



October 2015

## Complete Issue of Volume 3

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**Lee T. Todd, Jr.,  
President**

Once again, I am pleased to welcome you to the University of Kentucky Journal of Undergraduate Scholarship, *Kaleidoscope*. This third issue of the journal is even more impressive than the previous two, containing a wide range of outstanding articles and other submissions.

The creativity and scholarship of the undergraduate students at the University continue to be a source of pride for me and for the entire Commonwealth. As always, each article published in the journal has been refereed by both the author's faculty mentor and a second faculty member who is a member of the journal's Editorial Board. Some of the articles are taken from longer works, such as Gaines Fellows' senior theses. Expanded versions of the articles, in some cases the entire longer work, are available in the on-line version of the journal at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004).

The articles and other submissions in this issue attest to the breadth and quality of undergraduate scholarship at UK. The humanities are represented by an original play, poetry, an analysis of 18<sup>th</sup> century French manners, and a historical tribute to the women of Vietnam. Two economics studies, a service-learning project evaluating the YMCA's Black Achievers Program and an undergraduate research program (UK URP) abstract, utilize the social sciences. The Fine Arts contribute two stunning photographic galleries. A study of West Nile Virus in House Sparrows, the contributions of this year's two Beckman Scholars and their mentors, and a number of abstracts by additional UK URP students represent the natural sciences. Finally, both education and engineering are combined in a piece on enhancing education through digitization.

It must be mentioned that none of this scholarship could have been completed without the guidance and mentorship of faculty members who are devoted to supporting the very finest undergraduate educational experiences for our students. I am grateful to our faculty who work closely with undergraduate students. Such mentoring requires deep commitment and many hours. Clearly, their dedication is reflected in and rewarded by the quality of their students' results.

Lest you get the impression that only our seniors have reached the level of academic maturity required to have their work published, it should be noted that the articles and abstracts in this issue, as in previous ones, have been contributed by students at all stages of their undergraduate careers. There is work by first-year students as well as graduating seniors, and every level in between. All students at UK are challenged and invited to become active, creative scholars, not just passive listeners in class. Those who accept this challenge can reap enormous intellectual rewards. This involvement with active faculty scholars, in pursuit of the creation and expansion of knowledge, from the earliest point in a student's college experience is what distinguishes an undergraduate education at a top-20 research university.

I hope that you share my admiration for the students who have contributed to this issue of *Kaleidoscope* and that you recognize that UK's students continue to conduct research and other scholarly and creative activities of the highest quality, interest and value, activities that make an important contribution both nationally and internationally.

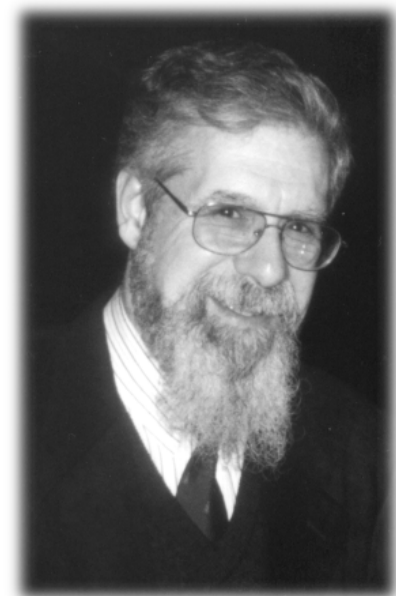
This is the third issue of *Kaleidoscope* and I believe it just keeps getting better and better. This year's submissions from students have been outstanding. Unfortunately, we simply did not have enough space to publish all of those that were favorably reviewed. Even so, this issue is larger and more inclusive than the previous ones. There are works from the arts, the humanities, and the social and natural sciences. The authors range from first year students to graduating seniors. The quality is uniformly excellent.

It is always a pleasure to work with the students who submit their work to *Kaleidoscope*. They are fine scholars who have become deeply involved in the rigor and the rewards of conducting serious creative and research undertakings. Some of the works are the result of a short project — less than a semester; others are the products of several years of intensive creativity. In each case, however, the submission has been reviewed by at least two independent professors and found to meet the highest professional standards. My task of helping the authors make the final adjustments to their pieces that are necessary for publication is enjoyable, because of their talents and their eagerness to develop the very best presentation of their work.

*Kaleidoscope* is as fine as it is because of the efforts of an outstanding team. Teresa Shear does a superb job of design and layout work. She makes the journal look beautiful and professional and she prepares the final copy for the printer. Evie Russell handles the innumerable details required to publish an issue, from contacting authors and mentors, tracking down those who are traveling, and assembling their pictures and illustrations, to arranging our meetings and keeping all the records. Matt Smith translates the paper version of the journal into the electronic version, including significant additional material for most of the articles, such as extra tables, illustrations, and data, as well as extended versions of some of the works. The result is a tribute to the team.

The journal is also a tribute to the excellence of the students and the faculty of the University of Kentucky. Clearly, the work represented here is of the highest quality, suitable for publication in any national, peer-reviewed journal. That we have so many such projects at the undergraduate level attests to the University's strength in and dedication to undergraduate education.

I am proud of this issue of *Kaleidoscope*, but the quality of the journal depends on the continued support of the student authors. If you are a University of Kentucky undergraduate student, I hope that you will seriously consider submitting your best work to *Kaleidoscope* for review for publication. The guidelines for submission are included on the journal's website, [www.uky.edu/kaleidoscope](http://www.uky.edu/kaleidoscope). As a scholar, you should always be thinking about publishing your work to share it with the wider community of scholars. *Kaleidoscope* presents you with a convenient, yet prestigious opportunity for such publication.



**Robert S.  
Tannenbaum,**  
Editor





**I** have just finished my fourth year as a theatre major at the University of Kentucky. Although acting is my first love, I have a great deal of interest in directing, costume design and playwriting. I am a member of the Honors Program and the Gaines Center for the Humanities. I have been awarded two Oswald Research and Creativity Grants for playwriting, one that funded my first full length play, *The Noise in the Room: based on the diary of Carolyn Taylor*. There have been three staged readings of my play at

the University of Kentucky's Black Box theatre and The Downtown Arts Center. Currently, I am writing a screenplay based on Carolyn's story and eventually would like to write a play for each journal, making the 'The Noise' a three piece collection. My career goal is to open a theatre that specializes in installation art and performance theatre.

This project has changed my perspective on the value of recoding my life and the lives of those around me. I think there is so much to be learned in the present through the personal record of one's daily activities and thoughts of the past. In this way, Carolyn's diaries have been a doorway, a threshold, of creativity and understanding. I would like to thank the Bracken County Historical Society members for giving me support while researching in Augusta. This play is not only about the past or the present, but how they intertwine and weave a new story.



**Mentor:**  
**Dr. Barbara Lewis,**  
**Associate Professor,**  
**Department of Theatre**

When she was a little girl, Lauren Argo liked playing in her grandmother's closet. For hours, she could get lost indulging herself in the texture and look and sensibility of another time, measuring herself against the seams of an earlier era. She knew that she owed much to lives that preceded hers and she cherished those obligations. Once again, she is acknowledging a legacy to her forebears with this play that she has constructed from the words of a woman who died before she was born. For Lauren, history is not musty and old, better forgotten and discarded. It informs us today. It creates the texture we live. History is in our pores, but we who are alive now have the opportunity and the mandate to shape what we have inherited in line with contemporary fashion and demand.

History is also a chronicle, and it was in the diaries of Carolyn Taylor, a woman who recorded her life for fifteen years, that Lauren Argo found a mirror of a past she wanted to explore. Early in the century, women in America struggled and waged a public battle to be noticed and to have options in their lives, not simply to be the voiceless appendages of men. Carolyn Taylor, a native of Augusta, Kentucky, was engaged in that fight on the circumscribed stage of the local. She devoted her energies to making positive changes happen in her milieu not just for herself but also for those who had less power and privilege than she.

Lauren Argo, who has benefited from the progress that Taylor and her sisters in suffrage demanded, pays tribute to Carolyn Taylor. She darns the frayed narrative of Taylor's life and in the process she celebrates this woman who could have been her great grandmother. From the fragile and fading pages of the first of three diaries that Taylor kept, Lauren Argo translates five years of Taylor's life to a drama that makes palpable how the fight of women for recognition and social acceptance at the beginning of the last century forms a continuum with the struggles of women and the underprivileged today.

It has been a pleasure to listen to Lauren develop her ideas and her approach to this material, which she felt bound to honor at the same time that she wanted to make it her own. Her job, as she saw it, was not just to set out on the discovery trail after the facts of Carolyn Taylor's life, but to add the tinge and resonance of today. She has succeeded, and in the process she has helped us see the shifting panorama and the fragility of life. How easily it can pass without a trace. The moments we live are evanescent. They vanish all too quickly. Art extends those moments, and drama is metaphorically a garment-filled closet that allows us to touch and breathe the aura and memory of the past while we rehearse the future.

## The Noise In The Room

based on the  
diaries of Carolyn Taylor

Lauren Argo

Develop interest in life as you see it; in people, things, literature, music—the world is so rich, simply throbbing with rich treasures, beautiful souls and interesting people. Forget yourself.

Henry Miller

*Dedicated to Carolyn Taylor:  
For recording her exquisite life,  
and teaching me to live again.*

## CAROLYN TAYLOR

*In conjunction with the Bracken County Historical Society, I have been researching Carolyn Taylor for almost a year. Although my findings are not a complete portrait of Carolyn's life, I have gathered information from the Bracken Chronicle, The State Journal, Vital Statistics and Records of the Commonwealth of Kentucky, Bracken County Court Records, and secondary sources about Miss Taylor. Please use this information to better understand Carolyn's character and the project's focus.*

Carolyn H. Taylor was born in Bracken County, Kentucky on March 4, 1871 to Benjamin F. Taylor and a Mrs. Hamilton Taylor. Carolyn's legal guardian, as recorded in Bracken County court records, was Mrs. Finniah Taylor, possibly a family member on her father's side. Carolyn was released from the custody of Finniah Taylor on her twenty first birthday, March 4, 1892, and had been overpaid by said guardian the sum of One thousand and twenty six dollars and sixty five cents. Although this is the only record of finance I found for Carolyn, her lifestyle as recorded in her diary concludes that she was a woman of wealth. It is my belief that Carolyn inherited money and property after her father's death.

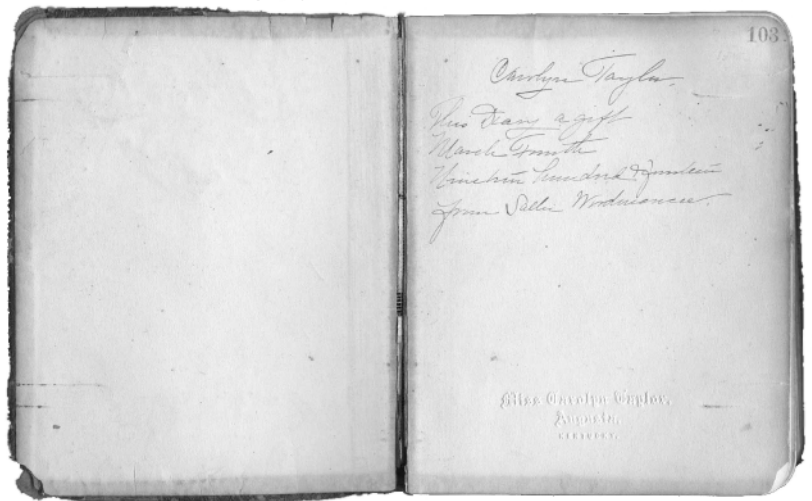
Miss Taylor lived with her mother in downtown Augusta for a large part of her life, renting the family farm in Bracken County to temporary tenants. Harry McDonald cared for the farm from 1916-1919, raising hogs, cows, hay, tobacco, and other goods. The profit from these goods was split between Mr. McDonald and Mrs. Taylor and Carolyn for living expenses. Carolyn took several months of the year with her family in Cincinnati, Ohio, to attend Art and Sewing School, leading a very social life in the city.

While living in Augusta, Carolyn participated in several society groups in her free time. She sewed shirts for the soldiers for the Red Cross and believed in supporting the war effort with her service and financial contributions. Carolyn was a leader in the Augusta Chapter of Red Star, an organization focused on animals in World War I. An Emergency Service of the American Humane Society, Red Star was created to raise money to send medical supplies, veterinarians, and ambulances to the front line to care for injured horses. Carolyn was an active member in the Presbyterian Church women's group, although she retracted her membership to the church in 1917 over a difference of opinion. Carolyn was a strong woman of her time and place, supporting controversial issues such as women's rights in the Suffrage Movement. A very social woman, Carolyn's love of the arts is obvious from her attendance at picture shows, art museums, plays, and music performances.

Carolyn moved from Augusta to Frankfort, Kentucky, around 1935 where she worked as a clerk for the Economic Department of the State of Kentucky until her retirement. She returned to Augusta to cast her vote on Election Day in August of 1939 when she finally celebrated her right to vote. Carolyn eventually moved into Green's Rest Home in Frankfort where she would reside until her death. She was found deceased by Mrs. Ireland Davis on November 12, 1961, at the age of ninety. Her remains were cremated in Louisville, Kentucky, and taken to Davis Funeral Home in Paris, Kentucky.



*Site of  
the 127  
yard sale.*



*A page from Carolyn Taylor's journal.*

*I am honored to be a part of Carolyn Taylor's life and will continue to seek the answers to questions about her that cloud my dreams. This woman, who is not famous by the standards of the world, has been the most influential woman in my life, giving me the desire to know my own grandmothers and mother better. My life is dedicated to finding her truth and creating a record of my own great life.*

## THE NOISE IN THE ROOM

### PRODUCTION NOTES

This play is based on the 1914-1919 diary entries of Carolyn Taylor and my discovery of these diaries. The scenes, 127 and THE HYSTERICAL HISTORICAL SOCIETY are based very closely on real life experience and should reflect such realism. Other scenes that require a focus on realism include THE PARLOR and THE CEMETERY. The remaining scenes are based in the abstract worlds of Carolyn and Elizabeth's dreams and thoughts. Please be creative with your production with consideration to the following suggestions:

**VIGNETTES:** The Vignettes should reflect the style of 1919 silent films; presented as black and white videos, with music but without words. They are shown throughout the play, the THE MOON VIGNETTE is the prologue for the first act, THE PAPER VIGNETTE is the prologue for the second act, and THE MASQUARADE VIGNETTE is the epilogue.

**CASTING:** The cast should have strong abilities in creativity, style, and versatility. Double casting the following roles should be considered, but is not required:

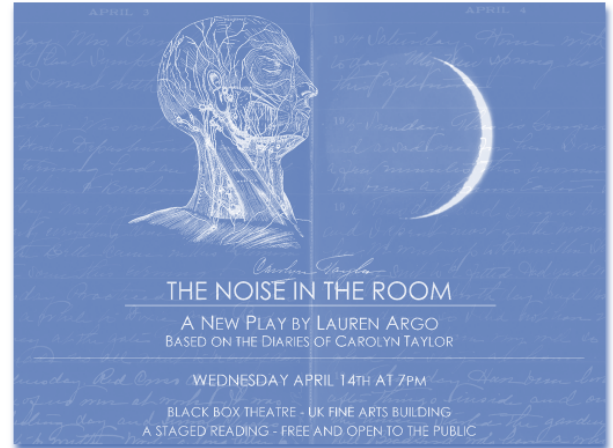
MRS. SCARLETT and MISS. LIZZIE BLACK  
MRS. RUBY and MRS. BIRDIE  
MRS. CRIMSON and ELISE ELLIS  
MRS. CARDINAL and SALLIE BANK  
DOCTOR and HE  
PREACHER and MYRON MUDD

The time period and personalities for these pairs of characters are very different, which will create a challenge for the cast, but they share similar qualities. When acting these roles, the opposites are critical, but in some cases time to make the transition is limited.

**VISUAL ELEMENTS:** There are several visual elements in the play, including the costumes and set. These elements can be complex or simple, realistic or abstract, and should clearly define and differentiate the past and present. Carolyn and Elizabeth should always be in red to represent their similar ambition and passion. Please pay close attention to the use of hats throughout the play, considering that they represent the time and personality. The moon should not be a representation, but an actual set piece.

**MUSIC:** The use of music is another important element that must be considered. Music that Carolyn Taylor listened to includes (but is not limited to) Mozart, Schumann, Brahms, Howard Boward, pianist Joseph Hoffman, and violinist Eugene Ysaye.

Please take great care with the project, paying close attention to the characters and symbolism of the play. This script is a guide line to the story, you are the storytellers.



### DRAMATIS PERSONAE

#### The Moons

ELIZBETH KEY,  
a woman of the present, early 20s  
CAROLYN TAYLOR, a woman of the past,  
mid 40s  
LYDA BELLE, her country companion  
SHE/NURSE

#### The Stones

DOCTOR, the provider  
MR. WOLF, the deceitful past and present  
MYRON MUDD, the thief  
HE

#### Keepers of the Past

MRS. SCARLETT  
MRS. CRIMSON  
MRS. CARDINAL  
MRS. RUBY

#### The Remains

MISS. LIZZIE BLACK  
MRS. BIRDIE  
ELISE ELLIS  
SALLIE BANK  
PREACHER  
PICTURE SHOW ATTENDANTS

# THE NOISE IN THE ROOM

## ACT ONE

127  
The Moon Vignette  
Elizabeth's Poem  
Confession: The Wooing  
The Hysterical Historical Society  
The Parlor  
Nightmare # 1

## ACT TWO

The Cemetery  
The Paper Vignette  
The Mystery Man  
The Picture Show  
The Masquerade Vignette  
The Resuscitation

Act II is available on-line at  
[www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004).

## ACT ONE

### 127

Lights up on a bright, summer's day at the 127 yard sale. Signs reading "Lawrenceburg, KY," "Welcome to the longest Yard Sale in the world!" and "Highway 127" are visible to the audience. The stage is a typical rural yard sale, littered with small, cluttered tables of random trinkets, dishes, and broken appliances. Similar tables should be placed in the lobby and throughout the theatre to accentuate the sense of infinite bargains. At each table there is a "seller" pushing items for the audience to buy. This setting should be the most realistic representation of life in the play. ELIZABETH is holding an oddly tall, green bottle, walking around the busy set, looking for more interesting items. The other consumers walking around looking for items are the characters who appear later in the play. They are dressed in contemporary "rural Kentucky" attire. The same actors playing DOCTOR and LYDA are playing HE and SHE, two country people standing over a table on stage. Their conversation catches ELIZABETH's attention. She moves close enough to hear what they're saying without being noticed.

**SHE**

Hey! Hey look at this, Bud.

**HE**

*(without looking)* What is it?

**SHE**

Just come over here and look at it, huh. It's real neat.

**HE**

Hey, look at this George Foreman grill. I saw one of them on T.V. before. It cooks steaks and burgers real fast and all the grease runs off into this little tray —

**SHE**

*(engaged in her own find)* Would you get over here and see this?

**HE**

*(moves in)* What the hell you been lookin' at over here?

**SHE**

These things right here. I wanna buyt'em.

**HE**

What in the world are you talkin' about?

**SHE**

These are journals somebody wrote a long time ago.

**HE**

What? This old thing? *(He picks one up and starts to examine it.)*

**SHE**

There's three of 'em. Look at her old writing, it's all in cursive.

**HE**

Why in the hell would you want somethin' like that? You wouldn't even be able to read them things.

**SHE**

Well how would you ever know if you didn't at least try to read 'em. Look here—"April 9<sup>th</sup>, 1914. It was rainy." I could read that much. *(flipping to the front cover)* She was from Augusta, Kentucky. Says right here in the front.

**HE**

How much?

**SHE**

Forty-five.

**HE**

You are gonna spend forty-five dollars on some dead lady's journals? Damn, you been wastin' money all day. I'm goin' under the tent. I'm ready to go.

**SHE**

I think they're neat.



**HE**

(*while exiting*) She's dead, honey. She don't matter no more. Come on when you're done.

SHE sets the book down and begins to count out the money in her purse when ELIZABETH moves to her.

**ELIZABETH**

(*she picks up the books.*) Excuse me.

**SHE**

Are those yours?

**ELIZABETH**

I just paid for them. I'm sorry, were you looking at them?

**SHE**

I didn't know somebody had already bought 'em. How much you give for 'em?

**ELIZABETH**

Forty-five — same as the tag.

**SHE**

Whatcha gonna do with 'em?

**ELIZABETH**

I don't know.

SHE exits and Elizabeth picks up the books and carries them over to the MAN behind the table. He is dressed in a thin, white t-shirt and blue jean overalls and has a long, white beard. He continues to eat chicken wings throughout the scene, wiping his hands on the overalls.

**MYRON MUDD**

What you got, honey?

