophile, which are in order from coldest to hottest temperatures. The organisms selected for study were chosen based on the large number of species that each genus contains, and the fact they all have several organisms that thrive in each of the three temperature classes. I am examining Ribonucleic Acid (RNA) that is synthesized from the adenylate kinase gene, which is found in organisms from each of the three temperature classes. Adenylate Kinase was the gene selected because it has been sequenced across the three temperature classes in the organisms we are studying.

Identifying the nucleotide sequences for the adenylate kinase RNA allows the relative stability of the RNA in each temperature class to be studied. This identification is done by taking the complimentary RNA sequences derived from the DNA sequences that are found in published scientific papers and running them through a program called *RNA structure*. This program produces images of the most stable foldings of the RNA, together with a numerical measure of each folding’s stability. The stability is measured as the change in enthalpy ($\Delta G$), expressed as kilocalories/mole, and a more negative number indicates a more stable molecule.

*RNA structure* calculates the stability under standard free energy parameters at 37º C. Using a complex set of files that determine base pairing, energy of free ends, and multi-branch loop stacking among other things, *RNA structure* is able to produce a theoretical folded molecule with its accompanying stability. By examining the stability of similar RNA across all three temperature classes, I will determine the evolutionary role temperature plays in altering an organism to adapt to a temperature-related environment.

The conclusions drawn thus far are that RNA stability is related to temperature. Additionally, the stability increases as expected; because thermophilic organisms grow at higher temperatures and have a greater input of energy to cope with, the RNA must be more stable so that it does not melt apart. Conversely, the psychrophilic RNA must be less stable, otherwise at such low temperatures it would be so compacted that it would not be able to be replicated. Future plans include comparing nucleotide sequence similarities, and attempting to determine which organisms gave rise to the others in their genus.
Undergraduate Awards and Honors

Astronaut Scholarship for Research
Andrew L. Lynch
Andrew Lynch awarded a $10,000 scholarship by the Astronaut Scholarship foundation (ASF). The scholarship is presented to dynamic undergraduates or graduate students who exhibit motivation, imagination, and exceptional performance in the fields of science and engineering.

Andrew plans to pursue his studies in the area of biochemical research after graduation in 2008. The money will be used to attend graduate school. ASF honors students whose talent foreshadows a career leading to advancement of scientific knowledge and technology. Established by the original astronauts in 1984, the foundation has grown to include more than 50 astronauts from the Gemini, Apollo, and Shuttle programs. The foundation is dedicated to helping the U.S. retain its world leadership in science and technology by providing scholarships to students pursuing careers in those fields.

Beckman Scholarship Recipients for 2007-2008
Eddie M. Kobraei, Andrew L. Lynch
Eddie Kobraei, a junior majoring in biology, is from Murray, KY. He is exploring the inhibitory effect of molecules called chondroitin sulfate proteoglycans (CSPGs) on neuronal outgrowth and regeneration following spinal cord injury. A major goal of this project is to identify the inhibitory structural features of CSPGs so that drugs and therapies can be developed that specifically target the inhibitory influences of these molecules. These developments could help to facilitate recovery of function in patients with spinal cord injury. His research is under the direction and mentorship of Dr. Diane Snow, Associate Professor in anatomy and neurobiology.

Andrew Lynch, also a junior majoring in chemical engineering, is from Williamsburg, KY. His research is investigating the oxidative breakdown of halogenated organic compounds. He hopes that this research will lead to a better understanding of the detoxification of environmental contaminants and improve remediation effectiveness. Andrew is performing his research under the mentorship of Professors Allan Butterfield in the Chemistry Department and Dibakar Bhattacharyya in Chemical & Materials Engineering.

Established in 1987, The Beckman Scholars Program is an invited program for accredited universities and four-year colleges in the US. It provides scholarships that contribute significantly to advancing the education, research training, and personal development of selected students in chemistry, biochemistry, and the biological and medical sciences. The sustained, in-depth undergraduate research experiences and comprehensive faculty mentoring are unique in terms of program scope, content, and level of scholarship awards. ($19,300 for two summers and one academic year. (See pages 94-97 for reports from this year’s Beckman Scholars)

Goldwater Scholarship
Andrew L. Lynch
A UK chemical engineering junior, Andrew L. Lynch, has won one of 318 Barry M. Goldwater Scholarships awarded nationwide worth $7,500. The recipients were selected on the basis of academic merit and potential for contribution in the sciences. The scholarship covers expenses for tuition, fees, books, and room and board up to a maximum of $7,500. As part of his successful application Andrew submitted a research proposal focusing on the biochemical breakdown of organic contaminants in groundwater, which builds upon his work in Dr. Dibakar Bhattacharyya’s laboratory.

FULBRIGHT SCHOLARSHIP
Vanessa M. Dimayuga
Vanessa Dimayuga, a graduated senior who majored in Biology, is a 2007-08 recipient of a Fulbright Scholarship. She will travel to the Netherlands to use her scholarship to conduct research at the Netherlands Institute for Neuroscience with Dr. Elly Hol and her research group. Dimayuga’s project will focus on determining the relationship between aberrant neuronal expression of Glial Fibrillary Acidic Protein (GFAP) and Alzheimer’s disease. Her future career plans include attending medical school and working in the medical research field.

The Fulbright Fellowship Program, funded by Congress, is a national grant competition for U.S. citizens or permanent residents to work and/or study abroad during the course of their studies or after graduation. Grants cover travel and living expenses for the academic year and necessary tuition at overseas universities. The goal of the program is to increase understanding between the U.S. and foreign countries. Selection for any Fulbright Student Program emphasizes leadership potential, academic and/or professional excellence, and commitment to mutual understanding.

COLLEGE OF AGRICULTURE
Department of Biosystems and Agricultural Engineering
Emily M. Kirkpatrick
Monetary award given to the highest achieving Biosystems & Agricultural Engineering Student.

FRANK WOESTE AWARD

Eddie M. Kobraei

Andrew L. Lynch

Vanessa Dimayuga

Bryan Roberts

Nathan Hendren, Allison Richardson, Bryan Roberts

Monetary award given to the highest achieving Biosystems & Agricultural Engineering Student.

Department of Earth and Environmental Sciences
Elizabeth Almy
Tarr Award
A National award presented to an Outstanding Senior Geology student for high academic and service accomplishments in the department. The recipient receives the Geology Hammer.

Jessica Rosenberg & Daniel Hedges
Pirtle Scholarship
A $1000 cash award to the academically outstanding junior Geology Major.

Nathan Hendren, Allison Richardson, Bryan Roberts
Tuition Scholarship
Glenn Rice Tuition Scholarships are awarded to junior or senior geology majors who have a strong academic record.

Department of Sociology
Adrianne Crow
Coleman Award
The Coleman Award is presented at the end of each spring semester to a graduating senior and carries a certificate and cash prize. Professor Coleman (1913-1995) was a long-time faculty member in the Sociology Department at UK and was particularly concerned with instructional activities. He conducted groundbreaking research on the diffusion of agricultural technology.
and promoted the cause of civil rights in Kentucky and the south. The selection process is based on scholarship, leadership, and involvement in sociological activities in research. Eligibility requires nomination by a faculty member or student, a GPA of 3.50 or above, and submission of an application and example of an independent research project or course paper from a sociology course.

**COLLEGE OF BUSINESS AND ECONOMICS**

**Department of Economics**

Jason M. Wattier,         KY Society of Certified Ashley M. Wesseler   Public Accounts Scholarships
Jason Mark Wattier of Paducah and Ashley Marie Wesseler of Florence, KY received scholarships provided by the Society of Certified Public Accounts Education Foundation (KYCPA). Scholarships were awarded based on academic as well as financial need criteria set forth by the foundation.

**COLLEGE OF COMMUNICATIONS**

**AND INFORMATION STUDIES**

**School of Journalism and Telecommunications**

Megan Boehnke         Hearst Foundation's National Writing Competition
Megan G. Boehnke took 3rd place in the Hearst Foundation’s National Writing Competition to earn herself a $3,000 prize scholarship. Hearst Reporting competition applicants are full-time undergraduate journalism students returning to school in the fall. The award is based on students’ published articles, resumes, letters of recommendation, and an essay. The Hearst Journalism Awards Program is presented annually under the auspices of the Association of Schools of Journalism and Mass Communication (ASJMC) with full-funding by the William Randolph Hearst Foundation. The program’s mission is to encourage and support excellence in journalism and journalism education in America’s colleges and universities. This is the 44th year of competitions, in which more than $400,000 in scholarships and grants will be awarded to students and schools. There are six writing, three photojournalism, two radio broadcast news and two television broadcast news competitions each academic year, beginning in October and ending in April. The monthly competitions honor the top ten winners with awards ranging from $500 to $2,000, with the schools receiving matching grants. The competition year culminates in June with the National Writing, Photojournalism and Broadcast News Championships, and is open to selected winning students from the monthly competitions who also receive additional awards.

**Seán Rose**         Hearst Spot News Writing Competition
UK junior Seán Rose finished 4th in the nation in the Hearst Spot News Writing Competition. Often called the “Pulitzers of College Journalism,” its awards are open to journalism students actively involved in campus media at 107 undergraduate journalism programs in the US. Rose’s spot news story from the *KY Kernel* is titled “Crash kills 49.” The story ran the day after Comair Flight 5191 crashed following its takeoff from Blue Grass Field. Rose competed against 75 students from 48 universities in the spot news category. He will receive a $750 scholarship, and the UK School of Journalism and Telecommunications will receive a matching grant.

**Sloane Cavitt**         James C. Bowling Scholarship
The Bowling scholarship is awarded in conjunction with the James C. Bowling Executive-in-Residence program in the UK School of Journalism and Telecommunications. The scholarship and a lecture series was established through a generous endowment from the late Joseph M. Cullman III, former chairman of the board at Philip Morris. As part of the series, a nationally recognized public relations professional visits the UK campus each year.

**Samantha Harrell**         Chaplin Scholarship
The Chaplin Scholarship, named for a popular Lexington radio talk show host, was established in 1998. The scholarship is awarded to incoming freshman and/or undergraduate students. The students must be diagnosed with a certified disability, qualify for financial need, declare a pre-major or major in journalism and have 2.8 or higher GPA. Chaplin, remembered most by radio listeners as Herb Oscar Kent, was a radio host for the “The Herb Oscar Kent Show,” that ran 25 years on Lexington station WLAP 630 am. The scholarship honors Chaplin who, despite being born with a deformed foot and contracting polio at 6, overcame impairments to have a successful broadcasting career.

**Kernel**         Pacemaker Award
The university’s independent daily student newspaper, The *Kentucky Kernel*, won the Pacemaker award, often called the Pulitzer Prize of college journalism. The *Kernel* was the only college newspaper in Kentucky to win. The Kernel has been a finalist four out of the past five years. Each year between 10 and 16 finalists are selected from student newspapers around the country. The last time The *Kernel* won this award was in 1999 and before that in 1986. The paper has a circulation of 17,000 and its readership is about 35,000 people. Its circulation ranks among the top newspapers in the state. The award was handed out at the Associated Collegiate Press annual convention in October. The *Kernel’s* winning issues included stories about a UK Med Student traveling to Africa to fight the spread of AIDS; A former UK professor suffering from Pick’s Disease; A student group that traveled to the Gulf Coast to help Hurricane Katrina victims repair homes, and a special section commemorating the four seniors on the men’s basketball team.

**COLLEGE OF DESIGN**

**School of Architecture**

Brian Buckner,         American Institute of Architecture Students (AIAS) and American Plastics Council (APC) Competition
Yu Fan Cheung,
Matthew Storrie,
Brandi Berryman, and
Rudy Renfro
Five UK Architecture students received honors in the American Institute of Architecture Students (AIAS) and American Plastics Council (APC) jointly sponsored competition. The event challenged students, working either individually or in teams, to learn about materials, specifically plastics and plastic composites construction materials, and their assembly in the design of a transportation hub. A team of three earned second place and earned the students a $1500 cash award. The judges’ notes on the project commented on how it was provocative and intriguing. The plan was a city in real terms and showed a great deal of transit research, had compelling images, and clear understandable graphics. The project will be published in the fall issue of *Crit*, Journal of AIAS and will be exhibited on the AIAS Web site. Berryman and Renfro received honorable mention recognition for their design along with $500 to the students.

**Matt Clarke**         9th Annual Berkeley Undergraduate Prize for Architectural Design Excellence Competition
Matt Clarke was awarded second place in the Ninth Annual Berkeley Undergraduate Prize for Architectural Design Excellence competition. Clarke, a native of Lexington, received the $2,000 prize for his essay, “Re-presenting Public Housing: creating community in the East-End.” The essay detailed Lexington’s Bluegrass-Aspendale neighborhood, home to the abandoned landmark, the Lyric Theatre, and presents an image of a possible future to revitalize the community, highlighted by green technologies, mixed-use, and urban connectivity. Matt’s
essay was among entries from students representing 14 countries, on 6 continents. The competition focused on the social art of architecture. Matt’s essay was in response to the competition question that asked what do you believe is the most needed project in your town that, when built, would better the cultural situation for a population in need? As a 2nd place winner, Clarke is invited to participate in the Berkeley prize Travel Fellowship Competition. The winner of the fellowship receives airfare and a stipend to attend and participate in the Global Studio to be held in July in Johannesburg, South Africa. A version of Matt’s essay appears on pages 4-13 of this issue of Kaleidoscope.