**ELIZABETH**

These journals.

**MYRON MUDD**

Well, I'm finally gonna sell them things.

**ELIZABETH**

How long have you had them?

**MYRON MUDD**

I don't know, a couple years, probably since I was a young'un.

**ELIZABETH**

I'll give you thirty-five.

**MYRON MUDD**

Deal. (*He takes her money and begins to count it.*)

**ELIZABETH**

Do you know where they came from?

**MYRON MUDD**

Nope.

**ELIZABETH**

It says Carolyn Taylor on the first page. Do you know who that is?

**MYRON MUDD**

Nah.

**ELIZABETH**

(*reading*) Augusta, Kentucky. Are you from there?

**MYRON MUDD**

Why you wanna know?

**ELIZABETH**

Do you realize how old these books are?

**MR. MUDD**

Yeah, they're pretty old. (*laughs*) Just about as old as me.

**ELIZABETH**

Have you read them?

**MR. MUDD**

I got other business to attend to.

**ELIZABETH**

Okay. Thank you. (*He hands her the change and she turns to leave.*)

**MYRON MUDD**

(*calling to her*) Hey, girl.

**ELIZABETH**

Yes—

**MYRON MUDD**

They was in the attic of a house that burned. That's all I can tell you.

**ELIZABETH**

Thank you. I hope you make some money today.

**MYRON MUDD**

(*gazing up at the sky*) I just hope it don't rain. That would ruin my whole damn day. Hey, where'd you get that crazy bottle?

**ELIZABETH**

Up the road at a white house with a wagon in front.

**MYRON MUDD**

Yeah, I know that guy. He sells a buncha crazy shit every year. Hey, remember I gave you a deal. You come back and see us, now.

**ELIZABETH**

(*under her breath*) You gave me a whole new life.

ELIZABETH walks down stage of the table and stands reading the journal. For a moment the other actors join together in a clump to watch her walk away. The lights dim as she reads the following passage, the tables and signs are replaced with a dock, material water, the moon, and a backdrop of the city of Cincinnati. CAROLYN is dressed in high collared, early twentieth century attire and a red hat, dancing with the SNAKE CHARMER. The moonlight is exceptionally beautiful on the figures and the water.

**ELIZABETH**

(*On tape. These readings should sound as if they are being played on a monograph.*) April 22, 1914. Once in awhile a pause is absolutely necessary. May 12, 1914. May 22, 1914. Augusta seems like a strange country this summer. September 7, 1915. This has been in every sense of the word "Blue Monday." Reynolds Hook came this afternoon and has suggested something that may solve the problem. Friday, June 4, 1915. The Tom Thumb wedding was given this evening by seventy-four of our little home children. November 5, 1915. Came to our new home this evening and everything is in a topsy turvy state. Tuesday, November 16, 1916. The pain got so bad today Dr. Norris had to come twice and give me opiate. Friday, June 9, 1916. This has been another wet season and I have no energy but manage to get a little done each day. Sep 28, 1917. Spent this evening with *Travel* magazine. Feb 22, 1917. Washington's Birthday. Went up to the tobacco sale this morning. Had my piano tuned today. Saturday, Feb 26, 1918. Practiced on my Mozart today and was out for a little while. June 17, 1919. Thursday and Circus day! The boat and barges were here early in the morning. August 7, 1918. The moonlight was absolutely breathtaking. I watched late into the night, gazing out my window.

**BLACKOUT**

## THE MOON VIGNETTE

CAROLYN TAYLOR is sleeping peacefully in her bed. Suddenly, because of a bad dream, she sits up in bed and notices the moon outside her window. Eventually she climbs out of the bed, out of the window, and onto the large wooden moon. She covers her eyes with a blindfold and begins to sleep on the moon.

**BLACKOUT**

## ELIZABETH'S POEM

Lights up on the dock and river. Alone, CAROLYN TAYLOR, is standing close to the edge of the dock, waiting for a ferry. While gazing at the moon, she occasionally wipes her eyes with her handkerchief. ELIZABETH KEY, is downstage, dressed in contemporary attire, writing at a small table. The characters do not interact.

**ELIZABETH**

I have been dreaming of you all day, Carolyn.  
Trapped in the idea of wanting to see you—  
Your hair—  
Your eyes—  
Imagining you are beautiful wearing a high collar  
and long skirt, flowing over the sidewalks of the city.  
I was there, one day far from now, wondering about you  
Did you cry the day you left your life in Cincinnati—  
Your hat pin slipping from your tight bun as you looked out across the water,  
The years of your childhood slipping beyond what you know?

How did you become the woman I know?  
Who were you before I felt the rain drown your heart and stop your breath?  
What was it like, the day you died?  
Did you feel your eyes close for the last time?  
I wish I could have held your hand and touched your face—  
so soft and pale.  
Dressed in the most beautiful red.

Can you imagine what I am feeling right now looking into your life?  
Your pain and loneliness is my heartache.  
Sometimes I want to say I'm sorry.  
So sorry for doing this—  
I do not mean to pry,  
I only want to resuscitate you.

**BLACKOUT**

## CONFESSION: THE WOONG

Lights up. CAROLYN TAYLOR is sitting at a small table with a lamp. Her clothing suggests bedtime and her appearance is newly taken down. She stares into the audience with a blank look on her face. A recording of the following monologue is heard. The monologue is a collection of thoughts whirling through her head. As the recording plays, her face melts with expression; the intensity grows until she breaks down at the recording's conclusion. While this scene is being played, the dock can be transformed to the Bracken County Historical Society set.

**CAROLYN**

(on tape) It is rainy and dismal again today. I feel empty from last night. I usually can't recall what it is like to have his hand on the back of my neck, until it happens. It was so sudden last night, just as we were walking from the dining room to have a game of Rook in the parlor. I wonder what on earth he could be thinking to touch me twenty feet from that group of vultures. I tried to pull away, to excuse myself as any lady would, but he grabbed tightly to my wrist and pulled me toward him. Breathing down my dress, examining my neck, forming stillness around my shoulders like a shawl, petting the tiny hairs at the base of my neck like some feline. Wooing, wooing, always wooing, scaring me today. He's scaring me to death, Lyda. Do you understand that? Can you even imagine what it was like to be there— to be waiting, gazing out the window in search of any sign, any arrow pointing down the road? (imagining what she saw) I saw him round the corner of the house, peering straight into the window, and directly behind it my face. For a split second I saw his eyes adjust, as if I were the sun, shining white rays into his skull. His face remained still, waiting; the narrowed eyes of a snake with its charmer— a venom-mouth connected to a stone heart. He showed no affection, no softness on the corners of his mouth, the center of his palm. And that's when my heart started to throb, raging to break free of my chest and call out to him through the window. That's when I knew, in an instant, he was enjoying this suffering just as much as I was.

CAROLYN, now visually emotional, throws open the small drawer of the table and extracts a small, almost square book. She searches frantically for a pen and as she pulls it out it falls to the floor. She retrieves it and

writes, speaking aloud in a hushed voice as she goes.

**CAROLYN**

September 14, 1917. Rainy and very dismal. (pause) We both feel bad. Lyda came over and we made her stay for dinner. I do hope my year will not continue like this day.

She shuts the book, replaces the objects in the drawer, looks around, opens the drawer and removes a hair brush and begins brushing her hair.

**BLACKOUT**

## THE HYSTERICAL HISTORICAL SOCIETY

The scene begins in the cozy office of the Bracken County Historical Society in Brooksville, Kentucky. The room is messy but sorted. Along the wall there are a number of shelves filled with folders, and volumes and volumes of records, file cabinets, and two microfiche machines. The walls are decorated with antique signs, photographs and paintings, each part of the history of Bracken County. The tables are littered with handmade baskets filled with peppermint and butter-scotch candies. A phone is mounted on a wall close to a small table near the center of the room where four women are seated, quietly listening to a light rain tapping at the window. MRS. CRIMSON is quietly copying down a recipe while MRS. SCARLETT is munching very loudly on a small pack of oyster crackers. The other two women seem to be bored, staring blankly out the window. MRS. RUBY begins mumbling to MRS. CARDINAL about the weather, when the creak of a door is heard.

ELIZABETH enters slightly out of breath with freshly damp clothing and satchel. She is dressed in an eccentric red outfit that seems to glow under her raincoat. The four women turn to the new visitor, forgetting their present business. MISS CRIMSON can be heard taking in her breath.

**MISS SCARLETT**

Hello. (pause)

**ELIZABETH**

I'm looking for some information about a woman named Carolyn Taylor. (begins to stumble) I was trying to arrive much earlier, but with the rain ... I couldn't, well actually I couldn't find Brooksville so I've been lost for

most of the day. I just, I want to know anything I can about her. Do you think it would be possible to find out where she lived? Or how old she was when she died? *(no response)* I'm not actually sure if I'm in the right place. Is this the old jail? *(goes to the window)* It must be because your recording said you're located near the Court House and ... there it is— *(pause)* Isn't this rain terrible? I was driving for so long — at Falmouth I stopped at a Rite Aid to buy some snacks and ended up buying all this makeup on sale. But when I left the Rite Aid I called my Dad and said, "I'm in Falmouth. Am I close to Bracken County?" and that's when I found out I was really lost. So, I get back in my car and leave Falmouth — back on the road now, and finally, when I thought I had reached Brooksville I saw all these little fires, burning away even through the rain. It didn't make sense, but there they were, fires in the rain on hillsides. No matter how hard it rained, there were those fires on steep hills with bulldozers. *(pause)* Does that normally happen here? I mean, I've never actually been to Brooksville. I mean, not until right now...

**MISS SCARLETT**

What was the name?

**ELIZABETH**

Carolyn. Carolyn Taylor with a C and Y. *(pause)*

**MISS SCARLETT**

Well girls, let's get to work.

Suddenly all of the women rise from the table and take separate corners. MISS SCARLETT begins to hunt for a large book while MRS. CARDINAL is pulling out microfiche and loading it on the machine. MRS. CRIMSON and MRS. RUBY bring small folders to the table and begin to shuffle through the contents. Everyone is automatically engaged but ELIZABETH who stands awkwardly at the door with her umbrella at a downward angle, a puppy's tail.

**MRS. SCARLETT**

You can sit here. *(sliding a rolling chair toward ELIZABETH)*

**ELIZABETH**

Oh, yes. Thank you. *(She shakes off her umbrella and sits. She has not removed her raincoat or closed her umbrella, a huge soggy blob in the small chair)*

**MRS. RUBY**

What year was she born? Do you know honey?

**ELIZABETH**

No, I actually don't know much about her at all. Well I know some things, but, not really a record of sorts. I was —

**MRS. SCARLETT**

What is she to you?

**ELIZABETH**

Uh, nothing actually. I, well ... the thing is ... I have her diary. Diaries. I'm just trying to find out anything I can.

**MRS. RUBY**

You have her diaries you say? *(her face brightens)*

**ELIZABETH**

Yes, the first one begins in 1914, so I do know that she was alive and living in Augusta at that time.

**MRS. RUBY**

Oh, Augusta. I see. Taylor ... 1914.

**MRS. SCARLETT**

Where did you get the diaries?

**ELIZABETH**

I bought them at a yard sale. In Lawrenceburg, Kentucky, at the 127 yard sale.

**MRS. SCARLETT**

*(turning toward MRS. RUBY)* I bought the table in my front hall from a man in Danville on the 127 —

**MRS. RUBY**

*(Flipping through a book, not looking up)* Is that so? The one in the hall with the brass handles?

**MRS. SCARLETT**

No, the room in the back with the curtains that —

**MRS. CARDINAL**

I'm going to try the census sweetie. She might be in there. Was it Mrs.?

**ELIZABETH**

No. I think it's M-I-S-S. I don't think she was married.

**MRS. CRIMSON**

Really. *(Looking at ELIZABETH over her glasses on the tip of her nose)* Mm... Not married —

**MRS. CARDINAL**

She's not married!

**MRS. SCARLETT**

We'll if she's not married who knows where in the world she could be.

**ELIZABETH**

Well. I don't think so. Unless she's a widow —

**MRS. SCARLETT**

*(Eating her last cracker, walks to the phone and picks it up, turning to the rest of the ladies)* You know who I bet knows something. Art Taylor.

**MRS. CRIMSON**

Well, yes, maybe —

**MRS. RUBY**

Art? *(beginning to chuckle)* You had better try his sisters.

**MRS. SCARLETT**

Well, I'm just gonna see. *(While punching numbers she clears her throat, preparing to use her phone voice.)* Art? Hello. It's Carmine Scarlett down at the Hysterical Historical Society. *(giggly laugh. He doesn't seem to respond so she continues in a more serious voice.)* There is a young lady down here that is trying to do some research on somebody from Augusta and we thought ... what? Well, she just wants to. *(pause)* No, she's the literary type. You know. She's doin' some kinda research. Anyway, she's looking for a Carolyn Taylor. Do you have any idea of who that could be? Well ... you ain't even heard nobody mention her? Sallie Jean or your Mamma or any of them? You know, it could be those Taylor's down my lane. Yup. Oh. Okay. Well, good to talk to you Art. Have a good one. *(Pause)* Honey, how's your Mamma been doin'? She feeling any better after that old cold a hers. Oh, well okay then. You take care sweetie. Okay. Tell your Mamma we're sendin' our prayers. An' your sisters. An' everybody down that lane. Alrighty ... Bye-bye now. *(she hangs up with a sour face)* Well, Art didn't know anything.

**MRS. RUBY ... MRS. CRIMSON**

Call his sisters!



**MRS. SCARLETT**

They don't see eye to eye on a lot of things. Maybe I should just call them up and mention that I talked to Art. They'd get a kick out of that one wouldn't they? *(chuckles)*

**MRS. RUBY**

What does he do these days?

**MRS. CRIMSON**

Work ... as little as possible.

**MRS. SCARLETT**

Well, he claimed to know nothin' about it. *(She sits back down and starts sifting through a book.)*

**MRS. CARDINAL**

I don't think he knows much a nothin'.

**MRS. SCARLETT**

Mrs. Cardinal! I'm shocked at you. *(She gets out another small pack of oyster crackers and begins eating again.)* You know, he didn't even act like his Mamma was sick. She hasn't been able to get up in ages. They say the doctor says it's a cold, but I bet it's the gout.

**MRS. CRIMSON**

Have you ever had the gout?

**MRS. SCARLETT**

No, but you talk crazy when you got it and she's talked crazy for as long as I've known her!

**MRS. CARDINAL**

Okay. Here were go. *(to ELIZABETH)* Okay Hun. Looks like she isn't in the census of 1900 and I can't really go back any more because the census of 1890 burned in Bracken County.

**ELIZABETH**

They burned?

**MRS. CARDINAL**

Yes, Ma'am. It was a sad day in the history of Bracken County.

**MRS. CRIMSON**

*(to herself)* Had a few in my time.

**MRS. SCARLETT**

Speaking of burning, you know what happened last night?

**MRS. RUBY**

You talkin' about the fire over there on Hamilton Lane?

**MRS. SCARLETT**

Yes, I sure am. I tell you what, when I heard sirens at 2:38 A.M. and turned on my scanner you better believe I already knew what it was.

**MRS. RUBY**

Well, now how did you have any idea what was goin' on?

**MRS. SCARLETT**

There are only two things in this town the police wake up for. A fire ... or a snack. *(The women erupt with laughter. ELIZABETH, feeling a bit more at home, begins to remove her rain gear and get settled in.)* No, I'm serious. You know they always just dismiss all those fires — either those old barns or gutted houses — it don't matter. No one cares about what happens to those old buildin's anyway. That's why they get away with it, they're never gonna even try to catch them hooligans.

**MRS. CRIMSON**

Well, who do you think's doin' it?

**MRS. SCARLETT**

I think it's them two Mudd boys. Always up to no good. Either they're sneakin' aroun' downtown outside their dirty mother's store or they're out burnin' buildin's and tippin' cows!

**MRS. RUBY**

*(cracking up)* Cow tippin'! You even know what that is?

**MRS. SCARLETT**

I most certainly do know and I think it is just awful.

**MRS. CARDINAL**

Well, I think it's a grand time. *(the ladies erupt with laughter once more. This time ELIZABETH begins to giggle. MRS. RUBY hands her a book off the table.)*

**MRS. RUBY**

Here sweet pea, you take a look in there for your Carolyn. With a Y and N. *(chuckles and winks)*

**MRS. CRIMSON**

Honey, where are you from?

**MRS. SCARLETT**

What's your name?

**ELIZABETH**

I'm Elizabeth Key, from Cynthiana.

**MRS. RUBY**

Just down the road from us, huh?

**ELIZABETH**

Well, from the four hours in the car I thought it was longer than that! *(she begins to flip through the book looking for an index)*

**MRS. SCARLETT**

*(jumps up)* You know what. I'm gonna call Mrs. Oldum.

**MRS. CRIMSON**

George Oldum's wife?

**MRS. SCARLETT**

Well, why not. Don't you think she knows somethin' about everybody in this town?

**MRS. CARDINAL**

She helped my Mamma have me when I was born.

**MRS. RUBY**

Is that so?

**MRS. CARDINAL**

I think she used to go 'round and do that for a buncha women — help 'em go have babies when they was havin' a hard labor.

**MRS. SCARLETT**

Yes, sir. I'm just gonna dial her up and see if she can get that brain of hers switched on and warmed up! *(she begins to dial a series of numbers off the top of her head. MRS. RUBY leans over to ELIZABETH)*

**MRS. RUBY**

She knows everybody in this whole town's phone number. Sometimes I even think she knows what they had for dinner too.

**MRS. SCARLETT**

Hello Mr. Oldum. *(screaming in the phone)* George? Hello there George. How are you? I said, How are you? Listen honey, this is Carmine Scarlett down at the Hysterical Historical Society. Honey, is Edna home? *(pause)* Edna Oldum. *(pause)* Your wife. Your wife! Okay. Thank you honey. Could you get her for me? *(pause)* Hello? Edna? *(pause)* No, George. Put her on the phone. Okay, then.

Thanks, sweetie. *(to the girls)* That man is deaf I think. Hello Mrs. Edna. *(pause. getting louder)* Hello Mrs. Edna.

**MRS. RUBY**

*(to ELIZABETH)* Apparently she is too.

**MRS. SCARLETT**

Sweetie, this is Carmine Scarlett down at the Hysterical Historical Society and we have a young lady here looking for some information on a Carolyn Taylor. Do you remember her? Carolyn. A woman who lived in Augusta in the nineteen teens. *(pause)* She was a Taylor. *(pause)* No, no. Not a sailor. A Taylor. You know, the Taylors out by me. *(pause)* We'll all right then sweetie. Thank you for your time. Just thought I'd call but this is rather irritating so I'm gonna hang up now. Okay. Alrighty then. You have a good night sweetie. Goodbye Mrs. Oldum. Goodnight. *(hangs up)* Well, I swear to God. Somebody needs to lock her up.

**MRS. RUBY**

Oh No. She just can't hear any more that's all. Who really needs to hear anyway? I'd like to live my life confused and mixed up, it would make it a lot easier to justify my work in this room. *(the women explode with laughter this time. MRS. CARDINAL puts a folder in front of her face to hide that she is blushing from ELIZABETH)*

**MRS. CARDINAL**

I think I found something girls.

**ELIZABETH**

What?

**MRS. CARDINAL**

Let's see. Well, I don't know if this is her or not. Do you think she went by Carrie?

**ELIZABETH**

Well, the name embossed in her diary is Carolyn Taylor, but she could have gone by Carrie.

**MRS. CARDINAL**

Well, let me see. Give me a minute here, but I think maybe this is her.

**MRS. RUBY**

I would really like to see her diary if you could get a chance to come back maybe you could show me.

**ELIZABETH**

I have it out in the car. I'll go get it for you.

**MRS. RUBY**

You do?

**MRS. CRIMSON**

Would you bring it in so we can see it?

**ELIZABETH**

Sure. Just give me a second. *(she puts on her raincoat and exists.)*

**MRS. RUBY**

Can you just imagine how old that book is?

**MRS. CRIMSON**

Isn't this excitin'? And to think she bought it at a yard sale.

**MRS. CARDINAL**

I just usually find some Tupperware.

**MRS. RUBY**

Have you all ever thought to keep a diary?

**MRS. SCARLETT**

Well, I don't know. I used to write in somethin' when I was younger, but my life isn't very excitin' now.

**MRS. RUBY**

For some reason I think you would be better at fiction. *(MRS. CRIMSON giggles.)*

**MRS. SCARLETT**

Oh you hush up! You know there might be something in the burial book. *(she begins to hunt on the shelves for another book to pull out when ELIZABETH walks in the door)*

**ELIZABETH**

Well, I only have the one with me. I've been transcribing it so I won't have to touch it too much. *(she takes out a little pouch, unzips it, takes out something wrapped in cloth and begins to unwrap it. All the women except MRS. CARDINAL move to get a closer look.)* There it is. My pride and joy. *(MRS. CRIMSON takes in a breath.)*

**MRS. RUBY**

Oh my goodness. May I?

**ELIZABETH**

Yes, of course. *(MRS. RUBY sets it down on the table and looks it over)*

**MRS. RUBY**

"A Line A Day," how cleaver. *(She slowly opens the cover and reads)* "Carolyn Taylor. This diary, a gift. March fourth. Nineteen-hundred and fourteen." Oh, her writing is absolutely beautiful. *(Her hand goes to her mouth.)* My grandmother used to write like this. Yes, this is absolutely beautiful. Listen. "Ward's A Line A Day book. A condensed, Comparative Record for Five Years. Rulla Dies sine linea —"

**MRS. CARDINAL**

I think I found her—

**MRS. RUBY**

"No day without a line—"

**MRS. CARDINAL**

If this is right, she was born March 4, 1871 and died November 12, 1961.

**MRS. RUBY**

That must be Latin—

**MRS. CRIMSON**

That makes her ninety years old.

**ELIZABETH**

*(stunned)* Ninety years old.

**MRS. RUBY**

"Copyrighted 1892 by Samuel Ward Company, Boston, Massachusetts."

**ELIZABETH**

Oh my God.

**MRS. RUBY**

"You have neither the time nor the inclination, possibly, to keep a full diary. Suppose, however, out of the multitude of matters that crowd each day, you jot down in a line or two those most worthy of remembrance. Such a book will be of the greatest value in after years. What a record of events, incidents, joys, sorrows, successes, failures, things accomplished, things attempted. This book is designed for just such a record. It can be commenced on any day of the year, and is so printed that it is good for any five years."

**ELIZABETH**

No day without a line.

*A shadow screen is lowered down stage. As MRS. RUBY continues reading different images appear behind the screen as shadows. Slowly throughout this passage the women at*

*work put down what they're doing and turn to watch the screen. It is their collective imagination. As the images appear the room slowly goes dim.*

### MRS. RUBY

The day was dreadfully hot. *(a beaming sun appears on the screen)* Lunch at Mrs. Bradford's as usual. I went for a visit with Garret and Lucile. We had a jolly time this evening. *(pause)* November first. Dandelions in bloom. *(slowly, one at a time several flowers sprout onto the screen. MRS. SCARLETT is replaced by MISS LIZZIE)* Went down-street to call on Elise Ellis. This evening we watched the flying machine. *(An old airplane, complete with sound and movement joins the sun.)* Thursday, June 18. Club met with Mrs. Birdie this afternoon for a Red Star meeting. The moonlight was beautiful. *(The sun is replaced by the moon. MRS. CRIMSON exits and LYDA enters, taking her seat)* This afternoon I watched the sailboats on the river. *(Water appears, the airplane lands with a splash and is replaced by a sailboat)* August 22, 1917, Thursday. Our possessions seemed few until we began to sort out the valuable from the necessary. Nothing of importance happened today. *(the sailboats disappear and MRS. CRIMSON is replaced by ELISE ELLIS)* Rain has been falling for days. *(The moon is removed and MRS. RUBY is replaced by MRS. BIRDIE, but continues to speak. The waves on the screen flip horizontally, creating a new sky. As raindrops begin to fall the sound of rain grows. ELIZABETH stands and begins to put on her raincoat.)*

### CAROLYN ... MRS. RUBY

Rain has been falling for days. This weather is so oppressive. *(ELIZABETH is replaced by CAROLYN who is gazing at the shadow screen as if it is a window.)*

### CAROLYN

I want to see a rainbow.

### BLACKOUT

## THE PARLOR

Lights up on the table and a few chairs. MISS LIZZIE is seated at the table with a handkerchief in her hand. She is dressed in an expensive, well put together outfit. Her haughtiness is easily recognizable because of her posture and facial expressions. MRS. BIRDIE and ELISE are also at the table sharing the daily newspaper. MRS. BIRDIE is a

sweet lady of small stature. She is the oldest of the group, in her 60s. ELISE ELLIS is in her early 20s and presents a fun, light attitude. She is also the prissiest of the group, in ruffles and bows. LYDA, is off to herself in a chair embroidering, while CAROLYN leans forward, gazing out the window at the sky. LYDA has a grand, serious look about her with a beautiful, bright smile. She is in her late 30s and has been a dear, lifelong friend to CAROLYN. All of the women have on hats in different shades of blue except CAROLYN whose hat is brilliantly red.

### CAROLYN

*(leaning toward the window)* It would just be so bright and clear and ... beautiful.

### MISS. LIZZIE

What dear?

### CAROLYN

A rainbow.

### LYDA

That would be nice. I think the river will rise soon with all this rain.

### MISS. LIZZIE

*(taking a note card from her handbag)* Carolyn, please be my guest Tuesday night. I'm entertaining some people on the dock by Mr. Hunter's shop.

### LYDA

*(Eagerly)* You should come with us, Carrie. I would love to have you entertain me while I'm bored.

### MISS. LIZZIE

There will be plenty to do. I have even extended an invitation to Mattie Belle Harberson, *(to Lyda)* her brother, and Lulu Camden from the city. I have invited quite a big group of the unmarried people.

### CAROLYN

Of course, yes, the unmarried people! That's me! Well, I will not be there because of the unmarried people, I will be there to see Lulu. I never miss an opportunity to see her. *(teasing Lyda)* I won't have to entertain you Lyda, not if Mr. Harberson is there.

### LYDA

*(defensively)* Well, I don't care if you invite Garrett Harberson or not.

### ELISE

*(teasing)* I've seen you care. Like last year at the Chautauqua festival in Maysville I saw Lyda Byar and Garrett Harberson kissing on the Ferris wheel when it was stopped at the top.

### LYDA

That is absolutely not true!

### ELISE

Oh yes it is! When we stopped I couldn't even see your faces! You had one your purple and green feathered hat, leaned over neck-ing! It's just like the poem —

### LYDA

What poem?

### ELISE

*(She clears her throat as she gets up from the table to recite the poem.)*  
Education of a Co-ed.  
She learned to love,  
She learned to hate  
She learned a care would carry eight.  
She learned to smoke and how to tell  
Wood alcohol  
By taste or smell  
She learned to coax  
She learned to teach  
She learned a new way  
of cooking cheese  
*(to Lyda)* She learned to neck  
And break a date  
She's ready now  
To Graduate.  
*(The women burst into laughter. Lyda is clearly embarrassed.)*

### MRS. BIRDIE

Well done, Elise. You should have studied recitation instead of short hand!

### LYDA

I will come, but only because I want to play a good hand of cards. It will be the perfect opportunity to play a game of Five Hundred. *(pause)*

### CAROLYN

Five Hundred is such a bore! I'd rather play Rook.

### LYDA

You'd rather have a doctor's visit.

### CAROLYN

You'd rather Mr. Harbeson play doctor.

**LYDA**

(shocked) I can't believe you!

**MISS. LIZZIE**

I don't understand why you are ashamed of liking that man. He earns a decent living.

**LYDA**

Garret Harberson is inconsiderate and hot tempered —

**CAROLYN**

(changing the subject) Who would like some tea while we're waiting for the chocolate and cake?

**MRS. BIRDIE**

Please, Carolyn. That would be delightful.

**LYDA**

I'll help you prepare a pot in the kitchen.

**CAROLYN**

Thank you Lyda Belle.

**ELISE**

Do you have any English tea Carrie?

**CAROLYN**

I'm not certain, but I would be glad to check.

**ELISE**

Thank you.

CAROLYN and LYDA exit into the kitchen. The kitchen set should be very minimal and off to the side of the parlor. Black cubes for an oven with a red tea set on a silver platter. As the following conversation takes place CAROLYN and LYDA prepare the tea.

**CAROLYN**

Lyda, please don't take anything Lizzie has to say seriously. You know she is simply trying to get a rise out of you.

**LYDA**

And that is exactly what she's doing. I will not just sit silently while my affections are disclosed.

**CAROLYN**

I'm asking you for my sake. Elise and Birdie know perfectly well what Miss. Lizzie is up too. Just stay calm and you'll hush her up soon enough. (pause.) So, you are going to her night on the riverbank then?

**LYDA**

Well, of course if Garrett Harberson is going to show up. Knowing those Cincinnati boys they'll have a swim with their shirts off! (seriously) Please come Carrie. I want you to be there. You haven't been out for ages now. I'm worried about you.

**CAROLYN**

Everyone always worries about me when I am perfectly fine. I have been ill. That is simple and common, isn't it? I remember you being ill last winter for nearly a week! Don't you remember ... you wouldn't come out of bed no matter how much broth I made —

**LYDA**

At least I was able to go to bed and stay there. (she takes the teapot from CAROLYN's hand and sets it on the table.) Have you been dreaming again?

**CAROLYN**

(irritated) It's not dreaming Lyda. They're nightmares and they refuse to stop. You can't understand. No one can understand.

**LYDA**

Please don't dismiss me with everyone else. I will try to understand. I promise.

**MISS. LIZZIE**

(offstage) Carolyn! Be a dear and put sugar in mine please.

**LYDA**

Why do we bother being friends with her?

**CAROLYN**

Shh. (under her breath) Because she throws the best gatherings! Come on now. (picking up the tray) Let's get back. (They return to the parlor with the tray. CAROLYN begins to serve the tea.) Yes, Miss. Lizzie, I would love to accept your invitation. A party on the river sounds delightful.

**ELISE**

(begins to clap) We're going to have a wonderful time! Alice Butler and Mrs. Fitzgerald have accepted as well.

**MISS. LIZZIE**

I think we shall row a bit if there is enough interest.

**MRS. BIRDIE**

If the tide refuses to fall that will certainly be an experience!

**ELISE**

Carolyn, would you be interested in going with me to Hamilton Striptates to pick out a rowing outfit?

**CAROLYN**

I would be delighted Elise. I am having some trimming done to my favorite hat and can hardly stand this dreadful wait. One would think Mrs. Hamilton would help her friends first —

**MRS. BIRDIE**

You have more hats than anyone I know Carolyn, and they are all so beautiful.

**MISS. LIZZIE**

Well, I'm not sure if I would say they are all beautiful, but certainly interesting ... and red.

**CAROLYN**

(ignoring MS. LIZZIE's comment) Mrs. Birdie, how has your crop been coming?

**MRS. BIRDIE**

Well, with all this rain it seems to be doing better, but I can hardly say how it will turn out. And yours?

**CAROLYN**

Mr. McDonald is hopeful, but someone stole a large number of tobacco sticks so we experienced unnecessary costs. His family is going to Lexington tomorrow, so I plan to stay the night if Mamma is well enough to be left.

**MS. LIZZIE**

Well, a night in an old farmhouse. That sounds dreadful —

**LYDA**

I couldn't imagine you have anything better to do, Mrs. Lizzie.

**MISS. LIZZIE**

(stunned) Well, I —

**ELISE**

This tea is wonderful, Carrie.

**CAROLYN**

Thank you Elise. Did you all hear about the fire last night out Hamilton Lane?

**MRS. BIRDIE**

Do you think it's one of those Mudd men? You know, I'm never gonna understand why anyone would want to destroy something so precious. I can't even imagine how horrible it would be if someone tried to burn our barn down. That thing has been in our family for years.

**LYDA**

I think it's just awful.

**CAROLYN**

People here are ignorant. No one obeys the law because they don't have too. There aren't any consequences for actions.

**MRS. BIRDIE**

Well, going off to the war sure will jerk a knot in their tail.

**CAROLYN**

You're right but I wouldn't wish that on anyone. What an awful thing, this war. *(There is a knock at the door.)* Excuse me everyone, that must be the cake. I'll be right back.

*CAROLYN crosses the kitchen and opens the door. SALLIE BANK, an attractive, thin African American woman stands in the doorway holding a large cake pan. She is shy and gentle, dressed in a simple skirt, blouse and work hat.*

**CAROLYN**

*(warmly)* Hello Sallie. How are you?

**SALLIE**

Well, I'm just fine Mizz Taylor. My feet hurt somethin' awful, but it's almost time for me to be off. An' ya self?

**CAROLYN**

Well, not the best, but I'm doing much better. Thank you.

**SALLIE**

I want to apologize for being late, Mizz Taylor. I had to make a delivery to Mrs. McKibbin and it took longer than I 'spected. *(handing her the cake)* Here's the cake you ordered, Ma'am. It muss be good, we sold all eight today.

**CAROLYN**

No need to apologize, Sallie. Would you like to come in and have a piece of cake and a warm cup of tea?

**SALLIE**

No, Ma'am. That wouldn't be right. I should just get home. I gots to get some sewin' work done.

**CAROLYN**

Well, I had no idea you sewed, Sallie. I would love to talk to you about helping with some of the Red Cross work, if you would be interested.

**SALLIE**

What kin' a work you do?

**CAROLYN**

Well, right now we're sewing some shirts for the soldiers. The work is simple, but the more people that can help the faster they'll have our contribution. Please, please come in just for a cup of tea. I am sure you would like some refreshment after a long day of work.

**SALLIE**

Well, if you don't mind, Ma'am.

**CAROLYN**

Certainly not. And call me Carrie. All my friends do. Come on in here. *(putting her hand on her shoulder and leading her into the parlor)* Come in, please and let me tell you about the progress we've made already. *(They enter the Parlor where the conversation continues.)*

**MISS. LIZZIE**

Carrie, what do you think of Lucy Wilson attending the—  
*(MISS. LIZZIE stops her sentence when she sees SALLIE and CAROLYN enter the room.)*

**CAROLYN**

I want you all to meet a friend of mine. This is Sallie Bank. Sallie works for the Ross Confectionery.

**MRS. BIRDIE**

Well, yes. I recognize you, Sallie. I always come down on Tuesday to the Confectionery to buy up my week's worth of flour.

**SALLIE**

Yes, Ma'am. You look familiar.

**MRS. BIRDIE**

You can call me Birdie. Nice to meet you Sallie.

**CAROLYN**

And this is Elise Ellis, Lyda Belle, and Miss. Lizzie Black.

**ELISE**

Nice to meet you Sallie.

**LYDA**

Hello.

**MISS. LIZZIE**

Can we help you with something Mrs. Bank?

**SALLIE**

No —

**MISS. LIZZIE**

What are you here to do?

**SALLIE**

I was jus' ... well, Mizz. Taylor —

**CAROLYN**

She is my guest, Lizzie. Sallie is going to join us for cup of tea. I wanted to talk to her about doing some sewing with the Red Cross group.

**ELISE**

Oh, you sew. How wonderful.

**MISS. LIZZIE**

Well of course she sews. She's the help. What good would she be if she couldn't operate a sewing machine?

**LYDA**

*(to MISS. LIZZIE)* I do not think that comment was appropriate Lizzie. This is Carolyn's guest.

**MISS. LIZZIE**

I like to keep the colored where they belong — in the kitchen and on the farm.

**SALLIE**

*(to CAROLYN.)* I'm sorry, Ma'am. I should go —

**CAROLYN**

No, you will stay and have a cup of tea. It is Miss Black that will leave. *(to MISS. LIZZIE.)* You will not speak that way to my guests. I suggest you leave now and take your invitation with you. It seems I was mistaken earlier, I will be busy next Tuesday night.

**MISS. LIZZIE**

Well —



**CAROLYN**

Good day Miss. Black. Please shut the door behind you on your way out.

**MISS. LIZZIE**

Well, I can assure you Carolyn, my friends and I will not be able to attend your Red Star meeting this next Wednesday. It seems those poor little animals will just have to do without my contribution.

**CAROLYN**

*(calmly)* Get out of my house.

*MISS. LIZZIE slams down her teacup, stands up and grabs her invitation off the table. She stomps to the kitchen and leaves the house, slamming the door behind her. When Carolyn hears the door slam she bursts out laughing.*

**CAROLYN**

*(to Sallie)* Please do not worry about her, Sallie. We've been trying to get rid of her all afternoon!

**MRS. BIRDIE**

You have to understand, Sallie, Miss. Lizzie is the worst kind of woman — one that no one likes! *(the women laugh.)*

**CAROLYN**

Now, let me pour you some nice hot tea.

**SALLIE**

Thank you so much, Ma'am.

**LYDA**

Sallie, how long have you been sewing?

**SALLIE**

Well, nearly all my life. My boys are growin' out their clothes so fast I have to keep up.

**MRS. BIRDIE**

You are exactly what we need! We have been trying to sew some shirts for the Red Cross, but other than Carolyn, we are fairly mediocre for the most part.

**SALLIE**

*(to Carolyn)* Have you been sewin' all your life?

**LYDA**

Carolyn is a very talented seamstress, Sallie. She went to sewing school in Cincinnati.

**SALLIE**

Woo. Is that so? I bet you make some real nice clothes, Mizz. Carrie.

**CAROLYN**

Sallie, call me Carrie, please. *(to everyone)* And let's have some of this chocolate cake! It looks too delightful to not be eaten. Would anyone like more tea as well? *(CAROLYN starts for the door. Lyda follows her.)*

**ELISE**

Yes, please. *(calling after her)* Carolyn, what do think about Tuesday with the Red Cross?

**CAROLYN**

*(in the kitchen)* Yes, fine! *(when she enters the kitchen she begins to look for plates and forks. Lyda comes in through the door immediately.)*

**LYDA**

Here, let me help. *(she takes the cake from CAROLYN'S hands.)* I hope you're happy now that you have started being rude to Miss Lizzie.

**CAROLYN**

Oh, Lyda. Everyone cares too much about what everyone else thinks. If she really cared she would have the decency to not act like a witch to anyone that is the slightest bit different.

**LYDA**

I know that's how you feel, Carolyn. And I'm sure she does too, since you turned down her invitation.

**CAROLYN**

Her party is on the river bank — who can stop us from going?

**LYDA**

I knew you wouldn't miss a party.

**CAROLYN**

*(She stops cutting the cake)* Lyda, doesn't this town seem like a strange place this summer?

**LYDA**

Meaning what?

**CAROLYN**

I'm not sure. I just have a strange feeling inside ... like something is going to happen.

**LYDA**

Nothing's going to happen, this is Augusta, Carrie.

**CAROLYN**

But how do you know? /It could happen. I just don't know what it is.

**LYDA**

Well, of course I don't know. /This doesn't have anything to do with your illness does it?

**CAROLYN**

Please, quit mentioning my illness. *(turning away)* It's this weather. When it gets pretty again I will feel better.

**LYDA**

Are you sure? /It might be something else Carrie.

**CAROLYN**

*(She leans against the table)* It's so oppressive. /When it stops raining I'll feel better.

**LYDA**

Why do you act as though you aren't ill? *(sternly)* Carolyn, you have Encephalitis, you have to be careful! *(softly, comforting her)* You just love the city too much. You aren't at home in Augusta. *(She goes to her side to help support her)* Let's go to Cincinnati next week for a nice, relaxing visit. Wouldn't that be lovely. We can ride the train up and go shopping. We could walk though Eden Park — Carolyn!

**CAROLYN**

I'm not at home anywhere, Lyda.

*CAROLYN passes out on the floor. LYDA goes to her side and freezes in a kneeling position. The women in the parlor also freeze. Next, CAROLYN raises and delivers the following monologue in a trance, slowly walking through the kitchen and parlor, talking to the women who do not respond, representing the isolation she feels in Augusta. By the end of the monologue CAROLYN is getting into the her bed, showing signs of drowsiness, making her way to the bed.*

**CAROLYN**

I'm not at home anywhere, Lyda. It's not a matter of place, it's getting up in the morning and living through the day. Pulling off the covers and facing the rain. I despise it. I wake up in the morning to stare at my breakfast, wishing it would slide down my lap to the floor ... or slap me across the face ... or stab me in the heart. But it sits, motionless, and I watch eggs until they become the moon. I sleep walk through the visits and the parties and dream of the moon. I buy hats and

new skirts and dress for the moon. And finally, after the day's charade, I take down my hair, and invite him under the sheets. I wrap my legs around the trees and make love to the moon, watching him moan through the window. That is my complete happiness. But in the morning, when the sun comes up and he's gone, I die. All the days line up, tiny red Xs, filling my heart with a thousand little deaths. A thousand spiders in a jar waiting to take my place, to spin a web around the moon and devour it whole. Break the jar Lyda, so they will devour me instead. Let them devour me so I can sleep and never wake up.