Matthew Bailey

Receives key to city for reconstruction project

The key to the town of Guthrie was bestowed on Matthew Bailey, a native of this community and a UK architecture student, for his proposal for the community reconstruction project to the community’s mayor, Scott Marshall. The award recognized the proposal’s vision to transform the small railroad town with a rough past, into a new urban community with a bright future. Guthrie is a small 19th-century railroad city that was a stop on the L&N line. Once a busy stop on the railroad line, by the 1960s the town was in decline. Now, with the growth of Clarksville, TN, the community has seen a population increase and new interest in the small border town. The growth made Guthrie city officials consider reconstruction projects for its community. They decided to begin with a new museum and visitors’ center. Matthew originally created the designs for the Guthrie Multicultural Arts & Heritage Center. As the project evolved, he expanded it to include a new town hall and convert the town into a new urban community — Todd County’s first — with much of the city’s residential developments, schools, stores, offices, and recreation centers within walking distance.

Dan Thornberry: Furniture Design Winners

Brad Arnold

Dan McNatt

Mitchell Kersting

The Furniture Design Studio submitted “Furniture Jewelry” (door and drawer pulls) to an all school vote for the best designs. Faculty, students and staff were encouraged to pick the best design from four categories representing the tectonic building elements of line, plane, mass, and best complete set. 107 votes were cast with the following winners:

- Dan Thornberry: Best design using “line,” Design book award
- Brad Arnold: Best design using “plane,” Design book award
- Dan McNatt: Best design using “mass,” Design book award
- Mitchell Kersting: Best overall, $100 award

Five of the designs were sent to an international design competition for furniture hardware in Cologne Germany. The philosophy and pedagogy of the Furniture Design Studio is to research, develop, and produce three-dimensional forms at varied scales. By designing multiple scaled objects, students have the opportunity to “exercise” both theoretic and pragmatic design and fabrication skills.

OFFICE OF STUDENT AFFAIRS

Kathryn “Katie” Braun: Adelstein Award

Patrick Conlon

The Carol S. Adelstein Outstanding Student Award was given to Kathryn “Katie” Braun and Patrick Conlon. Katie is an Honors senior majoring in psychology, and Patrick is a senior with a double major in linguistics and political science. This is the 23rd year for the presentation of the award. Named for the late Carole S. Adelstein, wife of retired UK English professor Michael Adelstein, Carol, who used a wheelchair because of polio, was an inspiration to persons with disabilities by leading a meaningful, successful life at a time when individuals with disabilities were not encouraged to be independent and contributing members of society. The Adelstein Award is given by the UK Disability Resource Center to students with disabilities who are inspirations to others. Nominations are solicited from the entire campus community.

Patrick Conlon was chosen as the recipient of this award for his tenacity and courage to travel and study abroad in China. While there, student strikes broke out and the school closed. He was faced with many challenges, but that did not deter him from continuing to serve as an educator. He volunteered teaching English in an elementary school and wrote a blog for Mobility International, an organization that empowers people with disabilities around the world to achieve their human rights through international exchange and development. He also speaks more than 20 languages fluently. During the spring semester, he studied at one of the best language institutes in the world, St. Petersburg State University in Russia.

Katie Braun received the award for her work and juried project as a Fellow in the Gaines Center for Humanities. She researched, collected, and drafted a resource guide for students with physical disabilities to maneuver their way around campus. The guide, titled “Bridge to College” features sections on before, during, and after college. She hopes to see it on the UK Web site soon.

UNDERGRADUATE EDUCATION

Tara Bonistall: Sullivan Award

Christopher Garnett

The Algonon Sydney Sullivan Award is an annual award presented to an undergraduate male and female at graduation in recognition of their community service activities. Tara Bonistall of Centerville, Ohio, was selected for her extraordinary crisis intervention volunteerism and a medical advocacy at the Rape Crisis Center. She logged 277 hours as a volunteer with the center last year and continues to serve rape victims. She had a double major in psychology and social work. In addition, she served as a Big Sister of the Bluegrass and was co-president of the Student Social Work Association at UK.

Christopher G. Garnett, a biology major from Lexington, Kentucky, served as director of UK FUSION, a program that recruits and coordinates the campus’ largest community service program. In addition, he served as a Spanish interpreter at UK Chandler Hospital.

The Sullivan Awards were established by the New York Southern Society in 1925 in memory of Mr. Algonon Sydney Sullivan, a southerner who became a prominent lawyer, businessman, and philanthropist in New York in the late nineteenth century. The award seeks to perpetuate the excellence of character and humanitarian service of Mr. Sullivan by recognizing and honoring such qualities in others and demonstrating the spirit of love for helpfulness to other men and women through their heart, mind, and conduct. The first medallion was presented in June, 1925, at the George Peabody College for Teachers in Nashville, Tennessee, now a part of Vanderbilt University. The University of Kentucky is one of several southern universities that present the Algonon Sydney Sullivan award — sponsored by the Algonon Sydney Sullivan Foundation.
Honors Program

Leslie Hamby

Leslie Hamby’s honors capstone project was published by posting on the Kentucky Pharmacists Association Web site — www.kentuckypharmacists.com. During the spring semester of 2006, while Leslie Hamby was a pre-pharmacy student in the Honors Program, she completed her capstone project on the spread of illicit methamphetamine labs across the state during a 10-year period. She compiled her data from Kentucky State Police Reports. Her paper was titled “Geographical Dissemination of Clandestine Methamphetamine Lab Operations across Kentucky: 1995-2004.” With these data compiled in tabular and map form one can track the impact of this major societal challenge on his or her county. Prof. Joe Fink served as her Honors Program mentor for this project.

Posters-at-the-Capitol 2007

This annual event is intended to help members of Kentucky’s legislature and the Governor better understand the importance of involving undergraduates in research, scholarly, and creative work. Undergraduates, whose abstracts were selected for participation in Posters-at-the-Capitol, 2007, displayed their work in the state capitol and were encouraged, along with their faculty mentors, to arrange visits with legislators from their hometown and university districts. Twenty-eight UK students participated.

Presenters:

Megan Culler
(Oral Presentation)
Mentor: Becky Dutch
Cellular Protein Interactions with the Cytoplasmic Tail of Paramyxovirus Fusion Proteins

Nick Badre, Brent Hayden, Justin Kolasa, Geoffrey Hughes, Sonya Bierbower, Megan Adami, Mohati Desai
Mentor: Robin L. Cooper
Research in Neurophysiology: Calcium’s role in synaptic transmission, facilitation, and behavioral regulation

Jennifer L. Baumgardner and Ashleigh B. Ohlmann
Mentor: Patricia V. Burkhart
Factors Related To Asthma Quality Of Life For U.S. And Icelandic Adolescents

Tara Bonistall
Mentors: Kay Hoffman, Joanna Badagliacco, Joan Callahan, and Patricia Cooper
Reversing Complacency

Matthew Clarke
Mentors: Wallis Miller, Michael Crutcher, and Richard Schein
Voices of Home in Bluegrass-Aspendale: constructing the ideal

Amanda Duncan
Mentors: David Hamilton and David Olster
Saving the Commonwealth by Educating its Women: The Works Progress Administration in Kentucky, 1935-1937