*She falls asleep on the bed. Softly music begins to play, gradually growing to a crescendo. A light from the window follows the same cue, growing to unnatural brightness. At the maximum point of the crescendo, CAROLYN wakes.*

**BLACKOUT**

## NIGHTMARE #1

*All lights on the stage are off. A few seconds pass. The sound of crickets can be heard in the distance. A window is barely lit from the light of the moon. Suddenly out of the darkness, we hear CAROLYN struggling. Her sleep is getting more fitful with vocal sounds until dialog breaks the silence.*

**CAROLYN**

Lyda! Lyda! Help me. Lyda please! They're all over the bed — all over me! Please! Ah! Get Off!

*LYDA rushes into the room and fumbles with the lamp on the small desk stage left. As the lamp lights, the lights gradually come up stage left on a small bed angled toward the audience. Carolyn is flailing about in the covers with her eyes closed.*

**CAROLYN**

Spiders — They're still on me.

**LYDA**

Carolyn! What is it? Carolyn! Stop it. Calm down, Honey. You're having a nightmare. Wake up, Carolyn, it's Lyda. Wake up. You're having a nightmare, Dear. Come on now. Easy open.

**CAROLYN**

Of Lyda! Thank God. Oh, Lyda! *(Carolyn is exhausted from flailing about. She embraces Lyda when she recognizes her friend.)*

**LYDA**

What's wrong with you? You must be having a terrible dream.

**CAROLYN**

*(ruffling the covers)* Do you see any in here? Help me look—

**LYDA**

Any what? /What, in where?

**CAROLYN**

Oh god /I can still feel them.

**LYDA**

Calm down / Shh.

**CAROLYN**

But I can feel them on my leg /What?

**LYDA**

What are you looking for? /I'm confused

**CAROLYN**

I'm sorry.

**LYDA**

No I'm sorry. *(let's out an exhausted chuckle)* You wake up from a nightmare babbling and I'm asking you all the questions. Shh. I'm just confused that's all. Let's try this again — what are you looking for in the sheets, Sweetheart?

**CAROLYN**

Spiders. I could have sworn they were crawling all over me ... everywhere, in my hair and eyes and inside the pillow sham. *(moaning in pain)* I'm not getting any better Lyda.

**LYDA**

There's nothing anywhere. Shh. Calm down.

**CAROLYN**

Can I tell you my dream Lyda? *(frantic)* Before I forget it. please.

**LYDA**

Lie back down first. Calm. Calm.

**CAROLYN**

*(still riled up)* The two of us were at the picture show, in Cincinnati — I was dressed exactly like the other night. Oh what a beau-

tiful black dress I wore with my hat, and my best pearl set, beaming, freshly polished. It was magnificent, but in my dream I had stone instead of pearls. Little small round tan stones around my neck and it grew heavier and heavier as the show progressed. Mary Pickford was Stella Maris and the film was so wonderful — but there was this scene between the villain and Mary's character, Unity, but just when she fired the gun, I felt something going up my leg. Crawling! Tiny legs crawling up my skirt! It was awful — so fast, I was wiggling and screaming — *(defensively)* I couldn't help it. It was skittering up and down my leg. I couldn't stay seated! I leapt up and everyone had their eyes on me, of course, and the music stopped. Faded into a light gray ghost. I could feel it Lyda, all their eyes on me and then the spider — still in my dress *(she shudders)* in my pantaloons *(starts whispering)* I could feel it Lyda. Trying to get inside of my privates, it's long legs moving, probing. *(She flails on the bed at the thought.)*

**LYDA**

Alright, Dear. It's just a dream /I'm sure there isn't a single spider in that sheet ...

**CAROLYN**

But that's not it / You promised to listen.

**LYDA**

I've checked your bed Carolyn /let's not be crazy —

**CAROLYN**

*(pause)* What did you just say? Is that it? You think I'm crazy? *(plowing through the story)* Everyone in the audience started yelling at me! People were disgusted when I stood up and screamed. The film started to melt on the screen, and then I was running down aisles trying to get away from everyone — all the eyes and spiders. I went out into the street, past the city shops and strollers, and I ran until I reached the Ohio River and then at the dock I felt a tug on my neck — the stone pearls were growing heavier and heavier, pulling me into the water. I was sinking Lyda. I was sinking into nothingness. The moon was so bright. *(pause)* Lyda, please tell me I'm not insane. *(She moans in pain)*

**LYDA**

They've gone to call the doctor, Carolyn. It's going to be just fine.



**CAROLYN**

Thank you for trying to understand, Lyda.  
Thank you. *(she collapses on the bed)* Please  
read me something while we wait to keep  
my mind off of the pain.

**LYDA**

What would you like to hear sweetheart?

**CAROLYN**

*The Noise In The Room*, the poem in my little  
book. Read to me Lyda, it brings me com-  
fort.

**LYDA**

Okay, Okay dear. I'm getting it. *(Lyda re-  
trieves her book and finds the correct page.  
She plays with CAROLYN's hair as she reads  
the poem.)*

**The Noise in the Room**

The dear, little, queer little noise you hear,  
when you lie down to sleep in the twilight  
my dear.  
Is the quaint, little, faint little step of a dream,  
as she climbs to your bed in the silent  
moon beam.  
The gray, little, gay, little shadow you see,  
when first you look up in the morning to  
me.  
I'm the smart little, sweet little, dream on her  
way, to hear hymns in the clouds for the  
rest of the day.

**CAROLYN**

Isn't it beautiful, Lyda. I love the part about  
the moonbeam and the dream. I want to  
have wonderful dreams again, Lyda.

**LYDA**

I know, Love. You will. If you could have  
any dream in the world what would it be?

**CAROLYN**

I don't want to hurt anymore. That's what I  
want. I want to be able to sleep on the moon.  
I would stand out on the dock and the moon  
would come to me and he would kiss me on  
the lips. And it would be like God stepping  
down to hold my hand. I would be able to  
die then, Lyda. I would be able to die if I  
kissed the moon because I would know that  
God wanted me in heaven — I would already  
be there.

**LYDA**

Shh. Don't talk about that. You aren't going  
to die. You're going to dream again.

**CAROLYN**

Recite me a Whitman. Please, Lyda.

**LYDA**

What would you like to hear darling?  
*Seadrift?*

**CAROLYN**

Yes, *Seadrift*. A wonderful *Seadrift*.

*As LYDA recites the following poem, the im-  
age of the a sea and the moon should be pro-  
jected on a wall of the room. This image  
should not be clear, but painfully static to rep-  
resent CAROLYN's inability to have beautiful  
thoughts.*

**LYDA**

Soothe! soothe! soothe!  
Close on its wave soothes the wave behind,  
And again another behind embracing and lap-  
ping, every one close,  
But my love soothes not me, not me.

Low hangs the moon, it rose late,  
It is lagging — O, I think it is heavy with  
love, with love.

O, madly the sea pushes upon the land,  
With love, with love.

O, night! Do I not see my love fluttering out  
among the breakers?  
What is that little black thing I see there in  
the white?

Loud! loud! loud!  
Loud I call you, my love!  
High and clear I shoot my voice over the  
waves,  
Surely you must know who I am, my love.

Low-hanging moon!  
What is that dusky spot in your brown yel-  
low?  
O, it is the shape, the shape of my mate  
O, moon do not keep her from me any longer

O, darkness! O, in vain!  
O, I am very sick and sorrowful.  
O, brown halo in the sky near the moon,  
drooping upon the sea!  
O, troubled reflection in the sea!  
O, throat! O, throbbing heart!  
And I singing uselessly, uselessly all the night.

O, past! O, happy life! O, songs of joy!  
In the air, in the woods, over fields,  
Loved! Loved! Loved! Loved! Loved!  
But my mate no more, no more with me!  
We two together no more.

**DOCTOR**

*(A knock on CAROLYN's bedroom door is  
heard).* Carolyn? Carolyn! May I come in?

**LYDA**

Please come in, Doctor.

**DOCTOR**

*(entering)* Well, Hello Miss. Byar. How are  
you?

**LYDA**

I'm fine, thank you.

**DOCTOR**

*(moving to the bed)* Carolyn — how are you?  
I'm sorry I couldn't come earlier.

**LYDA**

I'll leave you alone, Doctor. I'll be in the par-  
lor if you need anything.

**CAROLYN**

*(straining to sit up)* Please don't feel like you  
have to stay, Lyda. Go home and get some  
rest.

**LYDA**

I don't mind taking care of you, it's the least  
I can do. *(to the DOCTOR)* Let me know if  
you need anything. *(LYDA exits.)*

**DOCTOR**

What's wrong this time? Are you having one  
of your spells?

**CAROLYN**

I'm in terrible pain. It's one of the worst  
nights. I can't stay asleep — either the night-  
mares or the pain.

**DOCTOR**

*(pulling out his medical bag)* Let's see where  
your pulse is ...

As he gets out his stethoscope CAROLYN  
raises up out of bed and grabs onto his shirt,  
pulling him close to her face.

**DOCTOR**

Carolyn, please —

**CAROLYN**

Please don't do this to me —

**DOCTOR.**

I can't help you, Carolyn. Not this time.

**CAROLYN**

Do you just expect me to suffer here all night in pain?

**DOCTOR**

Well, of course not, I was going to crush up something for you to take to get you through the night —

**CAROLYN**

Please, just give me a shot. Please.

**DOCTOR**

Carolyn, I —

**CAROLYN**

Shh. You don't have to say anything. Just get out the needle and we'll figure everything else out.

**DOCTOR**

You can take too much of this, Carolyn. It's only for emergencies, I've told you that several times. I'm asking you to respect me right now.

**CAROLYN** pulls the **DOCTOR** close to her and kisses him on the mouth. It is visible that he tries to pull away and then gives in to the kiss. As they continue to kiss she opens his bag and dumps it out on the floor. The sound of bottles falling onto the floor can be heard. The Doctor finally pulls away and searches the bed for a needle. When he finds the right one, he takes **CAROLYN's** arm, kisses it, and then injects her with opiate. After she is injected she falls back into bed, suddenly relaxed.

**CAROLYN**

Thank you. Thank you so much.

**DOCTOR**

Carolyn, this can't go on. I don't know what it will do to you. You have to stop this. *(he pushes her away)*

**CAROLYN**

*(groggily)* I can't stop!

**DOCTOR**

Listen to me! *(pushing her away)* You have to stop this! You might be killing yourself! Don't you realize that? You might go to sleep one night and never wake up.

**CAROLYN**

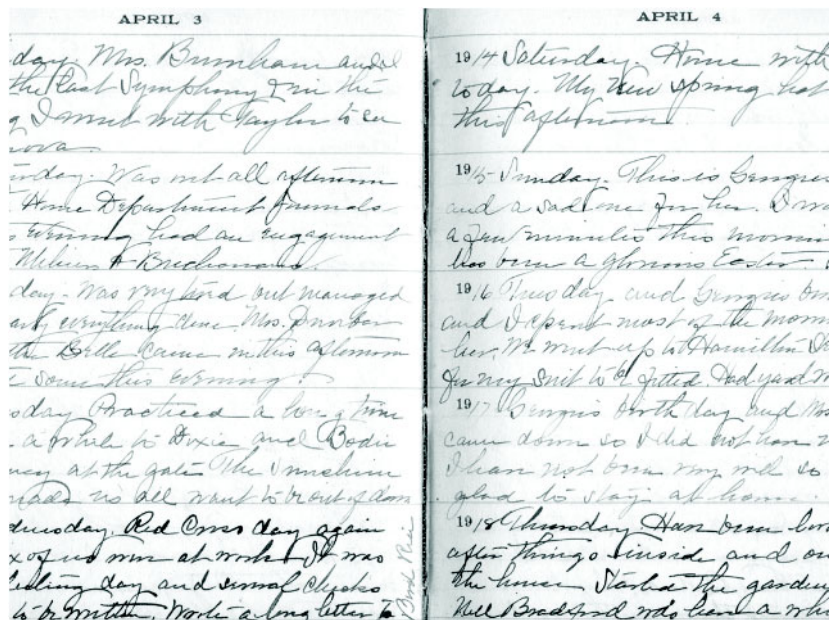
*(she slowly close her eyes)* I don't care if I die, Doctor.

**DOCTOR**

*(The light begins to fade as the DOCTOR begins to shake CAROLYN.)*  
Wake up, Carolyn! Wake up!

**BLACKOUT****THE END**

**(the complete play, Acts One and Two plus Notes, is available in the on-line version of the journal at [www.uky.edu/Kaleidoscope/fall2004](http://www.uky.edu/Kaleidoscope/fall2004).)**



Pages from Carolyn Taylor's journal.



I am about to graduate in May, 2004 with a B.A. in English. This poetry represents the culmination of my work as a Gaines Fellow. Writing over the years has become a larger and more legitimate part of my life, and I am very grateful to the Gaines Center for providing a venue for this type of creative work. These poems were written in the fall of 2003 over a fairly short period of time, and are part of a larger group of poems, which I hope to work into a book-length collection this summer, perhaps for some type of publication. This group of poems is a narrative about loss, abandonment, and how the narrator copes with this to become a stronger, self-aware person. All three of my thesis committee members, Professors Gurney Norman, Randall Roorda, and Jane Vance, proved to be extremely supportive and enthusiastic mentors, and their advice was indispensable to me. After graduating, I plan to work on writing and submitting my work to various journals, along with finding an MFA program to attend in the fall of 2005.



## Mentor:

Jane Gentry Vance, Ph.D.

Professor, Department of English and in the Honors Program

Melanie Fee's "A Letter Would Have Been Fine," a series of short poems, is actually one long poem in which the whole is greater than the sum of the parts. This collection both implies a narrative and explores honestly the deep and shifting feelings of the protagonist (the "I" of the poems), who has been left holding the shreds of a broken relationship. The narrator, through images that place us in her skin, makes us feel what she feels, thus compelling us to follow her into the depths of her pain and, finally, to emerge with her, at the end of the work, into new coherences in her life, the beginnings of healing.

The narrator's voice in the poems, non-rhetorical and human, convinces us that it comes from a real person. The integrity and strength of this voice, along with the realness of the character's suffering and her emergence from it, are the remarkable accomplishments of this poet's work. The strong emotional suspense it creates is akin to that evoked by a good short story.

The poet does not simply describe how her protagonist feels or tell us explicitly what feeling her story should elicit from us. Instead, these compressed, intense poems, in which every word is necessary and none is wasted, dramatize the character's states of mind and body. This creates in the reader a strong sense of her emotions and experiences. This achievement, and Melanie's dramatic, energetic use of language, partakes of the essence of poetry.

## A Letter Would Have Been Fine

are we in a decline  
she said  
dangling feet

into too blue water  
sometimes i want to  
go back don't you  
know

what i mean  
he tells her that  
finally

things have direction  
they are both moving  
forward

maybe with their faces  
turned  
away

but no she gets a  
feeling looking into  
the tall trees

crossed by powerlines  
and knows  
something is missing

9.17

i see eighteen  
people  
with your silhouette  
every day

and this is a  
lot of gasps  
and startled breaths  
to keep up with i have

an idea of you maybe  
just ripping the rest of  
your limbs  
off of my body

so that i may stop  
this perpetual  
false recognition  
that by the end of the day

leaves  
me  
limp  
do i dare

do i dare  
i can't connect  
with these  
shadows  
you send  
to torment me  
nor  
get any satisfaction  
from knowing  
you are not here you  
are not  
here

### 9.18

your phone is cutting  
out cutting  
me as you are sitting  
outside of  
the hospital  
you won't tell me  
why you're there or  
what you've been doing for  
these weeks of my nonexistence  
to you

i guess it's the monitors  
heart machines keeping  
people alive all pulsing  
together in a mechanical way that  
causes the  
interference  
when i keep asking questions  
and there's a space where i know  
you are talking  
saying wonderful things i'm  
sure but i just can't hear them  
i only am tuned back in for you  
to say  
i'm here  
you of all things  
are not here  
maybe you're making these silences yourself to  
save  
thoughts or see me react  
i can't react and tell  
you nothing

nothing about my  
looking around the house  
thinking you'll eventually turn  
up a lost scarf something exotic  
and i tell nothing about  
keeping my air conditioner  
rattling away all night  
drowning out voices and noises both  
inside

and out of my head  
i certainly can't bring up  
how i drove  
out of town  
into the coolness to the  
farm where you lived this summer  
one night late music too loud  
and what did i expect  
a spectre of your previous  
self jumping in front  
of my car saying  
no stop you've missed the  
turn and i've been waiting for you so  
long my plans were to skip work  
and make love to you  
all morning

no  
i finally had to turn back  
out by the interstate  
watch degrees rise  
as i head back into more  
concrete  
chiding myself  
maybe i just don't have the right senses  
you're really  
all around me  
burying your face in my hair  
looking  
into me  
maybe if i just try harder  
you will appear  
but now you're saying  
you have to go  
and i still don't know  
why  
why you're even there  
why i feel

like you're around  
every corner  
you worry too much you  
write i can hear the  
tone and it's much too  
lighthearted  
for my taste

### 9.19

so i try to correspond  
communicate  
reply  
and you say  
a letter would  
have been fine  
and i am confused  
because this is  
what i thought i gave you  
but  
no  
you say  
that was a poem  
and i am frightened  
by this unintentional poem  
like maybe  
i've given away  
more than i meant to  
or that this is  
the only way  
i think anymore  
or maybe you're  
fucking with my head  
because other than  
that you've told me  
nothing  
i don't want to  
ask these questions again  
it gives you power  
i don't know  
why i kid myself  
like maybe i'm putting  
a gauze curtain  
between me and the  
fact of your power  
now it's been  
another week

with nothing  
 and i'm looking  
 for excuses  
 and swatting them  
 away as they come  
 fluttering round  
 because really  
 you should be giving me  
 excuses  
 they should  
 be pouring out of  
 you like wine  
 turning my head  
 making my face redden  
 you know  
 you could do it  
 it would be so easy  
 and i would write poems  
 that i knew were poems  
 to you  
 if you'd let me  
 but somehow  
 i know  
 you'd think they were letters

#### 9.20

some contour of  
 cheekbone  
 is mesmerizing me  
 a dance of  
 flesh over  
 bone  
 then  
 a second glance  
 and all falls away  
 crumbling and constructing  
 itself into the un-you-ness  
 that i find  
 unbearable

(why am i mad at  
 all of these people  
 for not being you  
 it makes more sense  
 to concentrate my anger  
 tunnel funnel it all  
 into you so maybe

you'll feel a brush of it  
 all the way over there  
 and think some small wind  
 has kissed your cheek  
 because that's what my  
 anger dissolves into  
 when i think about your  
 cheek slight overlapping  
 of your front teeth  
 any part of you  
 for that matter)

does it matter  
 i wonder if you know  
 how finally i had  
 to put your soap  
 away  
 out of my shower  
 because every time  
 stepping in  
 your scent  
 was making  
 my insides blink  
 i would take it in my  
 hands marvel at the  
 fact that yes  
 your damp self stood  
 in this very spot  
 yes you were in this house  
 many hours

sometimes  
 i look  
 for some message you might  
 have  
 left lying around  
 it makes me  
 angry  
 that there is nothing  
 nothing of mine  
 in your life  
 nothing to inspect  
 inhale  
 handle  
 for hope of grabbing  
 some small essence  
 left behind

#### 9.21

i am letting the  
 phone ring as we  
 sit at my kitchen  
 table eating cheap  
 chinese food for  
 breakfast on a  
 sunday morning

we listen to the  
 message together  
 on speakerphone  
 and see what he  
 has to say something  
 about

are you okay  
 and a troubling  
 dream

i don't know  
 whether to cry  
 or smile but we  
 let it drop you  
 said there's no  
 point in jealousy  
 because if there's a  
 reason to be jealous  
 the woman is already  
 gone at the time this  
 seemed  
 enlightened  
 but now i feel like  
 it shows your  
 unwillingness  
 to fight for things

i'd like to think  
 that you'd have  
 fought to keep me  
 or at least put  
 in an appearance  
 at our final moment  
 but you haven't even  
 let me know that  
 much if our final  
 moment has even happened

i talked about how  
 conversational how  
 fucking conversational  
 that table was  
 you and me sitting  
 there like a happy  
 farmhouse couple  
 having an argument  
 about whether fitzgerald  
 really counts as an american  
 novelist since he was an  
 expatriate

i remember you asking me  
 about virginia woolf the  
 night we met i could  
 barely hear you  
 above the noise but  
 you were so impressed  
 that i actually liked  
 literature that i guess  
 you didn't care  
 what i answered

i try to have  
 talks with the  
 book you've left here  
 on my kitchen table  
 it tells me little  
 inside is a folded  
 paper  
     art in joyce  
     joyce—  
     woolf—  
 very enlightening  
 i'm beginning to  
 think you are  
 really buried in  
 some kind of academic  
 landslide never to be  
 seen again and i can  
 see the headlines  
 with a grim smile

## 10.01

i'd like to think  
 that soon  
 i could walk down  
 the street  
     you'd pass  
 and i wouldn't even see you  
 not the kind of  
 pretending  
 to not see you  
 that i might try  
 to see how you'd react  
 but really showing  
 how gone you are  
 from my consciousness  
 that the images  
 that make up you  
 don't coincide  
 in my eye  
 anymore

i want to not  
 see you  
 in every  
 tall lanky  
 male  
 with defined cheekbones why  
 can't i get  
 your damned bone structure  
 out of my head  
 i see you  
 from all angles  
 know the small furrow  
 of your sleeping brow

that  
     i think  
 is love  
 or something  
     just as profound  
 when your face eyes hands  
 are burnt  
 into my seeing  
 waking self  
 so much

that weeks  
 plus months  
 are not erasing  
 anything

## 10.29

i climb  
 up and down  
 the branches  
 on my wallpaper  
 every night  
 to get  
 a better perspective  
     see  
     a little farther  
 i just know  
 that one of these nights  
 upon reaching the  
 top  
 i'll see your far off  
 form  
 focusing itself  
 into view

you'll be tired  
 and dirty  
 and i won't  
 care that i  
 did not hear from  
 you the entire  
 month of september  
 because it's getting  
 on winter now  
 and it's cold in here

you'll have  
 a story  
 of where you've been  
 for these stacks  
 of days  
 and i'll believe it

you'll use the key  
 that you still haven't  
 returned to me  
 and



come  
right  
in

you'll say  
    i was keepin it  
    all this time  
    for a reason  
and i'll smile  
and hate myself  
for not being able  
to resist

the last time  
i talked to you  
i pretended nothing  
was wrong  
and even asked you  
if you wanted me to visit  
knowing i would  
make that trip right  
then you just  
say  
the word  
you said  
    no you said  
you were going  
to sleep  
and i had to wonder

if she was there right  
then if she was hearing  
me plead if she was  
the one to watch your  
sleeping face  
that night

#### 11.03

maybe i'm treading on the  
heels  
of a goddess  
but when i look in the mirror  
all i see are fragments

head arms wrists  
a person perhaps  
but my body can't remember  
decide

whether to take the form  
of a desperate lover  
or if i should be wading  
through the wax of my  
past pulling out what i need  
melting the rest

maybe i am this type of  
mental driftwood to you  
balance me on this notion  
of yours that maybe you'll wash me away  
or either we'll get together  
and have a beer sometime

it's the in between  
    the memory of you  
long flat wrists  
that makes me think  
all of this was inevitable  
    the weight of my hands  
    lifting open your eyelids  
to see the light

#### 11.04

if i could only get rid  
of this skin of mine  
forget touch  
altogether  
not notice  
the particular electricity  
of a hand or wrist  
on the back of my neck  
then no one  
would have power over me make me  
compare  
every meeting of flesh with flesh  
to how ours in the same vicinity  
for so long finally came together in  
something like a poem

#### 11.14

i slip through cracks  
in vents at night  
and try  
rearranging myself  
again  
to see if this time  
i'll come out  
mad not just with  
this thick quiet  
that's been hanging around  
piled with the books  
on my table

somewhere in these  
dark spaces  
you and i  
are dancing  
sitting and  
not needing  
the conventions  
of chairs and light  
to sustain us

i see each thread  
    in cloth  
and the different  
tiny intersections  
are beautiful

i think of us  
like this  
sliding down the lampshade  
just trying  
to avoid  
the flame of the candle below

#### 11.30

are you  
even  
still alive?

you become  
more my ghost  
every day



it's not like  
 you're haunting me  
     no  
 you're some kind of  
 loner spirit  
 hanging round  
 my empty wine bottles  
 and  
 bellowing your  
 silence  
 into my night

i don't  
 wish  
 your absence  
 just your presence  
 in a different form

i try to lure  
 you  
 into my bedroom  
 but it never works

the clock on the wall  
 has stopped  
 for awhile now  
 and i've gotten  
 used to 3 o'clock  
 all the time  
 i'd like to believe  
 that none of  
 this time  
 is passing

that it isn't  
 becoming harder  
 to recall  
 why it was  
 that you  
 were my ideal  
 of pain  
 of everything

i want still  
 to feel you like being ripped  
 out of my own body

and poured  
 into a wineglass  
 to swim with you  
 but  
 it's wearing off now  
 a shadow dream  
 growing more obscure  
 and grey  
 as days pile

#### 12.01

what are you  
 the dark of an open door  
 at night  
 or looking through blinds  
 into an empty room  
 i know not what you  
 are or were  
 to me her or anyone  
 i assume you're still  
 flowing  
 through your life

sometimes filling  
 completely  
 then emptying  
 some vessel  
 like me

i dream now of  
 empty benches  
 cellophane  
 drifting along the  
 inside of my mind

and you  
 much like this  
 here  
 and then not here  
 almost  
 camera flash fast

but an imprint  
 just the same  
 i still look for you  
 not in you anymore

but in myself  
 despite this  
 poured-out feeling

#### 12.05

maybe you've found that place  
 on me  
 the skin thinner  
 tender  
 the blue vein showing through a little more  
 i believed in my own strength  
 built it up  
     surrounded myself  
         in thorns  
 but now i sit  
     i do nothing do nothing do nothing  
     shake from exhaustion days blur nights blur  
     into siren scream  
     my skin shedding itself  
     all over falling around me like  
 bells  
 but you i am still finally in the  
     hollow of your collarbone  
 the light shines retreats  
     and shines again

#### 12.06

if we could sometime return  
     to books and arguments  
     to the farmhouse where we  
     never wrote and lived  
 would it be a protection  
     against the chance of  
     never feeling like this again  
 like i'm wrapped down to  
 the core in some  
 thick amber glass air bubbles  
 getting through but not much else

i didn't go out today but  
 rather sat with a blanket on my  
 legs and imagined your eyes  
 i thought of stairs not climbed and  
 glances not averted and smiles  
 not forced steps not forced everything forced  
 now

thinking i'd  
probably be smoking cigarettes drinking  
red wine every day instead of  
trying to  
breathe my life in through a straw  
or suck some part of you back  
into my lungs like you've  
left your scent in the next room

if we could sometime  
return

would i change back into  
flesh  
wrapping around  
you again

#### 1.01

i like it best  
when we're sitting up  
arms legs wrapping a full embrace  
kind of like we're talking things out  
and in the light in the dimness  
the red or silver or moth  
colored threads that connect  
our eyes tighten and stretch  
drawing us up & i don't remember  
you moving me from lying  
down  
but i just followed  
your eyes  
and i know there's coins in the  
bed falling out of your pockets  
but they'll be warmed  
by my back or thighs and become  
small flat fingertips  
letting me know we are  
we are both two here

#### 1.02

in my memory-visions of you  
you get blurred  
i see you  
drinking red bottles of luna di luna  
and sitting  
smoking on the porch while  
i wait inside in the bed  
you've been washed over  
with a clear golden wax  
stopped  
so now i can't remember how  
we switched sides in bed  
or you walking holding my hand in the  
car so i could just drive drunk with one  
hand instead of two  
why do all of these images exist  
in half darkness shadow  
flicker so hard to call up  
in the daylight i'm tracking thru  
the rain hoping to leave a clear enough path  
for you to find me or write you a love note  
in raindrops

#### 1.03

you laughed while your heart  
was still pounding  
(i could feel it pulsing into me)  
and said it's been long  
since i'm waking up alone  
this morning i'm confused by  
my nakedness  
like everything that  
happened in my vision  
impaired state became  
myth and (running thru the  
house to turn on the  
furnace) i did not see  
my old lover's face  
somewhere over  
your left shoulder saying  
rearranged  
and something about  
a girl in a different light  
(what kind of light i see you in

is reddish and fading  
which is flattering  
but not enough to change my mind)

#### 1.04

i have visions of  
small couches  
and squeezing onto them  
because it's more acceptable than lying on the  
bed  
to not mind that closeness  
to feel breath  
in my ribs  
to breathe breath

but now  
i thrash in your bed at night  
writhe when you come near  
and suffocate on your air  
i run out of the house into the  
cold rain at 5 am  
on the road thinking about the  
people who are just now getting up

i call when i'm finally home  
to let you know i'm okay  
which is more ridiculous than anything  
my happiness translated into  
yes i'm in my own house  
garbage truck slamming  
loud echoes into the night/morning

#### 1.10

if i could send you a picture  
it would be  
i get undressed with  
the window open so i can  
feel a breeze  
while i slip  
into water trying to wash  
everyone off of my skin  
i try to write poems to  
you in the shower  
i get weak in my knees  
and have to stop

when i hear a loud crash thru  
 the water i hope it's you  
 finally gone crazy tearing  
 thru the screen of my bathroom window  
 maybe you know i was gone all night again  
 i can't sleep there anymore  
 i wake from the water and  
 know this  
 but you haven't appeared  
 should i keep torturing  
 try to channel you thru some  
 gravelly tattooed songs

(you were reading ulysses  
 that summer and  
 when you left it  
 by the bed  
 i thought how many books  
 we'd have lying around in our  
 house not realizing the seriousness  
 of this thought told you anyway  
 and you didn't even look at the clock  
 but agreed)

i feel dented  
 like something  
 vital is rusting me away  
 from inside

mourning the loss  
 of a hand or edge of hip  
 gone to your grasp

### 1.30

i'm no longer relying  
 on my legs to hold me up  
 more like a dependence  
 on the sidewalk  
 to unbuckling  
 catch my  
 drifting along as if i'd been  
 walking this stretch all my life  
 somewhere  
 in the corner of my mind

i see my hair spread over  
 the spaces between your  
 fingers until  
 we are so entangled  
 now like a reliance  
 a promise not to snap my neck  
 i stop holding up my head  
 waiting to see if it will fall

### 2.01

if you were still around  
 i don't think i'd be  
 worrying  
 that i'm gaining weight  
 that i might just chop all of my hair or  
 burn it off  
 like the burn on my arm

i wake up with tiny cuts on  
 my hands and i don't know  
 what i've been doing in my  
 sleep cutting myself on  
 bad dreams of you or roaming  
 the streets sifting through the  
 fur and broken glass at the  
 edges of the road looking for  
 the note i know you've sent me  
 damn it you said you were coming and you  
 didn't  
 even call

i kept myself busy the whole time  
 sleeping in other people's beds and  
 looking out the window  
 with every car door slam

i'm sorry i'm too busy sleeping all day  
 to see you

my hands won't get warm  
 i sit at stoplights reading books  
 i watch the people in cars talking  
 whenever i'm in the car with someone  
 i'm always being driven like i can't handle  
 being responsible for both

you used to pretend you were scared  
 of my driving which made me mad

but god  
 i liked the looks of your hands on my  
 steering wheel

### 2.05

my version of the story  
 is that the corduroy  
 was not rough on your elbows  
 that you're just not  
 here because you've hopped  
 a train to go around  
 the country collecting  
 all different kinds of wood  
 build us a cabin  
 that beds  
 are not cold  
 are not full of pieces of skin  
 touches  
 that are not you  
 the aloe plant did not die  
 and moreover i just  
 found a chair at the  
 vintage store so nevermind  
 bringing over the plaid one  
 i'll get the mattresses moved  
 somehow truckbed  
 full of junebugs  
 and no matter the bed is an island  
 anyway  
 back beside the grass road  
 dodging the mudhole  
 feeling the sound of cold and the  
 silence eating up my grief

**2.18**

i don't check my mail  
     for days  
 and whisper sick breaths  
     into the seam of the pillow  
 transition      standing sitting talking  
                     oblivion  
 (i am) turning into wisps of  
     pale green fog pulsing and  
             receding around the  
 shining eyes and candleflames  
             of a former self  
     make me vapor and rattle my  
             wineglasses  
 all filled      at different levels  
     just waiting  
                     to find their own voices

**2.26**

if i could hover  
     in the small of your  
             back  
 curve  
     with your spine flexing  
     and moving  
     i could be a presence  
         that you couldn't  
     even detect  
 just ride along the  
     back of your consciousness  
 collecting pieces of your  
             life  
 to turn over in my hands  
 at night  
     watching them  
                     lose their glow

**2.28**

it's the initial plunge  
     like a separation from the self  
 that is the most painful  
     even knowing  
         cold doesn't seep in  
         heat just dissipates

and the smell of flames  
     only warms back to the  
     idea of july  
         and leaves an expanse  
     of crushed leaves & pieces of  
         cold  
     to navigate

**3.02**

my right hand is  
 feeling my face trying  
 to feel neck and shoulders as  
 you touched them  
 it occurs  
 to me that i've been so  
 aware of your cheekbones  
 or whatever it is  
 about your face that i have forgotten  
 my own jaw chin and skin  
 covering it more thinly now  
 so i feel like i might just  
 burst open at any moment

time for a breath  
 i've been breathing all  
 along now without you sometimes  
 too hard sometimes guilty

your face appears on the wall  
 over the shoulder the neck of a  
 bottle of the one dancing making  
 me feel  
 like a person again

he said he's been painting a lot  
 of bulls a lot of powerplants maybe  
 that pales to your knowledge of  
 aramaic

i'm figuring out that like anyone  
 you did your seeing with your eyes  
 what could i expect

i'm sticking the coathanger  
 down the drain and coming out  
 with nothing and i'm getting

used to this so maybe it stays clogged  
 this time letting nothing by at all

my mind moves around the words  
 we are at an impass  
 and now i know  
 there is never really  
 an impass  
 just you  
 in whatever city you're in now  
 and me              stepping through the leaves

the one  
 cupping her ears listening  
 for footfalls and regret  
 has nothing to do  
     with you  
 she sits  
 venetian blinds slitting the world into  
 one-inch horizontal slices  
 she bites the thick skin around her fingernails  
 and feels  
 the cold wind  
 sneaking itself in two for one through  
 the window air conditioning unit  
 she is not  
 thinking about  
     chicago  
 drafty apartments peeling paint  
 or any  
     of dreams  
     of farms  
 but more  
     of a bird  
 it seems now  
 migration  
     is essential  
 instead of dropping out  
 the bottom of things  
 catches her  
 rises  
 like water



Jennifer Burnett



Vladyslav Sushko



Ben Woodman

**Jennifer Burnett** is a May graduate of the Gatton College of Business and Economics at UK with a double major in Economics and Finance. She will be attending the Patterson School of Diplomacy and International Commerce as well as the Gatton MBA Program in the fall. Both her research position at UK's Center for Business and Economic Research and her management role at a local health food cooperative, *The Good Foods Market and Cafe*, have contributed to her interest in economics and public policy. She plans to pursue a career in the non-profit or government sector, with an emphasis on sustainable, responsible economic development.

**Vladyslav Sushko** is a Foreign Language and International Economics Senior. Currently he works as an undergraduate research assistant at the University of Kentucky Center for Business and Economic Research. During the summer he will be working for the Lexington Mayor's Office of Economic Development. His future plans are to get a masters degree in economics and work in the economic development field.

**Ben Woodman** is a Foreign Language (Arabic) & International Economics Junior. He will spend the 2004-05 year studying at the American University in Cairo, Egypt. He plans to pursue a career focusing on US-Middle East relations.



**Mentor:**  
**Dr. Gail Hoyt**  
**Associate Professor,**  
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The project described in this paper began with a request from administrators of the YMCA's Black Achievers Program for help in assessing the effectiveness of their program. In the true spirit of service learning, three economics majors stepped forward to offer their assistance in providing an assessment that would call upon skills they have acquired while at UK and force them to learn new skills. The authors met extensively with program administrators to determine assessment needs and then designed a survey instrument for program participants. After gathering and processing data, they compared their data to information obtained from the Fayette County School System and skillfully conducted a thorough statistical analysis.

Services such as those offered by the Black Achievers Program are vital in Fayette County, where the racial achievement gap in the school system is quite pronounced. Studies that evaluate programs such as Black Achievers are crucial to furthering efforts that chip away at this gap. The empirical findings of this study and the recommendations made by the authors will provide guidance to enhance the current program, and they will be used as supporting evidence in grant proposals for program funding.

## Impact Study and Comparative Analysis of the YMCA's Black Achiever Program

### Abstract

In this study, multiple surveys were designed and administered to program participants in the Central Kentucky chapter of the YMCA Black Achievers Program. The purpose of this project was to collect data on the academic success of these students for comparison to that of students in their geographic area who did not take part in the program. The full project also collected data on individuals' responses regarding program effectiveness, level of satisfaction, etc., to help the administrators of the BAP continue to update and improve the program to better meet participants' needs. This research summary focuses only on the quantitative analysis in academic achievement. When compared to academic statistics for Fayette county schools, the respondents in our study were found to have superior performance to their peers. Students who took part in the BAP showed higher levels of academic success than non-BAP African American students in ACT scores and Advanced Placement enrollment. Overall, the Black Achievers Program was found to be a success in academic measures, and also in its overall focus on keeping young African Americans on the path to success in their careers.

*"My work with the YMCA Black Achievers Program has been good for my soul. It brings joy to my heart to see our young people develop positive assets. I love to see that look in their eyes when they finally 'get it.' I'm thankful for all our volunteers who shed light on the road in hopes that our young people will see and follow the long hard road to success."*

Freddie Brown, program director



## Introduction

A recent study performed by the National Center for Education Statistics illustrates the pervasive problem of educational achievement gaps between Caucasians and African Americans in secondary education. Although there has been progress in some areas, the report states that performance gaps have actually widened between blacks and whites ages 13-17 from 1988 to 1999. Possible explanations for this phenomenon include unobserved differences in family background as well as differences in peer groups, school resources, and classroom experiences. “Whatever the causes of black-white gaps in educational achievement, the perpetuation of a large portion of these gaps throughout elementary and secondary school leaves blacks at a relative disadvantage as they prepare for college and/or the labor market.” (National Center for Education Statistics, 2001, p. 42) However, for African-American students who achieve at performance levels equal to their Caucasian counterparts early in school, the achievement gap is almost completely eliminated. When prior academic achievement is taken into account, African-Americans actually outperform Caucasians in terms of college attendance rates and college completion rates.

It is beyond the scope of this report to explain the causes of educational achievement gaps between Caucasians and African-Americans. However, through statistical analyses of surveys and other data, this report will outline the differences in important educational indicators between the participants in the Central Kentucky chapter of the YMCA’s Black Achiever Program and their peers.

## Background

The program’s mission statement says: “The YMCA of Central Kentucky Black Achievers Program (BAP) is the catalyst that provides exposure to present and future educational/career opportunities, instills positive social values, ignites students’ thirst for knowledge, enables students to reach their full potential by creating opportunities for adults and the community to participate in their lives, and empowers families to assist students in reaching higher goals.”

The Black Achievers Program was started in 1971; the first Kentucky chapter was founded in 1985. Today, Kentucky has two chapters, one in

Louisville and one in Lexington; there are over 100 chapters nationwide.

The Central Kentucky BAP Chapter serves many Kentucky counties including Bourbon, Clark, Fayette, Franklin, Harrison, Jessamine, Madison, Montgomery, Scott, Woodford, Lincoln, and Marion. Funding for the program comes from fund raisers, donations, grants, etc. Member dues comprised only 4.3% of the \$156,653 budget for 2003. Staff includes one full-time and one part-time employee, plus 134 volunteers. The program is relatively inexpensive, with registration fees of only \$20 for 7<sup>th</sup>-11<sup>th</sup> graders and \$25 for seniors. College tours cost \$225. Fees are subject to waiver. The program meets on the 2<sup>nd</sup> and 4<sup>th</sup> Saturday of every month from 9 am – 12 pm. Each participant in the program belongs to one of 11 clusters, which cover a wide variety of interests from computers and communications to education and public service. Goals of the program include giving black students scholarship opportunities; preparation for future careers; development of life, leadership, and social skills; and educational advancement. In addition to regular cluster sessions, the program also offers special services such as Arts and Culture Workshops, College and Career Fairs, College Tours, Underground Railroad Tours, ACT preparation sessions, Mock Interviews, and Study Skills workshops.

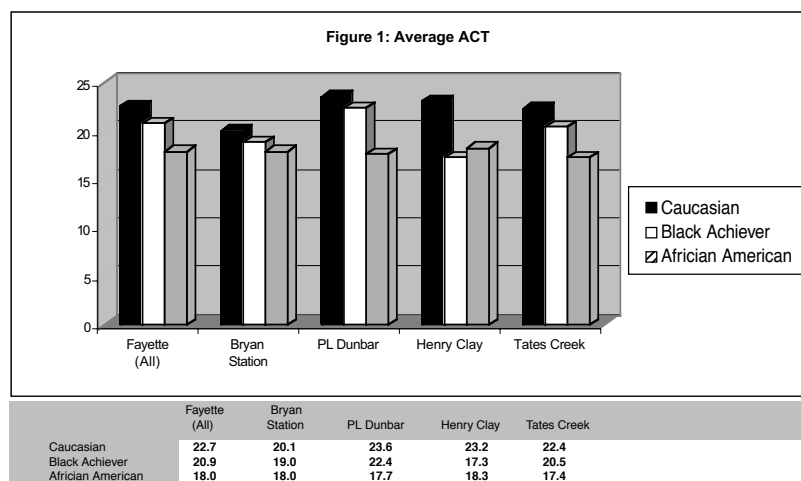
In our study, a survey was distributed to participants in the Black Achievers Program in January of 2004. The survey asked quantitative questions about indicators, such as GPA, ACT scores, AP class participation, and qualitative questions about factors such as the quality of the program and future scholastic intentions. The results of the survey were evaluated using various statistical programs and compared to the performance of other demographic groups in Fayette County. In this article, we discuss the comparative analyses of our primary quantitative findings.