Megan Marie Gillespie
Mentor: Leonidos Bachas

Carrie Grimes
Mentor: Suzanne Segerstrom
Personality, Skills, and Goals

Joshua Ishmael
Mentor: John Nychka
Improved Materials for Dental Restoratives

Kena Lanham
Mentor: Doug Steinke
Trends In Oral Antidiabetic Medication Initiation And Use In A HMO Population

Mitchell Martin
Mentor: Gary Ferland
Influence of Dielectronic Recombination upon the Ionization State of Interstellar and Intergalactic Clouds

Dale McClure, Tyler Doring, and Daniel Urb
Mentors: James Lumpp, James Hereford, and Ben Malphrus
Development of an Off-the-Shelf Bus for Small Satellites

Sam Nicaise and Nicholas Jackson
Mentors: Vijay Singh and Suresh Rajaputra
Fabrication And Characterization Of Porous Alumina Based Devices

Christina Nicole
Mentor: Brett Spear
The Fusion of Luciferase and Green Flourescent Proteins in Transgenic Mouse Models

Amanda Peacock
Mentor: Jonathan Golding
The Impact of Instructions to Disregard on Child Witness Credibility

Neil Russell
Mentor: Frank R. Ettensohn
Taphonomy Of Late Ordovician Cyclocystoids From The Millsburg Member, Lexington Limestone, Central Kentucky

Lavanya Wijeratne
Mentors: Kenneth L. Kirsh and Peter Wright
Predictors of Successful Outcomes in Chronic Pain Patients

Peter Wulff
Mentor: Karyn Esser
Bmal1-/- Mice as a Model for Temporal Mandibular Joint and Muscle Disorder
NCUR 2007

The National Conferences on Undergraduate Research (NCUR), established in 1987, is dedicated to promoting undergraduate research, scholarship, and creative activity in all fields of study by sponsoring an annual conference for students. Unlike meetings of academic professional organizations, this gathering of young scholars welcomes presenters from all institutions of higher learning and from all corners of the academic curriculum. Through this annual conference, NCUR creates a unique environment for the celebration and promotion of undergraduate student achievement, provides models of exemplary research and scholarship, and helps to improve the state of undergraduate education. Dominican University of California hosted the 21st NCUR. Approximately 2,200 undergraduates from more than 250 colleges and universities attended the three-day event. The students from UK who were selected to attend are listed here.

Presenters:

William Bledsoe
Natural Products with Anti-inflammatory Functions against Oral Bacterial Infections

Jeremy Bonzo
Nebulette: Characterizing the Interactions of a Small Cardiac Protein with Tropomyosin

Deena Cotterill (Oral Presentation)
Are Recommended Clothes Care Instructions Contributing to Energy Conservation?

Megan Culler
Cellular Protein Interactions with the Cytoplasmic Tail of Paramyxovirus Fusion Proteins

Christina Davis
The Fusion of Luciferase and Green Fluorescent Proteins in Transgenic Mouse Models

Amanda Duncan (Oral Presentation)
Saving the Commonwealth through Women: The Works Progress Administration in Kentucky, 1935-1937

Jason Fackler
NIR Spectrometry for the Differentiation of Oral Bacteria using Near Infrared Spectroscopy (NIRS)

Jeff Griffin (Oral Presentation)
Russian Iconography and the Formation of a Radical Political Identity

Carrie Grimes
Hidden Goals: Output Primacy as a Measure of Goal Accessibility

Andrew Klapheke
Study on Interactions between Host Cell and Oral Bacteria, and their Effect on HIV-1 Reactivation in Dendritic Cells

R. Deric Miller (Oral Presentation)
Sex Expression in Response to Environmental Factors in Non-vascular Plants

Amanda Peacock
The Impact of Instructions to Disregard on Child Witness Testimony

Lauren Reynolds (Oral Presentation)
Non-vascular Plant Recovery from Desiccation in Tropical Rainforests

Kathryn Schweri
Investigating the Modular Nature of a Cyclic Peptide Synthetase Required for Production of Pharmacologically Important Ergot Alkaloids

Maja Starcevic
Nutraceutical Inhibitors of Osteoclast Activation by Oral Bacteria
RESEARCH. That word was more intimidating to me than my first college chemistry exam only a few short years ago. Now when I hear or see it, I am only able to think of the knowledge gained, the discoveries being made, and the future understanding that will certainly be acquired. It is a word that I once shunned in ignorance, but now embrace as a way of life and learning. This change in attitude has not been just a unique experience for me, but it has also been felt by many others who have wished to expand their knowledge and develop a deeper level of understanding. At SPUR (The Society for the Promotion of Undergraduate Research), we serve to bridge the gap between curiosity and involvement for other such undergraduates. Along those same principles, we bring together all those at UK who participate in such scholarly activity to provide mentoring, opportunities to network, and arrange various meetings for social interaction.

Under the guidance of Dr. Robert S. Tannenbaum, the SPUR organization was founded in 2004. The ideologies of the four student founders were established during a class workshop to form a type of union among students involved in scholarly activities. The Society initially focused directly on increasing the population of students participating in research, but we have since expanded our efforts to play a more active role once the student has become involved. Today, just as before, the mission of this organization is fulfilled through the great passion and drive each officer and member possesses. In accordance with undergraduate feelings, we have received significant support from the offices of eUreKai! and UKURP. Without such aid, all of our achievements would not be possible.

Entering the spring of 2008, there are many evident changes within our organization. As the only returning officer and senior, I am very proud to say the future leadership of SPUR is more promising than ever. This group of officers has worked more diligently than any I have witnessed during past organizational experiences. Their efforts are beginning to become more apparent as we start to achieve many of the goals we listed when we first entered our respective positions. The development of a completely new website, increased enrollment at our member gatherings, and an early start on this year’s Showcase of Undergraduate Scholars are just a few of our most prominent accomplishments thus far. As I end my term as SPUR President, I will have no reservations or concerns regarding the future of this group, and I can only be grateful to have had such an incredible opportunity.

As I previously mentioned, we have begun work on the 3rd annual Showcase of Undergraduate Scholars. Looking back to the development of the first Showcase, I could not be more excited with the ever-increasing involvement of undergraduates not only presenting their work, but also with those who put their time and energy toward the design and management of the actual event. Previous Showcases have been catered by students in the Department of Nutritional and Food Sciences, the floor plan and lighting was by students in the College of Interior Design, and the presentation of the Oswald awards. This year we plan to include UK’s Intercollegiate Debate Program in the opening ceremonies, which promises to be a wonderful event all its own. In its inaugural year the Showcase had over 120 participants, with last year’s reaching 150. This year we are continuing to grow and increase the number of student presenters from all areas varying from the fine arts to chemistry. This year’s Showcase will take place on Wednesday, April 23, 2008, and we look forward to seeing you there.