## ACT evaluation

Reported Black Achievers’ ACT scores were compared to Caucasian and African-American students in Fayette County, broken down by school. (Our comparison data was retrieved from the Fayette County Office of Data, Research, and Evaluation.) It is clear from Figure 1 that, with the exception of participants who attend Henry Clay High School, Caucasian students outperform African American students on the ACT, but Black Achievers perform better than African American students as a whole.

These scores were further evaluated on the basis of gaps between Black Achievers’ scores and the scores of African-Americans and Caucasians in Fayette County schools. This evaluation is illustrated in Figure

**Figure 1.**



2. Again, with the exception of Henry Clay High School, the gap between the performance of Black Achievers and Caucasians is smaller than the gap between the performance of African-American students as a whole and Caucasian students. This disparity in performance could be due, in part, to other factors not taken into account here. For example, many studies have found that ACT scores are correlated with income levels as well as race. The income levels of Black Achievers' families were not available and, therefore, were not included in the analysis.

## Advanced Placement

The second quantitative element pertained to the enrollment rates of students in Advanced Placement coursework. In 2003, 17% of the Caucasian student population in Fayette County participated in at least one Advanced Placement course.

Only 5% of African-American students in Fayette County participated in Advanced Placement coursework in 2003. However, an impressive 30% of current Black Achievers were involved in AP courses. Figure 3 illustrates the differences in Advanced Placement enrollment rates among these three groups. Furthermore, Black Achievers were enrolled in 2.6 AP classes each, on average.

Just as with ACT performance, the higher AP enrollment rates of Black Achievers when compared to their peers may not be the result solely of participation in the program. This difference in enrollment could be due to a host of factors including socio-economic background and the amount of resources available to certain schools. It is also a possibility that those who are drawn to the Black Achievers program have already attained some degree of educational achievement in the past and, as such, the Black Achievers program has a higher concentration of highly motivated African-American students than the general population.

## Conclusions

Based upon the comparisons of ACT scores and AP enrollment, the participants in the Black Achievers Program seem to outperform their peers in academic attainment. Furthermore, program participants made significant progress toward closing the Caucasian/African-American academic achievement gap. Therefore, program initiatives such as ACT preparation, study skill development, and career exploration may have a positive effect on participants' academic aptitudes. It should be noted, however, that the causality between the Black Achievers Program and the success of its participants is unclear at this point. This difficulty in determining causality is due, in part,

to the self-nominating nature of the BAP and the survey, the lack of a time series evaluation, and the limited amount of parental demographic data received. Further investigation into the relationship between the content of the program and the academic performance of Black Achievers is explored in the extended version of this paper, available in the on-line edition of the journal at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004). The full version includes analyses of the qualitative portion of the survey as well, addressing exogenous factors such as parental educational attainment.

## Acknowledgements:

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Figure 2.

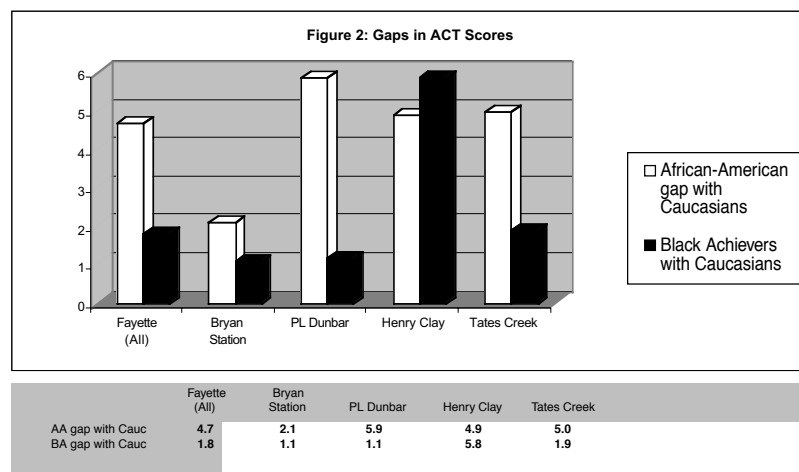
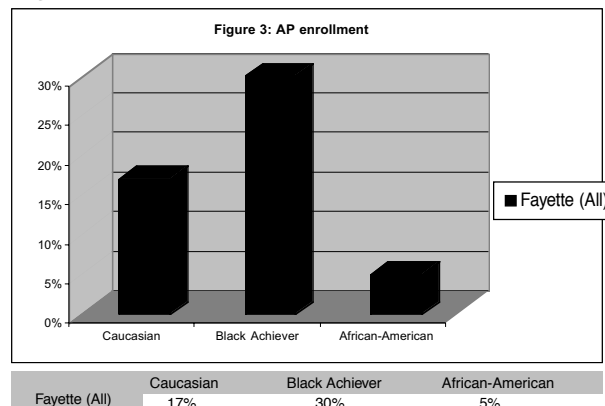


Figure 3.







I am a junior history major and music history and theory minor from Greenville, Kentucky. I entered the University of Kentucky in 2001 as a National Merit Finalist and a Singletary Scholar. Since coming to UK, I have been fortunate to enjoy the best of what the university has to offer. I studied music and flute performance abroad for six weeks in Salzburg, Austria, with the best teachers in my field. I was selected to participate in the 2004 Bingham Seminar on Japanese urbanism. In addition, I am a student of the Honors Program, as well as the Gaines Center for the Humanities. My goal is to graduate with recognition from both of these programs by completing a project on Vietnam that I began last year under the expert guidance of Dr. George Herring.

As I progressed as a student of history, I began studying the Vietnam War and its effects on the Vietnamese people. My studies gradually evolved into an investigation of the role of women in the North Vietnamese Army (NVA) and National Liberation Front (NLF) during the Vietnamese fight for independence against the French and the United States. In Dr. Herring's class, I researched many secondary sources pertaining to the topic, including Karen Turner's *Even the Women Must Fight*, and Sandra Taylor's, *Vietnamese Women at War*. As my interest in the subject piqued, I was able to obtain primary sources that included a collection of interviews from the private collection of WGBH at the University of Massachusetts, Boston. Reading the personal accounts of

## Breathitt Undergraduate Lecture, Presented January 21, 2004

women who aided the nationalist movement in so many different facets of combat had a profound impact on me. From these manuscripts, I developed an intense desire to know these women who sacrificed so much for a cause in which they believed.

Earlier this year, I was awarded the Breathitt Undergraduate Lectureship to give a speech on this theme. Resuming my research on the subject increased my desire to discover even more about the women who served in the NVA and NLF. In gathering information for my speech, I interviewed Dr. Robert Brigham of Vassar College who had just returned from a trip to Vietnam. He described the role women play in society today and he gave clues as to whether their social goals during the revolution were achieved. Through *Kaleidoscope*, it is my pleasure to share my summations, thoughts, and visuals from the Breathitt lecture I gave on January 21, 2004.

As a junior Gaines fellow, I plan to focus my senior thesis on the subject of Vietnamese women. Feeling passionately about the roles and results of the actions of these revolutionaries, I plan to travel to Vietnam during the summer of 2004 to hold interviews with members of the Women's Union and other females who played a part in the resistance. Seeing the land for which these women fought so resiliently and immersing myself in the culture that spawned such fierce female warriors will elevate my understanding to that of a true historian rather than that of a college undergraduate.



*Mausoleum of Lady Trieu, leader of the 3rd century uprising against the Chinese.*



**Mentor:**  
**Dr. George C. Herring,**  
**Professor, Department of History**

Jordan Wood's paper concerns a part of the Vietnam Wars about which little has been written. Volumes have been devoted to military strategy and tactics and specific military operations. What Jordan does so well here is to show the vital role played by those women who served as support troops and actually participated in combat for the North Vietnamese and the National Liberation Front of South Vietnam against South Vietnam and the United States. She has found and makes excellent use of obscure memoirs written by women who took part in the war and interviews with Vietnamese women conducted shortly after the war and now located in the University of Massachusetts, Boston, Library. She places her subject in the broader context of Vietnamese history, a tradition of women

assuming leadership roles as warriors dating back to Vietnam's ancient struggles against the Chinese. She shows how the wars fought between 1945 and 1975 were part of a broader struggle by Vietnamese women to secure full equality in modern Vietnamese society. She recounts in fascinating detail through individual case studies the diverse and truly critical roles played by women in the thirty year war for Vietnamese national unity. Jordan Wood's important paper highlights a most significant and little known dimension of the Vietnam Wars.

## Abstract

Explaining the outcome of the Vietnam War has challenged diplomats, strategists, and politicians for three decades. Searching for reasons that such a small nation pushed a superpower from its borders, some have criticized U.S. policy, found errors in American strategy, and commented on the overall effort of the United States. Most, however, have ignored the real strength of the enemy: the female warriors. This group of women, comprising a large part of the Vietnamese nationalist force, assumed many different combat roles. Thousands who actively defended their homeland earlier against the French were more than ready to rid the country of American invaders. Without their effort, the outcome of the war might have been completely different.

Because little information has been published about these females in conflict, this report from primary sources such as the personal interviews stored at the University of Massachusetts, Boston, highlights individual women who assumed extraordinary roles. By examining their motives and viewing the women as real individuals, we can understand why their will to survive was stronger than all the bombs delivered by U.S. planes.

Researching such an intriguing subject raises related questions of whether the women's efforts actually contributed to improving their status in Vietnamese society today. Did the country they fought so valiantly to defend reward them for their efforts, or did their own countrymen overlook them, too? How many of these women are still alive today with their stories of combat still untold and unrecorded? And more importantly, will the spirit and commitment of these women teach us to make wise judgments before our country decides to invade another nation?



*The Ho Chi Minh Trail*

## Taking on a Superpower: A Salute to the Women of Vietnam

Vietnam is a land of endless rice fields, high mountains, and swampy river deltas. It is home to a diligent people who work daily in the fields to bring food to bustling city markets. For centuries, the Vietnamese people have struggled to survive in an agrarian society under the rule of colonizing world powers and dominating neighbors. In 1946, a civil war began that lasted over a quarter century and took the lives of more than 10% of its forty million citizens. Though scarred by a war of epic dimensions, the Vietnamese still toil today to make a living and hold their country together.

Life in Vietnam strikingly contrasts with that in most industrialized, Western nations. This tiny country, roughly equal to twice the size of Arizona, is tucked below China on the South China Sea. Thus, it is no surprise that prior to the Vietnam War few Americans even knew this small Asian nation existed. Lacking political and economic cohesion and possessing a weak military, Vietnam was almost defenseless against those foreign nations that had overrun her borders for thousands of years. By all considerations, Vietnam should have been no match for the powerful military of the United States of America. However, after centuries of oppression and defeat, the Vietnamese had developed a fierce sense of nationalism. They unleashed it first in 1946 against French troops and then in 1965 when the first United States combat troops arrived in Vietnam. After almost a decade of fighting, the National Liberation Front of South Vietnam and the North Vietnamese Army in 1973 successfully pushed the American superpower from their borders.

Forcing the U.S. out was a job that required the dedication and effort of each person committed to an independent Vietnam. The Vietnamese women did not hesitate to join in the fight. These female patriots provided support to the revolution by whatever means necessary. Each gladly placed country before self. Many were willing to sacrifice the lives of their own children. Attempting to block U.S. Army tanks from entering their villages, women with children in arms lay in roadways.

Northern women resisted the United States by serving as foot soldiers and spies. Females held military and political leadership positions to command troops and lead fellow patriots into battle. Women also served as the lifeline to scattered military battalions by transporting weapons, ammunition, and other supplies. If age or other circumstances prevented females from going to the battlefields, they worked at home to make explosives and other weapons. Some southerners ground betel nut with a mortar and pestle to alert resistance fighters that enemy troops were nearby.

Many women in the South opened their homes to northern resistance fighters infiltrating the country below the seventeenth parallel. Others simply used their eyes and ears to defeat the enemy. They silently gathered information about numbers of troops, the location of weapons, and the layouts of army buildings and bases. Such tactics allowed women of South Vietnam to back patriot troops and rarely be discovered by the Americans or the South Vietnamese. Without these combined efforts, the war might have gone on much longer and perhaps had a different outcome altogether.

I am not offering a *salute* to the results of Vietnamese women's efforts in this conflict. I am not suggesting that we applaud their successful killing of American soldiers or their spying and plotting against American forces and their allies. Many Americans, especially Vietnam War veterans, may find it difficult to respect efforts put forth by any Vietnamese in opposition to U.S. troops. However, if we consider these Vietnamese women apart from political stigma and our own loyalty to the U.S. troops, we discover a group of human beings who truly embodied the patriot's spirit. Their dedication, bravery, and tenacity should be universally saluted.

The motivations behind the fierce dedication and national pride of these women can be traced to three sources: a heritage of strong female leaders, religious beliefs, and an opportunity for equality. The will to defend their country was in their blood. Throughout Vietnam's history, women contributed to the fight for freedom. They can be credited with developing a rich heritage of Vietnamese nationalism. In the first century AD, the Trung Sisters, Trung Trac and Trung Nhi, led the first major Vietnamese insurrection against China. The sisters gathered other nobles and their subjects to vanquish the Chinese in 40 AD. A woman in their company, Phung Thi Chinh, supposedly gave birth to a baby in the middle of battle, strapped the infant to her back, and continued fighting. This group of vengeful soldiers claimed independence for their nation and set up an independent state that stretched from Hue into southern China. The Trung sisters were named as queens. Two years later, however, the Chinese crushed the state. Consequently, the sisters, in "imperial style," committed suicide by throwing themselves into a river. Even today, the Vietnamese honor the two women at temples built in Sontay, Hanoi, and other sites around the country.

Another woman who added to the tradition of resistance was Trieu Au, the Vietnamese equivalent of Joan of Arc. In 248 AD, at only twenty-three years of age, she rode an elephant to lead a thousand men into battle against the Chinese dynasty. Trieu Au, like the Trung sisters, was eventually defeated. In the annals of Vietnamese history, however, she



***Phu Tho conscripted female laborers transporting supplies by foot to Dien bien Phu in 1954.***

is remembered as a selfless warrior devoted to her country. Vietnamese worship her as a sacred hero in temples dedicated to her memory. Trieu Au's words continue to embody the Vietnamese spirit: "I want to rail against the wind and the tide, kill the whales in the sea, sweep the whole country to save the people from slavery, and I refuse to be abused."

Besides having national pride in their blood, Vietnamese women believed it was their religious duty to defend their country. A seventeenth-century emperor best described their Confucian ideals when he said that a subject could not divide his loyalty between the temporal and the spiritual but owes all his allegiance to the state and his sovereign. Living by these principles, the Confucianists accepted that revolution is a normal, cyclical process that restores balance and righteousness to a nation. They felt a moral obligation to support the revolutionaries in their cause. Vietnamese of both sexes sought a ruler who had the "mandate of Heaven," a person destined by Heaven to provide domestic tranquility and peace among the Vietnamese people. They were looking for a new leader whose moral stature promised to restore harmony. Perhaps not all the revolutionaries found such a leader in Ho Chi Minh, but it is certain that they did not find one in the South Vietnamese President, Ngo Dinh Diem. And even if the Communist Party was not the exact leadership for which they were searching, Confucian believers knew that the government of Diem had to go.

The third reason Vietnamese women took on the fight was that for centuries they had been subordinate to men. When the Democratic Republic of Vietnam, or DRVN, was formed in North Vietnam in 1954, women envisioned the revolutionaries as their only



champions in a quest for more freedom and equality among men. Leaders of the DRVN and of the Communist Party offered the long-sighted women the parity they sought. In return for their participation in the struggle to liberate their country, they were to receive improved political, social, and economic status. Such promises seemed like an answer to the prayers of the women who had long suffered under the old customs of life and government.

By making women's rights one of its initial goals, the Communist Party drew a large number of female supporters. The party proposed to advance women's positions in five areas: military combat, labor, leadership and administration of the party, management of the society, and the family. The Party won over even more women by actually acting on its proposal. The Party strengthened domestic rights in the 1946 constitution by giving women rights equal to men in the family, in divorce, and in property ownership. In 1954, the Party reorganized the Women's Union, a group originally established in 1930 to attract the female Vietnamese at every level of the community.

Women who participated in the Union at its inception not only raised their political awareness, but gained the confidence to carry out any necessary civilian or military role. In the war against France, which began in 1946, females joined the armed forces by the thousands. One source reported that in the early 1950s, about 840,000 female guerrillas operated in the North and some 140,000 in the South. In conflicts where the main force units were participating, the Dan Cong labor battalions ferried supplies to the front lines. Two-thirds of the Dan Cong was comprised of women. During the decisive battle of Dien Bien Phu (1953-54), the Dan Cong transported virtually all the supplies needed to the revolutionaries on their backs or balanced on bicycles, because monsoon rains made motor vehicle use impossible. This conclusive battle eliminated the last French stronghold against the revolutionaries.

A large percentage of the National Liberation Front, the southern communist resistance group organized in 1960 to fight the U.S.-backed government of Ngo Dinh Diem, was made up of women who chose to enlist. Both the Women's Union and the Party encouraged women to train to protect the country. By learning to shoot down U.S. airplanes, females in the North helped stop bombing campaigns. Women used special sights to bring down American fighter planes, while soldiers such as Nguyen Thi Kim Lai captured the pilots.

The Ho Chi Minh Trail was kept open by armies of young women with shovels and AK47s. This 600-mile web of trails was the lifeline over which essen-

tial supplies flowed from the communist North to troops in the South. In fact, rebellious women were transformed into Vietnamese icons who embodied the full potential of their gender. They became martyrs whose actions were emulated by women aspiring to be the best revolutionaries possible.

Because political circumstances were so different in North and South Vietnam, pro-Communist women of these opposite regions often assumed contrasting duties in the revolution. The sisters in the North took more of a leadership role. The president and vice-president of the Women's Union served in the central government in Hanoi. They took part in leading local armed forces that defended the provinces. They also took major responsibility for communications networks and the logistics of the regular armed forces.

In the South, Women's Union members held administrative offices that formerly belonged to men. They participated in defending villages, attempted to educate South Vietnamese "puppet troops," and organized child care centers so that mothers could have more time to aid in the resistance. According to one report, in the South more women than men participated in the war. Females also held many leadership roles. Nguyen Thi Dinh advanced to general in the People's Liberation Armed Forces (PLAF) based on her credentials as co-founder of the NLF and leader of the Ben Tre uprising. At one point, it was reported that forty percent of PLAF regimental commanders were women. Involvement in the PLAF, however, represented only a small segment of the total number of females actively involved in the revolution. Most southern women served in local and regional guards, rather than in the national forces. More proof of the wide extent of female involvement in the southern provinces can be found in the high casualty rate. From 1954 to 1965, it was reported that Southern female revolutionaries suffered 250,000 deaths, 40,000 disabilities from torture, and 36,000 imprisonments.

While you have heard some statistics relating to Vietnamese women's involvement in the conflicts with France and the United States, it is more important to hear the individual experiences. Unfortunately, most of these stories were ignored by the American army press and Western journalists who must have held army nurses or "Rosie the Riveter" as their stereotypical images of females in combat. Hearing the women's personal accounts and recognizing their deeds is necessary to grasp the profound impact they had on the outcome of the Vietnam War.