I would also like to recognize Dr. Tannenbaum, Evie Russell, and the AMSTEMM staff for all the time they contribute and direction they provide to the SPUR organization. It is greatly appreciated.
Any current UK undergraduate (full- or part-time, enrolled for either semester) who does not already have a four-year degree is eligible for the Oswald Research and Creativity competition and is invited to submit papers and other projects in the following categories:

1. Biological Sciences
2. Design (architecture, landscape architecture, interior design, etc.)
3. Fine Arts (film, music, painting, sculpture, videotape, etc.)
4. Humanities: Creative
5. Humanities: Critical Research
6. Physical and Engineering Sciences
7. Social Sciences

Entries are judged on originality; clarity of expression; scholarly or artistic contribution; and the validity, scope, and depth of the project or investigation.

The following are representative winners in the 2006-2007 Oswald Research and Creativity Program:

(Extended versions of some of these entries are available at www.uky.edu/kaleidoscope.)

1st Place
NAME: Ashby Clay Turner
TITLE: The Effects of an Altered Serotonergic System on Behavior and Development in Drosophila Melanogaster

A drug that prevents serotonin synthesis, pCPA, was fed to fruit fly larvae and the impacts were observed. The flies were monitored for time to pupation, body length at two stages of development, mouth hook and body wall movements, and were dissected and stained for serotonin presence in the brain. All larvae fed pCPA were compared to control animals fed the same food in the same conditions without the drug.

CATEGORY 2:
Design
1st Place (tie)
NAME: Aaron Scales
TITLE: The Sustainable Stop

1st Place (tie)
NAMES: Brian Buckner, Ivan Cheung and Matthew Storrie
TITLE: Stop Gap

Due to the nation’s security threats, rising gasoline prices, and effects of a warming global climate, it is becoming increasingly important for mass transportation providers to become a more appealing and convenient option for travelers. Through the joint support of the National Railroad Passenger Corporation (Amtrak), Central Ohio Transit Authority (COTA), U.S. Department of Transportation (U.S. D.O.T.), and the City of Columbus, Ohio, we intend to deliver a center for transportation suitable for the diverse demands of the participating organizations.
CATEGORY 3: 
Fine Arts

1st Place
NAME: Lisa Woods
TITLE: Belle of Amherst
This abstract consists of dual components: the visual/oral dramatic creation of a character role and the visual/construction element of the costume. *The Belle of Amherst* is a one-woman play about the great American poet Emily Dickenson, written by William Luce. I performed the role of Emily in an hour long production and also constructed the 19th century costume. Under the direction of Dr. Andrew Kimbrough, I researched the character and life of Emily Dickenson and rehearsed the performance of *The Belle of Amherst*. I created the costume for my character of Emily Dickenson from the design by Professor Nelson Fields of the theatre department. The costume is silk with antique lace and includes a bodice, separate skirt, and a corset and chimes all built by me. The dress is worn with three additional petticoats and a crinoline. Specially built to fit me and to withstand the rigors of performance, the entire costume is fully functional as a wearable garment and has served me for nine performances of *The Belle of Amherst*. The costume is now part of the UK theatre costume stock. The outreach aspect of the project was geared toward sharing the story of Emily Dickenson with students and facilitating a better understanding of theatre, as well as promoting the opportunities of the Department of Theatre to future students at the University of Kentucky.

CATEGORY 4: 
Humanities: Creative

2nd Place
NAME: Christopher Clark
TITLE: Short Story: The Land of Nog and Crystalline Wall
This story is merely one of a series of short stories that I have written, which I one day hope to turn into a fantasy series of epic proportions. This story does not capture the picture of the whole world, simply because it would end up being too long-winded and complicated for such a task. This particular entry is the back story to how two of my characters originally meet — a lost tale in a world forgotten in time.

1st Place
NAME: Nathan Landrum
TITLE: Short Story: The Dreamer
This is a speculative fiction story that envisions a future in which the hailed explorers, the Ponce De Leon’s, the Lewis and Clark’s, the Marco Polo’s, once again have a new frontier to conquer. With the help of a technology that allows single pilots to travel the stars in search of promised treasures every bit as enticing as the fountain of youth, sleeping away their journeys, forever staying young, this story focuses on the homecoming of one of these explorers, and the impact of having family and friends separated not only by distance but also by time. What would it mean to remain young of body and mind, as the people you know grow old, die, and are replaced?

CATEGORY 5
Humanities: Critical Research

Honorable Mention
NAME: Amanda Duncan
TITLE: Saving the Commonwealth through its Women: The Works Progress Administration in Kentucky 1935-1937
The Works Progress Administration was implemented in 1935 by an Executive Order of President Franklin Roosevelt. President Roosevelt expected the W.P.A. to provide work for the millions of Americans on welfare, while also providing valuable improvements to the communities where these individuals lived. The W.P.A. has been viewed as a failure by many historians because it did not truly modernize most of the country, due to a lack of funds and President Roosevelt’s fear of deficit spending. In Kentucky, from the program’s inception to 1937, the public and those who sponsored and worked on W.P.A. projects felt quite differently. Based on the Goodman-Paxton Papers, the W.P.A. provided jobs and improvements that would not have otherwise been available. For women, the W.P.A. provided gender specific work. The Training Work Centers (which employed 86 percent of women working for the W.P.A. in Kentucky), housed in various communities throughout the state, and funded by both state and federal money, provided women with the chance to support their families and learn valuable skills. Women learned to sew, make a complete family wardrobe, and learned basic hygiene and family health skills. Women also worked as teachers, educating both adults and nursery school children. This service taught Kentuckians to read and write, and gave children an early start on education. In short, the W.P.A. in
Kentucky, while not creating social change, provided the mechanisms needed to modernize the state. Not only were women learning how to care for themselves and their families, they were providing valuable services to the state.

2nd Place
NAME: Ryan Zeller
TITLE: A Cultural Anthropological Explanation of the Dispute between Jefferson and Marshall

This paper attempts to answer the question: “How does competition related to status in the context of the cultural expectations for behavior and rituals held by the Virginia gentry help to explain the social and political rift between cousins Thomas Jefferson and John Marshall?” My purpose was not to uncover new facts about the Jefferson-Marshall rivalry: rather it was to present the well-known evidence of their conflict from a different perspective. I chose to emphasize competition, honor, and cultural rituals and expectations, rather than offer traditional political explanations for their differences. I did not intend to downplay the importance of political differences, but wanted to place the rift in a broader context of competition, honor, and cultural rituals.

1st place
NAME: Anna Sewell
TITLE: The Births of Babies of Beliefs: How Ancient Roman Women Rose Above their Bodies

This historical research thesis addresses the position of women in ancient Roman society. After examining the historiography on Roman women, I concluded that no scholar has examined the implications on the objectification of women. Therefore, I used ancient medical evidence to prove that Roman women were objectified due to the obsession with their reproductive bodies, much like modern women. However, this objectification is only theoretical, and women still managed to usurp power from their families and, through inheritances, education, and other methods. Because Roman women were objectified, but were also uniquely powerful in their age, I argue that they laid the foundation for future feminism movements.

CATEGORY 6: Physical and Engineering Sciences

Honorable Mention
NAME: Matthew A. Borns
TITLE: Reverse-selective Membrane Networks for the Purification of CO₂ Gas Mixtures

The relaxation characteristics of rubbery reverse-selective membranes designed for the preferential transport of CO₂ over light gases have been investigated using dynamic mechanical thermal analysis and dielectric spectroscopy. Short-branch networks with varying crosslink density were created by a copolymerizing poly [ethylene glycol] diacrylate [PEGDA] crosslinker with two separate species of mono-acrylate co-monomer. Results and data analysis demonstrate a significant contrast in relaxation characteristics between the two types of networks as well as these “short branch” copolymers as compared to other reverse-selective membranes.

2nd Place (tie)
NAME: Andrew Lynch
TITLE: Evaluating the reliability of groundwater samples taken from wells potentially impacted by residual drilling fluids multiple reduction-oxidation indicators

The summer after my sophomore year I was accepted into NASA’s Undergraduate Student Research Program (USRP). At Los Alamos National Laboratory I conducted research evaluating various geochemical oxidation-reduction couples as indicators of in-situ biogeochemical groundwater conditions. I developed these couples into a multi-tiered redox protocol that allows rapid, reliable analysis of groundwater samples for impaction by residual drilling fluid from well construction. Essentially, the protocol analyzes the speciation of four geochemical species and, based on this analysis, can quite accurately determine the oxidation-reduction state of the groundwater and, from there, the level of impaction by residual drilling fluids. I don’t discuss the implementation of this research in the report, but this protocol was so successful that it has actually been implemented by LANL and is used to screen all new groundwater data as it is collected. I also presented this research at the Geological Society of America’s annual meeting in the Innovations in Groundwater Monitoring topical session. My report is regularly referenced by LANL both for implementation efforts and in new research reports.

Category 6 winners Levon Ter-Isahakyan, Andrew Lynch, Matthew Borns, and Mehul Suthar
2nd Place (tie)
NAME: Levon Ter-Isahakyan
TITLE: OsiriX plugin for reconstructing 3D medical images from segmented slices

As a part of my undergraduate research work in my advisor’s Collaboratory in Computing for Bioinformatics and Biomedical Research, I developed and implemented the Area-Isolator, a program that helps to visualize medical images. The Area-Isolator uses a number of image processing techniques, such as segmentation, noise reduction and hole detection. Although all three are well studied for 2-dimensional (2D) images, their combination that allows the user to reconstruct good 3-dimensional views of human organs is an interesting contribution of the Area-Isolator. Implemented as a plug-in the Area Isolator, it extends the functionality of a popular, open-source medical image viewer, OsiriX.

1st Place
NAME: Mehul Suthar
TITLE: Synthesis and Characterization of Hydrogel Nanocomposites

The recent developments in biomedicine and pharmacy have brought new questions about biomaterials and their characteristics. This study aims to determine some of the physical swelling characteristics of a specific composite hydrogel nanoparticle system. This synthesized hydrogel nanoparticle composite is capable of being safely implanted in the body, being actuated from an external alternating magnetic field, and is capable of swelling or collapsing under varied temperature. The characterization studies of this hydro gel complete the initial step in the larger goal of developing a hydrogel system for controlled drug delivery devices. These hydrogels can provide a basis for future controlled drug delivery therapies, microchip delivery devices, and self regulating devices.

CATEGORY 7:
Social Sciences

Honorable Mention
NAME: Brenton Kenkel
TITLE: Irredentism First: How Leaders use Annexationist Claims

Much of the literature on “ethnic conflict” in international relations contains arguments based on stereotypes and misconceptions about the political behavior of ethnic groups. In this paper, I develop a theory of irredentism — international conflicts in which an ethnic group in one country tries to “rescue” its brethren in a neighboring country — that does not rely on problematic assumptions about ethnic identification or political behavior. Using rational-choice theory and contemporary studies of ethnicity-based political mobilization, I find that state leaders have incentives to seek the backing of ethnic (rather than ideological) coalitions and that a rallying cry for the “rescue” of ethnic kin in a neighboring state is a salient issue around which to unite such a coalition. From this theory, I develop empirical predictions, and I examine how those are borne out in the case of Somalia’s irredentist campaigns, contrary to assertions elsewhere that Somalia’s annexationist campaigns provide evidence for an innate desire for nation-state unity.

2nd Place
NAME: Logan Kistler
TITLE: Rock Art Mammoth Cave

This paper is to be submitted as my undergraduate senior honors thesis in the Anthropology Department and Honors Program. Therein, I discuss a number of prehistoric pictographs and petroglyphs, collectively referred to as rock art, with regard to their archaeological context and the probable circumstances surrounding their origin. I explore the neuropsychological model of Lewis-Williams and Dowson’s 1988 publication Signs of All Times: Entoptic Phenomena in Upper Paleolithic Art, as a possible avenue of explanation, and construct a hypothesis to support this idea based on numerous factors of the prehistoric cave experience. I spent ample time in the cave system, conducting research for this project, and will use the photographs of Charles Swedlund to illustrate my work. A version of Logan’s thesis appears on pages (69-82) of this issue of Kaleidoscope.

1st Place
NAME: Chris Garnett
TITLE: Accessibility of Poison Control Centers’ Hotlines to Spanish Speaking Callers

Latinos/as are the largest and fastest growing minority group in the United States. Estimates show that 14 million Americans have limited English proficiency (LEP). LEP persons face barriers to accessing many public services. Roughly one in five Spanish speaking Latinos/as does not seek medical care due to language barriers that persist within the nation’s health care system. This thesis puts forth a culturally informed, scientific approach to evaluate the linguistic accessibility of public health services, with particular interest in health services offered to non-English speaking Latinos/as in the United States.

Chris Garnett
March 17, 2007 — Colorado Mission Successful, and close to much more …

Two years ago, in early April, 2005, the BIG BLUE 3 team was preparing to travel to Colorado for the first test of inflatable wings; the AIRCAT had not yet made its first flight with rigid wings (let alone inflatable wings), and the Micropilot autopilot was not working (with the Pax River competition only two months away). Less than two years later, the BIG BLUE V (BB V) team has now successfully completed the final Colorado mission to verify systems are ready for a high-altitude flight to demonstrate the feasibility of inflatable wings for Mars exploration. A lot has been accomplished.

The objectives of the BBV Colorado Mission were defined in Fall, 2006: 1) to verify long-range (near 100,000-ft altitude) communication with the commercial Piccolo autopilot, 2) to verify use of the autopilot for mission operations such as to initiate inflation, take pictures, monitor sensors, cut away and deploy the emergency parachute, and 3) to test at high altitude a new lightweight aircraft. The aircraft was designed with a target total weight of less than 15 pounds, compared to the almost 40 pound weight of the AIRCAT with inflatable wings. The team of Kentucky and Oklahoma State students has worked hard since August, with a Critical Design Review (CDR) at ILC Dover and many long hours in the lab and many cold days at the flying field.