### Tran Thi Tuyet

Ngo Dinh Diem's attempts to remove South Vietnamese from their villages in the 1950s drove some villagers to take up the communist cause. Such was the case with Tran Thi Tuyet. In an interview from the collections at University of Massachusetts, Boston, Tuyet revealed that she was living in the village of An-hiep. Times were quite easy for her, because harvests were good and the village was located quite a distance from the battles of the war. Great change occurred in the summer of 1959, however, when Diem's *agroville program* carved several dozen hectares from her village in order to build an agroville, a strategic hamlet. Tuyet's village was robbed of its orchards, paddyfields, houses, and even gravesites. She was forced to work on the construction of the new complex. Tuyet said "Life was in utter confusion." She was forced to help dismantle her own house and dig up the graves of her ancestors to make way for Diem's new project. Finally, the disgust and hatred of

*Hoang Ngan  
female guerrilla  
group in the war  
against French  
aggression.*



their oppressors caused the villagers to organize protests demanding they be allowed to return to their homeland. News spread fast that liberation forces were coming to help with the uprising. Such a rush of joy and relief swept the An-hiep villagers that they returned to the agrovillage building site and destroyed the construction. Tuyet helped in this process by beating the ceremonial drums and gongs that urged her fellow villagers out of their huts and into action. In 1960 when the Liberation Front was founded, Tuyet knew this organization would bring relief from Diem's forced removal of villagers from their homes. Tuyet said "...in my opinion, the only out was to follow the revolution, to follow the Front. Only this will give us peace and life again."

### **Tran Thi My**

Tran Thi My's account can be seen and heard in an interview from the archives of the University of Massachusetts, Boston, and the WGBH collection. Her story proves that women from every tier of Vietnamese society were involved in the struggle. Intellectuals like My found unique ways to help the revolutionary movement. Generally, they offered aid to those abused and mistreated by the anti-revolutionary regime. As a result of the Geneva Settlement, Tran Thi My, a professor holding strong nationalistic ideals, was waiting in Ca-mau to leave South Vietnam in 1954.

Waiting with her were other intellectual revolutionaries also bound for North Vietnam. At this time, My was still hopeful that the Geneva Accords which ended the French War would be followed and that a democratic election would take place. By 1956, however, the possibility of such an election seemed unlikely. For this reason, she and other women and men who were professors at different schools established an all-city intellectual organization in Saigon to deal with the policy of deception of the Ngo Dinh Diem regime. Because the PSE (the special police force created by Diem) began arresting more and more of her associates, My and her companions resorted to secret activities. Soon their covert work was discovered by the PSE who in 1959 beat her sister to death and arrested all of her fellow professors in Saigon. This completely destroyed any trust My had placed in the new Diem regime. She was even more determined to expose the Diem government by involving women in other neighborhoods and sections of the city. Subsequently, My joined a special operation in Saigon to aid fire victims whose homes had been burned. The Diem government believed, My explained, that "if these thatched houses were left unburnt, they would be sanctuaries for the Viet Minh." Eventually, the Diem regime discovered the names of those who had come to the aid of the fire victims. In turn, they





*Female Vietnamese militia woman bandaging a wounded American prisoner.*

arrested many of the patriots and set them on fire.

Escaping capture, My and her comrades pursued every opportunity to mount protest movements. They took students on camping trips in order to explain the political situation. They wanted young people to understand what it meant to be patriotic. Because of her efforts in organizing the camping trips for students and teachers, the PSE became suspicious of My. Soon the police were aware of her activities. With the help of a student who alerted her to the police's presence, she narrowly escaped capture. My posed as a student herself and left the province to be reassigned near Saigon to Cu Chi. In this city with a famous tunnel complex where the NLF made preparations for revolutionary activity, My organized instructors to resume teaching selected groups of students about the benefits of living under the communist state.

My extended her pro-revolutionary activities as a sort of courier to surrounding villages and cities of Cu Chi. Afraid of being recognized and imprisoned, My always dressed to blend in with the locals. She had "city clothes," "peasant clothes," and "impoverished

clothes." She delivered messages in all forms. My recalled, "Sometimes we hid our messages in a basket of fruit, sometimes in a bowl of salt. There were so many ways, making it very difficult for the secret police to arrest us ... even the messages delivered to me were camouflaged in so many different ways." My's persistent efforts to save Vietnam from foreign influence exemplifies the determination of thousands of females who resolved to hold onto their homeland by any means possible.

### Tran Thi Truyen

The story of Tran Thi Truyen comes from a personal interview given in 1981 in her village near Hanoi. Her words attest that North Vietnam mobilized the country's principal resource, its people, to infiltrate the South. Tran Thi Truyen worked as a field nurse along the Ho Chi Minh Trail. The North Vietnamese Army tried to move combat units and supplies from the Chinese border to the South in spite of regular U.S. bombing of the trail. When bridges were out, materials had to be transported by bicycle or by foot. Regardless of the bombing campaigns, the North Vietnamese Army moved an estimated 150,000 troops into the South from 1964 to late 1967. Some of the troops on the trail fell victim to US attacks, malaria, or dysentery. Nurses such as Tran Thi Truyen were desperately needed.

At the age of sixteen, she carried a sixty-pound knapsack through the rain and mud of insect infested jungles to help build an underground surgery unit. She made most of the trip on foot by crossing deep rivers and scaling steep slopes with her bare feet. Leeches and other insects made her trip particularly miserable. The bombing along the way caused

## Timeline

|           |   |
|-----------|---|
| 1880s     | France takes over Vietnam   |
| 1945      | Japan takes over Vietnam after WWII   |
| 1945      | Ho Chi Minh reads the Declaration of Independence   |
| 1954-1954 | French War  |
| 1955-1956 | Ngo Dinh Diem Organizes South Vietnam as a republic and names himself President<br>US funnels aid to Saigon |
| 1960      | Vietnamese Communist Party prioritizes liberation of the South  |
| 1965      | US bombers first attack North Vietnam (March 9, Marines land in South Vietnam)                              |
| 1968      | US has 500,000 troops in Vietnam  |
| 1969      | Ho Chi Minh dies<br>Nixon announces the beginning of troop withdrawal from Vietnam                          |
| 1973      | Last US troops leave Vietnam (March 29)   |
| 1975      | Saigon falls to the North Vietnamese (April 30)   |
| 1982      | Vietnam Memorial opens in Washington, D.C honoring 85,000 US soldiers killed or MIA                         |

her head to ache and her whole body to shake in fear. Once she arrived, her job was to help build a two-story field hospital eight feet deep with a fortified ceiling that would support another room on top. Before she and other workers could build a thatched hut for themselves, however, the wounded began to arrive. Truyen recounts that the sight of lost limbs and infected wounds brought shock and revulsion. Nevertheless, this sixteen-year-old carried out her duties. She nursed the sick until she contracted malaria herself and had to return home.

### **Nguyen Thi Binh**

A southerner, Madame Nguyen Thi Binh was the most influential of all female revolutionaries of the time. Her account comes from an interview in the archives at the University of Massachusetts, Boston. Binh was a fire-spitting political activist born in 1927 in Saigon. Her list of achievements is long and deserves to be recognized. From the start, Binh opposed the French occupation of her country. She once said, "I profoundly resent the fact that we were taught Vietnamese as a secondary language to French." This assertion sums up Binh's political outlook. She was a staunch patriot who wanted nothing more than to see her country free from foreign intruders. At the beginning of her patriotic pursuits in 1946, Binh organized protest marches against the arrest of patriots. She distributed leaflets and arranged meetings of her peers in which they discussed their necessary roles within the NLF resistance. Binh also fought against illiteracy and worked with political education. The French jailed Binh 1951.

Behind bars, she continued her nationalistic efforts. Designing classes for cultural enrichment, Madame Binh taught her fellow inmates. Many of these patriots were peasants and workers with little prior opportunity for schooling. Madame Binh said: "I taught in prison. At times we were punished for these activities. All our books and notebooks would be taken away. We would try to find new ones and we would go on. There were quite a few things to do in prison."

In 1954, when Binh was released, she remained in the South and joined a group who demanded the Geneva Accords be implemented. Their demands were suppressed, however, and the Diem government black-listed Binh. She was forced to leave Saigon and head into the surrounding countryside. Here, Binh continued her political education tactics. She went from village to village, in her words, explaining that Diem's policy was a policy dictated by the Americans, that it revealed weakness and not strength. Binh said, "We were already explaining to the population that the real enemy was the Americans."



***Militia woman Tran Thi Kim Lai escorting her captured American pilot, William Robinson, to a POW camp.***

In December of 1960, Madame Binh was summoned to the Headquarters of the Resistance (then located in Tay Ninh province). Here, she was appointed to the Central Committee of the NLF with the assigned task of carrying out activities in the field of international relations. By 1962, Binh was traveling outside the country to gather support from surrounding nations. Embodying the idealistic female role that the National Liberation Front wished for all its women members, Madame Binh was appointed chair of the NLF's Women's Liberation Association in 1963. As an ardent feminist, she recruited peasant women to the ranks of the organization with the promise of equal rights. These same female recruits became spies, political activists, combat soldiers, and medical personnel.

In 1969, the Ho Chi Minh government in North Vietnam once again recognized Binh's contributions to the cause and appointed her minister of foreign affairs for the Provisional Revolutionary Government (PRG) of South Vietnam, the government that grew out of the National Liberation Front. Appropriately nicknamed "the flower and fire of the revolution,"

Binh did not believe her role in the war to be extraordinary. She said it was how “Vietnamese patriots live.” Perhaps the greatest honor for Binh came four years after her appointment as minister of foreign affairs. She was sent to Paris as a representative to the peace talks with the United States. The fiery woman stood strong in her demand for the removal of U.S. troops and finally prevailed with the signing of the accord on January 27, 1973. She was a prime example of the leadership females provided during the war. Binh once said, “People ask why I am in politics. If you mean by politics, the fight for the right to live, then we do it because we are obligated to. But fighting for that is not politics. It is much more fundamental.”

### Nguyen Thi Dinh

Nguyen Thi Dinh’s story comes from her published memoirs. Many women fought their battles against America and the South Vietnamese government not in the jungles and rice fields, but in political roles with the NLF. Nguyen Thi Dinh is one such individual. Dinh was born in 1920 in southern Vietnam, then a part of French Indochina. Early on, she was exposed to nationalist and revolutionary ideals by groups who started operating against the French colonial administration. Finally, at the age of eighteen, she joined the covert Vietnamese Communist Party. In the 1960’s, Dinh emerged as the senior woman within the NLF insurgency against the American-allied South Vietnamese government. She was also a member of the Presidium of the National Liberation Front (the political arm of the Vietcong.) In 1965, a time of large scale American involvement in the war, Dinh was named the deputy commander of the Vietcong guerrillas. At the same time, she headed an organization similar to the Women’s Union called the Women’s Liberation Association. It was composed of village cells in areas controlled by the Vietcong. After the war, she served on the Central Committee of the Vietnamese Communist Party until she died in 1992.

### Names Forgotten, Deeds Remembered

There are countless other Vietnamese women who placed the nation’s needs before their own. Only a small fraction of the women who fought have recorded their stories. The others’ stories are either lost forever or live only in the memory of those who were there. Those witnesses include U.S. Vietnam veterans. Although the role of women in the Vietcong and North Vietnamese Army is not widely recognized by Western historians or U.S. government officials, the American men in Vietnam knew that women allied with the Vietcong posed an all too real threat. One veteran recalls a particular encounter with the young girl shown here at right above. This very young woman was an

undercover revolutionary female. Although unable to recall her name, the former soldier still has her picture and vividly recalls the day she died. He and a fellow combatant discovered this young Vietnamese cleaning woman stepping off the compound and making covert maps. Their orders for this type of situation were clear: the woman had to be killed on the spot. The men faithfully carried out their duties then searched her clothing. They found in her possession the small hand-



made map she had been holding close to her side as she counted the number of steps from bunkers to trucks parked around the circular compound. This woman had worked on the base for three years, had made friends with the American soldiers, and seemed very unlikely to be a spy. This incident proves how skilled these women were at espionage — how easily they gained the trust of Americans to infiltrate their camps. It also speaks loudly of their devotion to the revolutionary cause, the risks they took, and the sacrifices they made.

Revolutionary Vietnamese women of this era sensed the significance of the cause and the organizations they supported. The Democratic Republic of Vietnam and the National Liberation Front appeared as a beacon of possibility and hope, not only for restoring peace to their nation, but for granting more personal and social freedoms. To attain their dreams, these women committed their lives. With an end to fighting and victory declared by the DRVN in 1975, it seemed as though their sacrifices would finally be repaid. For many of those who fought in the war, however, their high hopes were not realized. When the North imposed unification on the South and quickly disbanded the National Liberation Front, some NLF members of high standing lost the status for which they had struggled. According to Dr. George Herring of the University of Kentucky, “Some non-Communists who had fought bravely in the revolution, including no doubt many women, were relegated to inferior status or even persecuted. Some went into exile.”

Considering these setbacks, women’s standing in modern Vietnam is remarkable. Today, in 2004, the Women’s Union continues to improve Vietnamese women’s societal and economic standing. Dr. Robert



Brigham, professor of history at Vassar College, reports that even though women are still subject to the traditional family roles that make them subservient to males, Vietnamese women now enjoy more rights than those in any other Asian nation. Under the Vietnamese Constitution, the women of Vietnam are entitled to basically the same social freedoms as women in Western nations. They enjoy complete reproductive rights and the freedom to use birth control. It is now legal to publish the name and photograph of people convicted of domestic abuse. Women can vote and inherit property. They qualify for micro-credit in order to secure loans. Females serve in the National Assembly, even as heads of the foreign relations board. Today women continue to fight for national and personal freedoms as they did during the Vietnam wars. Their ongoing efforts to attain equality reveal how driven Vietnamese women were when they began their fight in 1946.

The Vietnam War has been a conflict difficult to understand — one that still torments many Americans who try to explain the events. Over and over during the war, the Americans conquered territory they could not hold. They destroyed bridges and roads that were rebuilt by women and peasants so that more troops and supplies could be moved to the South. If the US killed hundreds of Vietnamese, thousands more came back to fight. As author and historian Stanley Karnow said, “the war was not a classic conflict between armies pushing back the enemy as they advanced across fronts, but a test of endurance in which the side able to last longer would prevail.”

The testimony and actions of the Vietnamese women give the real clues to understanding why only total annihilation would have defeated the nationalists. Other biographies of female freedom fighters not summarized in this report may be found in interviews, memoirs, a few published texts, and virtual archives. All deserve to be read. If we can grasp such a commitment that led to putting comforts for self and family behind duty to country, then we can begin to understand why Vietnamese nationalists won the war. As we look to the future with new political and diplomatic concerns, we can use these women’s stories to provide new perspective. Their accounts encourage us to seek the motivations and beliefs behind our enemies’ actions before marching blindly into war. Even though the Vietnam conflict drew to a close almost thirty years ago, it is time to chronicle the testimonies and memoirs of active Vietnamese women. Through their stories we may find understanding and peace that is long overdue.



***The Smile of Victory-Vo Thi Thang listening to the “20 years of penal servitude” verdict pronounced in 1968 by the jury of the Saigon Administration. To this she replied, “your government will not last that long.”***

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I am a graduating senior, majoring in Biology with an Environmental Studies minor. While at the University of Kentucky, I was a runner-up in the Biological Sciences portion of the Oswald Research and Creativity Program. I am also a member of Beta Beta Beta biological honors society and Omicron Delta Kappa leadership honors society.



In September of 2004, I am leaving to serve in the U.S. Peace Corps in The Gambia. The animal behavior analyses and bird identification skills I learned while completing this project will help me greatly in my position as an environmental extension agent, instructing native people in the importance of preserving a sustainable environment.

After the Peace Corps, I plan to return to the United States and apply to graduate schools in ecology. The experience I gained in the field and in the lab have helped to prepare me for a future in ecological research. The help and attention I received from both Dr. Westneat and Dr. Stewart truly showed me the amount of work and dedication it takes to start a new research project and see it through to the completion of a final paper.

My personal interests are wide and varied. As a student at the University of Kentucky, I have enjoyed starting up two women's rugby teams (one at the University of Kentucky, and a Lexington women's team) and serving as their captain. I also play soccer on two recreational teams, and snowboard, when time allows. I spend spare time hiking, camping, and writing poetry.

## Incidence of West Nile Virus in House Sparrow Nestlings in Relation to Parental Effort

### Abstract

The house sparrow, *Passer domesticus*, is known to be an important host of West Nile (WN) virus and may contribute to the transmission of WN virus to humans. However, little is known about the factors that influence the occurrence of WN virus in birds. I conducted a study to determine if parental care was related to the rates of WN virus infections among nestling birds. I observed house sparrow nests for one hour periods noting the time the male and female parent spent on the nest box, in the nest box, and the number of food trips, as measures of parental care. Each nestling was then tested for WN virus by PCR and gel electrophoresis. I found that, as the summer progressed, WN virus infections increased and each measure of parental care decreased. Although a number of factors may have contributed to lower parental care, my data shows that WN virus infections increased as parental effort decreased.

### Introduction

The West Nile (WN) virus began to make headlines in the summer of 1999 when it appeared in many birds and some humans in the New York City Area. Over the next 3 years, the number of human infections increased dramatically, hundreds of deaths resulted, and the virus was found in 45 states. WN virus is an Old World flavivirus, related to St. Louis encephalitis virus, and known in



**Mentor:**  
**Dr. David Westneat,**  
**Professor, Department of Biology**

Emerging infectious diseases, such as West Nile Virus (WNV) and SARS, seem to be on the increase. Most of the research on them is either in the laboratory or clinical setting (or, in the case of WNV, at public health labs). But the appearance and spread of a disease is inherently an ecological process that demands more focused research on the natural events that lead to contracting the virus. In the case of WNV, what affects which birds acquire the virus, and then what happens to those individuals? Natalie's project, part of the Independent Research course offered in Biology to majors (Biology 395) takes a much closer look at how the activities of individuals might affect WNV. Natalie sat for long hours watching parent birds feed their nestling, collected blood samples, used some tricky molecular techniques to identify those infected with WNV, and then put the field data together with the lab results. She had to learn a diverse array of skills in doing this, from behavioral to molecular. Her finding that nestlings contract the virus at fairly high rates is important because such birds are at a critical stage in their lives. Her other results, such as the effects of parents, are more ambiguous (as is often the case in research, particularly in natural systems). Natalie presents both types of findings here, and her paper is a great example of the ways doing research can lead students to advance technically and intellectually. Her study also makes a wonderful case for the value of mixing field and lab research.





**House Sparrows on Nest Box**

North Africa and the Middle East since the 1930s. Birds of many species appear to be the major introductory or amplifying hosts, with mosquitoes the primary vector between hosts. (Rappole et al., 2000) Indeed, the location and timing of human infections was found to be closely related to the appearance of bird deaths. (Guptill et al., 2003)

Avian exposure to WN virus is thus a critical element in the spread of this disease, but we know remarkably little about what affects exposure. For example, we know that many different species can carry the virus, but we do not know which individuals are more susceptible and why. For example, nestlings rather than adults may be a preferable host for mosquitoes. Nestlings are relatively immobile, warm, and bare; adult house sparrows are very mobile and catch insects as a food source for nestlings. Nestlings feed almost entirely on insects. (Clement, 1993) An unguarded nestling serves as an ideal host for a mosquito, which increases the risk for WN virus. I wondered if the frequency of infections in nestlings might be influenced by the parental care provided.

Parents may be able to affect the chance that young birds are exposed to mosquitoes and hence WN virus. A parent sitting on a nest protects the young by either catching the mosquito for food or receiving the bite in lieu of the nestlings. WN virus can be fatal to birds, so increased parental care should result in greater offspring survival and reduced WN virus infections. Parental investment (via high quality food) improved the immunocompetence of barn swallow offspring. (Saino et al., 1997) Providing high quality food for offspring may increase their ability to resist WN virus. The numbers of trips to bring food to a nest as well as the amount of time spent on the nest (which

can prevent mosquitoes on nestlings) are indicators of parental care.

“House sparrows in particular served as hosts for most avian WN virus infections in the bird populations we sampled...” (Komar et al., 2001, p. 622) Dispersal of house sparrow (*Passer domesticus*) fledglings might be a significant cause in the rapid westward spread of the WN virus. This along with the relative abundance of House Sparrows paired with being a common host for the WN virus makes it an ideal study subject for monitoring the WN virus. House sparrows are common reservoirs for WN Virus and might aid in spreading the virus to migratory birds.

By studying the relationship between West Nile infections in house sparrow nestlings and parental investment, I predicted that nestlings receiving more food and time from parents on the nest will have lower incidences of WN virus infection. I also predicted that August and late July should have the highest rates of parental care because that is the predominant season of WN virus infections.

### **Methodology**

House sparrows were studied on the Maine Chance Farm within the University of Kentucky’s Agricultural Experiment Station, north of Lexington, KY. The site included 6 different barns, relatively close in location, with nest boxes lining the sides. Adults had been marked earlier by trapping and banding with 3 colored leg bands and a numbered aluminum leg band. Nest boxes were checked every 3 days for eggs and then monitored until hatching.

At each nest containing nestlings 4-8 days of age, I observed the parental care for one hour. This timing is essential because parental care is the highest at this age, and nestlings were banded and tested for West Nile at 10 days old. This schedule also allowed for a suitable incubation period so that any virus infection during the peak of parental care could accumulate by the time the blood was drawn from the nestlings. These observations were taken between June 13 and August 22, 2003, between the hours of 10:30 am and 8:00 pm. Preference was given to observing in the evening hours when mosquitoes were likely to be out and an active threat to nestlings.