On March 17, the day dawned with freezing temperatures, but a clear blue sky perfect for spotting the descending flight string — the FAA requirement to cut away at low altitude. Two days of flight testing included many successful parachute deployment flights and enough autopilot tests, so the team was ready for a low-altitude cut-away mission. The mission simulation of the integrated aircraft finished at 2 a.m. Saturday with a long list of problems to be fixed, but most of these had been corrected before leaving the Fatton sunroom for the remote site. A loose connection in the cut-away circuit was finally located and the aircraft was quickly readied for launch as the balloon handlers kept the balloon from harm.

The launch and lower ascent proceeded as planned, with clear Amateur Radio-Band Television (ATV) transmissions from Edge of Space Sciences (EOSS) and UK cameras. As the balloon reached about 70,000 feet, aircraft control was successfully transferred from the launch-site ground station to the down-range ground station. The communication link to the autopilot was stronger and over longer distances than expected. The command was issued to inflate the wings. The ATV view showed the wings inflated, but folded because a restraint had not released. Then the restraint suddenly let go and the wings snapped open. The team watched the TV monitors in shock as the fuselage failed under the unexpected dynamic load and the right wing fell away. Clear thinking by Dr. Michael Seigler, a new faculty member in mechanical engineering at UK, prevailed at the remote autopilot ground station and the mission concluded with a successful cut-away from the EOSS parachute and successful deployment of the aircraft emergency chute. The aircraft was recovered, but the lost right wing is still missing. Spectacular video was recorded, along with amazing images. The success of this year’s efforts, confirming the operation of the autopilot and aircraft means that BIG BLUE is finally ready for the last step — high-altitude flight! Go BIG BLUE!
Students Make Rocket Science a Daily Pursuit
By Crystal Kinser Bruno

To an unfamiliar visitor, this gray, cramped room appears to be a storage area. On first glance, the dusty equipment stacked against the walls and on tables meshes together to become a single, massive instrument. An attempt to distinguish the individual elements yields a surprising discovery of an antique Morse code keyer. A modest sign — “KySat UK Ground Station” written in dry-erase marker on a white board — is the only obvious feature identifying the purpose of the room. Yet even the sign is generally only visible to regular visitors — those already well acquainted with the room and its equipment.

On this particular December afternoon, seven people squeeze into the oversized closet to watch a computer screen. On it, a circle moves over a flattened image of Earth, highlighting a dot on the map representing Lexington, KY. The circle will move over the “Horse Capitol of the World” for about ten minutes, enough time to send a text message, receive an E-mail reply and repeat. This seemingly ordinary exchange is actually quite the opposite: the visitors to this room just “spoke” to the International Space Station.

While the destination is extraordinary, the message sent is anything but. The short note simply identifies the call sign and location of the sender. The returning E-mail confirms the message was received. Nothing significant has been communicated but, like their Ham radio predecessors, much of the excitement for these students comes in knowing their signal could reach so far, in the event they ever did have something important to say.

“Talking to the different satellites is a challenge,” says Tyler Doering, a first year graduate student in electrical and computer engineering. “It proves we have built a ground station capable of communicating with these satellites.”

Hopefully, people will soon be trying to talk to another satellite, one developed by Doering and his fellow collegians.

For the students working on the KentuckySatellite (KySat) program, rocket science is a daily pursuit. Whether it consists of incorporating a new component into satellite design, collaborating with fellow students across the state, “talking” to satellites, or writing a blog on the program’s Web site, every day consists of new challenges for the satellite team.

Founded in 2006, KySat is made up of students and faculty advisors from universities across the state — each university working with the others to produce a single satellite — the challenges of which are difficult to overcome. Doering has encountered this problem first-hand.

“One of the hardest things about this project is trying to coordinate work between the universities,” he says. “We also have to figure out on our own what the problems are and how to fix them. No one is here telling us what the next step is.”

Luckily, Kentucky Virtual Campus has helped to solve one of those issues. KYVC allows the students at each university to meet with one another virtually to talk, share pictures, and work out problems.

According to Doering, the students have the opportunity to work on every aspect of the satellite, from design to launch, a responsibility welcomed by senior mechanical engineering major, Mike Gailey.

Gailey is one of two UK undergraduates currently working on KySat. He has been interested in aerospace technology for some time, and has chosen to work with KySat over other, higher-profile opportunities.

“KySat is great because at UK, there aren’t a lot of classes geared toward aerospace engineering, but working with KySat gives me the chance to work in the field,” Gailey said. “I’ve had other co-ops before but here I have much more responsibility with the project. I actually had a co-op at the Kennedy Space Center and I quit so I could work with KySat.”
Special Programs (CONT.)

Working with KySat hasn’t been a natural progression for Doering. As an undergraduate, Doering mapped out his career as an engineer and was even offered a position with General Electric Co. However, the possibility of working with KySat changed his mind.

“At first I didn’t want to work in the aerospace industry,” he said. “But after working on KySat, it’s opened my eyes to all the different aspects of the field. I am learning to work with other disciplines of engineers and learning how the whole system works instead of just my own little part. I definitely plan on entering into the aerospace industry after this experience.”

James Lumpp, an associate professor in electrical and computer engineering and faculty adviser for KySat, appreciates the chance these students have to undertake such an assignment.

“I’ve been involved in University projects for 22 years and I haven’t seen any project like this,” Lumpp says. “To have the chance to build something to go into space — it’s the ultimate design opportunity. These guys are ready to step right into leadership positions after this experience.”

The satellite being designed by KySat is 10 centimeters cubed — about the size of a large grapefruit or a softball. Compare that to Sputnik 1, which was nearly 23 inches in diameter, or to the International Space Station, measuring over 100 feet in each direction.

“It usually takes 10 years or more to develop a large satellite,” Doering says. “But with these small ones, we can turn around a satellite in one to two years.”

The ability to develop a satellite quickly is appealing to companies seeking to benefit from a booming digital society and explains the importance of the KySat program. The eventual goal of KySat is to successfully launch a satellite of its own design into orbit. Once accomplished, companies can approach KySat to design satellites for them, for whatever purpose they require, based on the design specifications KySat develops.

Ensuring the satellite can withstand the forces of space means testing it in extreme temperatures and shaking it at 10 Gs in all directions, over twice the speed of a typical roller coaster. G-force is a measurement of the combined forces of acceleration and gravity on an object.

“With a satellite, you have one chance to get it right — you have to succeed,” Lumpp says.

KySat’s first mission to space was not as successful as hoped. On Dec. 2, 2007, 20 students and KySat members traveled to NASA’s White Sands Test Facility in Las Cruces, NM, for a Dec. 5 sub-orbital launch. The Space Express satellite was supposed to climb to an altitude of 62 miles in order to test its systems outside of the Earth’s atmosphere and then return to Earth. From launch to landing, the entire process should have taken four minutes.

However, after a successful liftoff, the launch vehicle failed and the student payload never reached its target altitude. Although the mission was considered a failure, the students involved with KySat have learned important lessons and are looking forward to their next launch.

“We learned several things the day before the launch that if we knew sooner, we might have been able to change,” Gailey says.

Doering agrees. “Going through this process once will really help when we go to do this again,” he says.

KySat has plans to launch another satellite in mid-2008 and is in the midst of negotiations with launch sites around the world to determine who will launch Kentucky into space.

The target altitude for the next satellite will be between 370 and 500 miles above the Earth and it will stay in orbit for 10 years. The satellite’s payload could include a camera, radio, solar cells, and sensors measuring everything from speed to temperature. Students will of course be able to “talk” to it and give it commands.

“Cube sets are great to work on because you can test new technologies to be used on larger satellites,” Gailey says.

“Once you work on a project this fun, nothing else seems as exciting,” says Sam Hishmeh, a second-year graduate student in electrical engineering. “This is the future of a lot of technologies.”

“The space race started 50 years ago and in 15 years we went from space to the first man on the moon,” Lumpp says. “It totally changed the way we teach engineering. Now we’re entering into a new space age. The technologies we develop for the small satellites will evolve into other technologies.”

KySat is an ambitious joint-enterprise involving public organizations, colleges and universities, and private companies in a student-led initiative involving the design, build, launch, and ground operation of small satellites and other spacecraft to promote science, technology and engineering, innovation, and education. If you would like more information about KySat or want to get involved, go to www.kysat.com.
Wildcat Pulling Team  
www.bae.uky.edu/tractorteam

The Quarter Scale Tractor Team once again represented the UK Colleges of Agriculture and Engineering in exemplary fashion. The 2007 American Society of Agricultural and Biological Engineers Quarter Scale Tractor Design Competition was held in Peoria, IL, from May 31 through June 3. UK was one of 28 teams from the U.S. and Canada registered for the competition. UK placed fourth overall in the competition behind Kansas State, Purdue, and Universite Laval.

UK also received the Manufacturability Award and placed fourth overall in pull performance, in addition to bringing home the Cook-Off Main Event prize. For more information about the event and for the final scores from this year, visit UK’s biosystems and agricultural engineering Web site. Each student team must design and build a 1/4 scale tractor capable of pulling a weight transfer sled. All designs must conform to a rigorous set of rules including many safety features. The design competition consists of performance assessment (tractor pull and maneuverability course), a formal design presentation, a formal written design report, and judging of tractor designs in which teams of engineers assess features of the tractor, including safety, serviceability, and manufacturability. Over 80 professional engineers from industry judge and score the competition. UK’s team has already begun preparations for next year’s competition with the goal of finishing first place overall.

The Wildcat Pulling Team is optimistic about the upcoming year and looks forward to once again representing the team sponsors and the University of Kentucky in this competition. Feel free to contact one of the team advisors, Tim Smith (tsmith@bae.uky.edu), Scott Shearer (shearer@bae.uky.edu), Larry Wells (lwells@bae.uky.edu), and Tim Stombaugh (tstomb@bae.uky.edu), or call (859) 257-3000 if you have additional questions.
Upcoming Undergraduate Scholarship Events and Deadlines

Kaleidoscope, Volume 6
The University of Kentucky Journal of Undergraduate Scholarship is published once each year, at the beginning of the fall semester. All contributions to the journal are refereed by a standing editorial board and guest referees and editors. Articles, reports, and other creative works may be submitted by any undergraduate student at the University of Kentucky. All submissions must be accompanied by an endorsement by a University faculty member who has agreed to attest to the scholarly quality of the work and to serve as faculty mentor for editing and final submission of the work. Detailed guidelines for submission are available at <www.uky.edu/kaleidoscope>.

Deadlines for Volume 7, Fall, 2008:
February 24, 2008: Electronic letter of intent to submit, including a brief description of the nature and contents of the proposed submission sent to the editor. (rst@uky.edu)(optional)
April 4, 2008: Complete submission prepared according to the guidelines delivered electronically to the editor. (rst@uky.edu)
May 2, 2008: Notification of acceptance/rejection and instructions for suggested/revised revisions
July 15, 2008: Final, revised submission delivered electronically to the editor.

National Conference on Undergraduate Research
"The mission of the National Conferences on Undergraduate Research (NCUR®) is to promote undergraduate research, scholarship and creative activity done in partnership with faculty or other mentors as a vital component of higher education."
The 2007 NCUR conference will be held April 11-12, 2008, at the Salisbury University (MD). Visit the NCUR Web site at http://ncur.org/basics/index.htm for general information on NCUR, visit www.salisbury.edu/NCUR22 for details and deadlines for the conference.

Oswald Research and Creativity Awards
All current UK undergraduate students are eligible to submit a paper or other creative work to be considered for an Oswald Research and Creativity award. The competition categories in which papers and projects may be submitted include: (1) Biological Sciences; (2) Design (architecture, landscape architecture, interior design, etc.); (3) Fine Arts (film, music, painting, sculpture, videotape, etc.); (4) Humanities: Creative; (5) Humanities: Critical Research; (6) Physical and Engineering Sciences; and (7) Social Sciences. The deadline for submission is March 6, 2008. Visit the eUreKa! website at: www.uky.edu/eureka for details, application forms, and official rules See pages 123-126 for winning submissions from last year’s Oswald Awards program.

Office of Undergraduate Studies Research and Creativity Awards
As a means of promoting educational experiences for students, the Office of Undergraduate Studies offers Research and Creativity Grants during the summer term. The grants are intended to take advantage of the rich resources available through the libraries, the laboratories and, most especially, the academic personnel at the University of Kentucky. Undergraduates in all areas of intellectual inquiry are eligible, and students at many different levels of matriculation have received support. The deadline to submit applications is February 28, 2008. For details regarding eligibility, and application forms visit the eUreKa! website at: www.uky.edu/eureka. See page 100-112.

UK Undergraduate Research Program
The University of Kentucky Undergraduate Research Program (UKURP) creates research partnerships between first- and second-year students and faculty researchers. The program offers students the opportunity to work and learn alongside a research faculty member. Undergraduate students are given the real-life experiences of working in laboratories and other scholarly settings; developing a research abstract; presenting their projects at symposiums and professional conferences; publishing their findings; and meeting others in the international community of scholars. In other words, students are given a jump-start on their career. For more details and deadlines for applications, visit www.uky.edu/eureka/ukurp. See pages 115-116.

Additional Information
Additional information regarding undergraduate scholarship and creativity programs, conferences, competitions, and opportunities is posted on the Web site of the Office of Experiences in Undergraduate Research and Kreative Activities, eUreKa! at www.uky.edu/eureka.