During each observation, I noted which parent (male or female) visited the nest, when it arrived and departed, whether it brought food for nestlings, and the time each parent (male or female) spent on top of the nest box. The data were recorded on preformed sheets and then transcribed into data files for analysis.

Blood samples were collected from all nestlings at 10 days of age. Nestlings were removed from the nest, banded, measured, and blood taken by pricking

**Table 1.**  
Parental Care, Average Clutch Size, and Rates of WNV Infections

|        | Avg time<br><i>in</i> nest<br>(seconds) | Avg time<br><i>on</i> nest<br>(seconds) | Avg no.<br>of food<br>trips | Avg<br>clutch<br>size | % nest-<br>lings with<br>WNV Virus |
|--------|---|---|-----------------------------|-----------------------|------------------------------------|
| June   | 1668.6                                  | 302.1                                   | 14.7                        | 3.14                  | 22.7                               |
| July   | 1381.4                                  | 229.3                                   | 13.3                        | 3.08                  | 37.5                               |
| August | 714.0                                   | 71.6                                    | 11.9                        | 3.00                  | 100.0                              |

the exposed brachial vein in the wing with a needle. Blood was stored in centrifuge tubes and the nestling was returned to the nest. In the lab, I tested the blood samples for the WN virus, using a reverse transcription-nested polymerase chain reaction (PCR). (Johnson et al., 2001)

## Results

I found that house sparrow nestlings do act as hosts for the WN virus, because roughly one-third of nestlings tested positive (36.05%) for the WN virus. Thirty-one of the 86 nestlings born to parents I observed were positive for WN virus.

The rates of West Nile in the offspring varied across nests and months. For example, there were five nest boxes in which all nestlings tested positive for WN virus, whereas in seven other nest boxes all nestlings were negative. In June, five nestlings out of 22 tested (22.73%) were positive for WN virus. For the month of July, 12 out of 32 nestlings (37.5%) were infected. In the month of August, all 14 tested nestlings (100%) were infected with WN virus. There is an evident trend of more WN virus infections in the later summer months.

I observed a total of 28 nests, noting parental care for exactly one hour over the months of June, July, and August. The parents cared for a total of 86 nestlings, ranging from 1-5 nestlings per nest box, with an average of slightly over 3 nestlings per parental pair (Table 1). The complete data calculated from the field observations and the laboratory results is found in Appendix 1, available in the on-line version of this report at [www.uky.edu/Kaleidoscope/fall2004](http://www.uky.edu/Kaleidoscope/fall2004).

Males and females spent most of their time foraging rather than in or on the nest. Table 1 shows the number of food trips made by both males and females. Females, on average, made more food trips at 7.36 (206 food trips total) in one hour than the average number of male food trips of 5.86 (164 food trips total).

I found that females showed higher levels of parental care. The measures of time spent *in* and *on* nest are based on the one hour (3,600 second) observation period. Females spent an average of less time

Figure 1.

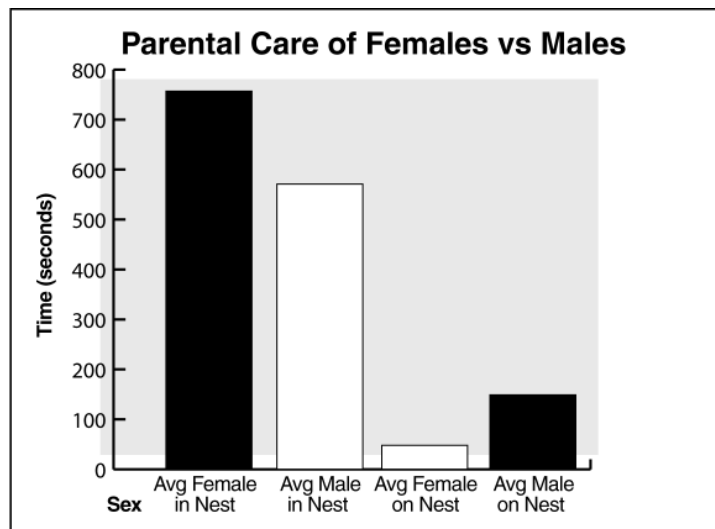


Figure 2.

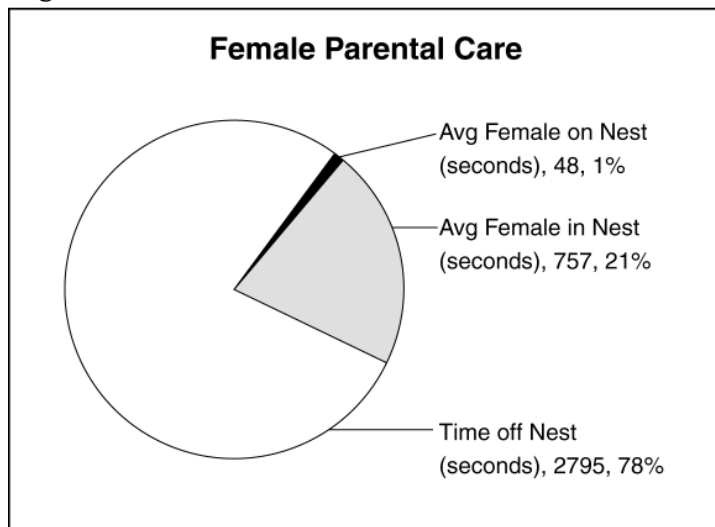
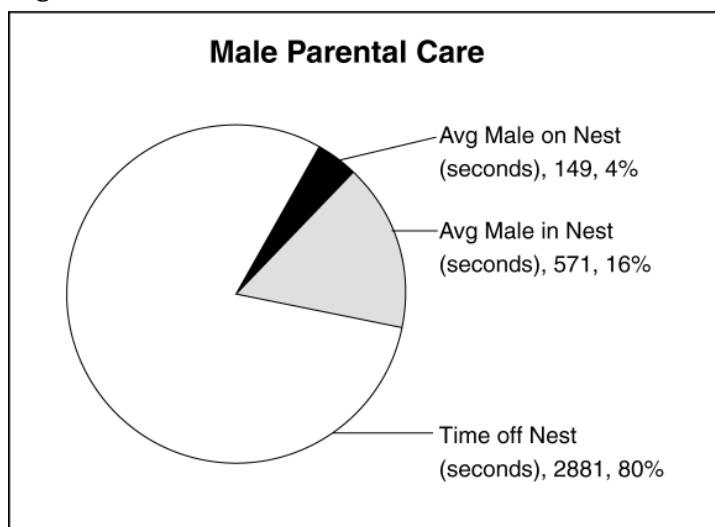


Figure 3.



on the nest (48 seconds) and more time *in* the nest (756.75 seconds) than the males. Males spent less time caring for the nestlings, spending 570.61 seconds *in* the nest, but more time than the females *on* the nest (148.82 seconds). Figure 1 shows the average time females and males spent *in* the nests and *on* the nests. Figure 2 and Figure 3 illustrate the parental care rates of females and males, respectively as a proportion of time observed. As a percentage of total time, females spent 5% more of their time *in* the nests than males (21% vs. 16%).

Nests where the male provided higher care than the female failed to show any different rates in nestling WN virus infections. This led me to conclude that male care is perhaps of equal quality to female care.

There was a decreasing trend in parental care as it got later in the season. From June to August, the total amount of time spent *on* each nest (per nest), *in* each nest (per nest), and the average number of food trips per nest decreased, as illustrated in Table 1. To reduce the effect of brood size, all values were divided by the number of nestlings hatched in that month. The greatest drop in parental care occurred from July to August and it occurred drastically in every category used to measure parental care. There was also a decrease in clutch size as it got later in the season.

There were five nest boxes in which all nestlings tested positive for WN virus, and seven nest boxes in which all nestlings tested negative. When comparing the average times *in* the nest box, *on* the nest box, and the number of food trips of the nests with WN virus positive versus negative, there was no significant difference. The standard deviation for both groups was very large, so important differences between these groups could exist and not be detected. The parents of nestlings that had WN virus even made more food trips (12.4 vs. 9.9) than parents of healthy nestlings. There was great variation in both groups for time spent *on* and *in* the nests and food trips.

## Discussion

My study shows clearly that house sparrows are exposed to WN virus at an early age, while still in the nest. This exposure increases as the season progresses. I tested for a correlation between parental behavior and WN virus infections in nestlings. I expected to see nests that experienced higher levels of parental care to have lower rates of WN virus in the nestlings. A direct comparison of nests with and without WN virus revealed no difference in parental care, but the number of nests involved was small.

However, both parental care and WN virus

changed as the season progressed. It is possible that the change in parental care may help explain the change in WN infection, although other explanations are also possible.

Food trips and time spent on the nest may have decreased over the summer months because parents became infected with WN virus. House Sparrows are common reservoirs for the WN virus and most infected birds do not die as a result of the infection. (Henderson, 2000) Parents living with the WN virus will have lower fitness due to immune response use of energy. It has been found that the large energy expenditures associated with immune response cause an overall decrease in fitness, which can result in lower brood sizes. (Martin et al., 2003) This is consistent with the lower parental care and smaller brood sizes through the high West Nile season. Unfortunately, I could not sample most of the parents, and so cannot test this hypothesis.

There is also the possibility that parents gave less care to the second or third broods of the season. This could be tested by testing the parents for WN Virus around the time of my observations. I could have also monitored whether it was the first, second, or third brood for the specific parents to evaluate this.

An unrelated but interesting finding from my study was the difference in care by parent sparrows. Females were found to spend more time on the nest and make more food trips for various reasons. Females put a greater amount of energy into reproduction due to egg production, egg laying, and spending more time incubating the eggs. This is consistent with past findings. Females primarily brood the nestlings, although males help. (The Birdhouse Network, 2003)

There could be a variety of other factors that explain lower male care. Males may have spent less time *in* the nest because they traveled farther to get food, getting more food, or catching higher quality food. Males also might be *on* the nest box to search for food, because insects are the primary food source for nestlings.

Although sparrows are considered monogamous, extrapair copulation is observed in many cases. (Rising, 1996) Paternity is not always clear, but the female can be certain that the eggs she laid will contain half of her genes. Males need to be territorial, not only to protect the nestlings, but to prevent other males from mating with the female. This may also explain why males spent more time on top of the nest box. The defended nesting territory is immediately around the nest site. (Rising, 1996) Sitting on top of the nest box is the best site to observe the males' nesting territory. Females might spend less time on the nests because they are less territorial. There is also a chance

that lower quality males did not find mates until later in the season, and this could account for lower care.

WN virus is an important disease both in its effects on wildlife and on humans or livestock. My study found that nestling birds may often be exposed to WN virus at a very young age. This new finding affects our understanding of the spread of this disease, because nestlings soon leave the nest and wander, potentially spreading the disease to other locations. Given that the nest site may be a prime location for mosquitoes to find hosts, I attempted to uncover factors, such as parental behavior, that might affect exposure to WN virus. I found few such factors, but did note that WN virus increased through the season while parental care decreased. My data are not sufficient to conclude whether it was the higher probability of being infected with WN virus later in the season or the lower parental care that caused the increasing rates of infection. However, this research opens interesting new questions about how parental care of house sparrow nestlings might relate to the spread of infectious disease in other species.

### Acknowledgements

I would like to thank David Westneat for the opportunity to work in his lab, and for training and advice on the manuscript. I would also like to thank Ian Stewart for training me on PCR, RNA extraction, and gel electrophoresis procedures and analysis, as well as field training, and Emily Morrison for teaching me field techniques and field data analysis. Funding for this work was provided by the Kentucky Biomedical Research Infrastructure Network (KBRIN).

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*Male House Sparrow*

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I am a senior at the University of Kentucky, studying elementary education and graduating in May, 2004. During my career at the University, I have been on the Dean's List six semesters and will be graduating Magna Cum Laude. I have completed my practicum and student teaching experiences at the professional development school, Squires Elementary. I have gained extensive technological experience working at the Digital Media Networking lab at the University of Kentucky for the last two years. In May of 2004, I will be conducting research with Dr. Brent Seales and his staff in Puerto Rico. Following graduation, I plan on teaching in Lexington. Shortly thereafter, I plan to return to the University to pursue a master's degree in administration or instructional systems design.

Jessica Muetterties has worked in my laboratory for almost two years and has been a valuable contributor to my research efforts. Her willingness to take a risk by working outside her immediate area (Education) has been a very positive experience for my research group. Her submission to *Kaleidoscope* represents an honest appraisal of her experience in contributing to a research project as an undergraduate, and I think it gives a valuable picture of what that can be like — her story should appeal to others on campus who may also have research opportunities.



**Mentor:**  
**Dr. W. Brent Seales,**  
**Professor, Department of Computer Science**

## Enhancing Education through Digitization

### Abstract

As technology becomes more a part of everyday life, it is increasingly important that future and current educators learn how to integrate the use of technology into day-to-day classroom activities. Teachers must learn to embrace the fact that computers and other aspects of technology are used by children everyday; the classroom needs to incorporate new and emerging technology. In this essay, I describe my experiences as an education major working in a research laboratory in Computer Science at the University of Kentucky. My work in the lab taught me how to digitize, process, and prepare on-line presentations of a variety of artwork. This experience has given me a first-hand glimpse of what it will take to incorporate technology into my classroom in the future. The possibilities and learning opportunities that exist for teachers who are adept at using and integrating technologies are exciting.

### Introduction

As an elementary education major, looking for a part-time job, I found little from which to choose. Typical education-related jobs available to undergraduates include working at a daycare center, after school programs, or in-house babysitting, yet few offered a career-enhancing opportunity that aligned well with my professional development. While it was tempting just to continue babysitting, I knew from my training that education has many more facets and requires skills beyond childcare.

At the start of Fall, 2002, I interviewed with Professor Brent Seales in the department of Computer Science. At that point, my computer knowledge consisted of using the Internet, *Microsoft Word*, *Excel*, and *PowerPoint* — which at the time I felt was all there was to know. We discussed different project opportunities. I realized then that the work would be challenging but educational. I was hired several days later and began working at the Digital Media Networking (DMN) lab.

There were some surprises when I first started working in the lab. As an education major at UK, I was always surrounded by like-minded friends. In Computer Science I felt like a minority. The gap between my experience with computers and the expertise of the others in the lab was noticeable,



and the gender gap (there are far fewer women in Computer Science than in Education it seems) was also surprising. I realized instantly that this experience was going to be a unique opportunity with potential impact for my future career in education. Although initially intimidated by my lack of computer skills, I began exploring different programs and taking advantage of the knowledgeable people who worked around me. Early on in my exploration, I realized the incredible impacts that my work with technology had on my career in education. Every project I worked on was intertwined with an educational component. I have had the opportunity to work at the lowest level of gathering data, the final level of actually displaying data so that a user can have access to it, and various levels in between. My goal as an educator is to make resources available from which students can learn. My experiences in the DMN lab have provided the groundwork for me to do so.

### Digitization Experiences

My current and, perhaps, most intriguing educational project while working at the DMN lab has been a collaboration with other computer science students to digitize, process, and present artwork from Puerto Rico. The goal of this project was to create a way for the average person to have access to art collections that would normally be inaccessible. My personal goal was to be able to create something simple enough so that a young student could easily have access to it and yet make it interesting and aesthetically pleasing enough that an adult viewer would also learn from the display. As an educator, the main goal when teaching or presenting anything to students is to ensure that they will gain knowledge on the presented topic. Through the steps of acquiring data, digitizing raw data, processing data, and in the end creating an accessible display, our team was able to accomplish this goal.

Professor Seales and two of his Ph.D. students from the DMN lab traveled to Puerto Rico during the summer of 2003. In Puerto Rico, they filmed many historic paintings and sculptures that had been kept in storage at the *Instituto de Cultura Puertorriqueño*. According to the Institute's activity coordinator, Carmen dorres Rodríguez, over one hundred sculptures and eight hundred paintings are kept in storage. Many of these sculptures and paintings have been damaged due to the natural aging process. In order to begin digitizing the paintings or sculptures, it was necessary to film them from a variety of positions and angles. To do so, the sculptures were placed on a turn table that was rotated 360 degrees. Both the paintings and sculptures were filmed by two

different video cameras, and digital still pictures were taken as well.

My co-workers returned home with hours of interviews, paintings, and sculptures from the *Instituto de Cultura Puertorriqueño*.

There are several processes that must occur before any of the art is suitable for viewing. The first step is to import the video footage into the computer system. To do this, I imported all of the raw videotape footage of the sculptures into the computer using non-linear video editing hardware and software. I then began to view the videos and make the necessary cuts between each sculpture's rotations. It was also necessary to make sure that all views were kept synchronized and cut in the same places. Once all of the video, from both cameras, was synchronized, directories were made for each sculpture, twelve in total. Using the two synchronized video clips, I then created 360 still frames of each sculpture from each viewpoint. This was done by importing the raw video clips into *Adobe Premiere 6.5*. (Figure 1.) (Color figures are on p. 47) Using chromakey, I removed as much of the original blue screen background as possible. (Figure 2.) Once a chromakey was in place, I exported the video footage into 360 still frames — a full rotation of each sculpture.

After 360 images of each sculpture were created, the rest of the background needed to be removed from each individual frame, so that the sculpture is the main focus and there is no unnecessary background "noise." Using *Adobe Photoshop 7.0*, I carefully removed the background of each object by hand. This was a difficult task because the work had to be absolutely precise in order to keep the sculpture in its true form. Each frame was magnified about 500 percent and I erased all background and the turn table from the frame. This task took approximately three to five minutes per frame.

While removing the background, I also fixed specific parts of sculptures that had been broken in the past. For example, in the piece *Mascara de Vejigante*, one of the horns was destroyed due to the natural aging process. (Figure 3.) I copied a horn from another part of the frame and added it onto the sculpture. I then used *Photoshop* features to blend the original frame with its repair. This repair is not obvious to the observer and can be done easily to enhance the appearance of an animation. (Figure 4.)

Digitally repairing a damaged piece of sculpture can enhance the aesthetic and educational value of a piece, but negative implications of "correcting" a sculpture exist as well. Aging and other damage can cause a sculpture to change in appearance and lose the form that the artist originally planned for. In cases such as

these, repairing the sculpture as best we can to its original form can be a great justice to the artist's creation. However, in order to repair a sculpture, assumptions have to be made. Copying from another part of the sculpture could be close to the artist's original creation but there is no way to be sure that my interpretation is completely accurate to the artist's vision. Furthermore, if the damage occurred a long time ago, the piece may have come to be known and appreciated only in its damaged state, not its original form, as with, for example, the *Venus de Milo*.

When the background and missing parts are added back onto the sculptures, there exist 360 frames of art against a blue background. The still frames are then imported into *Adobe ImageReady 7.0* and an animation is created. This allows us to show a full rotation of just the sculpture. The speed of the animation can also be controlled. This process was done for each sculpture and from each viewpoint. In the end, there were 24 different animations.

## Display

The next step in the project was to determine a way to present the sculptures that had been digitized and processed. To be consistent with the goal of the project,

we chose to display the data in an easily accessed resource. We created a website (<http://dmn.netlab.uky.edu/~jess/museum/>) for an audience to view the different sculptures, as well as to read related biographical information. (Figure 5.) The user is able to choose a sculpture and see it rotate 360 degrees from two different viewpoints. The website also allows the user to view various paintings that were filmed and photographed.

Through the use of multiple projectors it is possible to create a gallery that can immerse the user in the museum environment. (Figure 6.)

Sculpture images and rotations, as well as paintings, can be displayed such that the user can actually walk around and view the art. Several times a year, *Instituto de Cultura Puertorriqueño* loans out different pieces to other institutions in the United States. In order to do so, they have to specially wrap and ship the items. This can result in a very costly loan. However, creating a digital museum eliminates the deterioration and cost worries that can result when another museum borrows a piece. (Figure 7.)

A virtual museum was also created to display the sculptures and paintings. An environment is created in which the art pieces can be reproduced. Users can then "walk" through a museum either on their computer screen or physically through the use of multiple projectors. (Figure 8.)

I was fortunate enough to work on an entire display project from the lowest levels of gathering data to the highest levels of display. I not only have an understanding of the necessity of technology, but I have had the opportunity learn from the inside out the steps involved in creating displays.

## Why is this important?

This project allows us to display, in an easy-to-access format, information that normally is unavailable to the public. The *Instituto de Cultura Puertorriqueño* does not have sufficient space to display all of the artwork they have in their possession — therefore, the pieces have been lost to the public. By digitizing and processing the art, we were able to create an entire museum of priceless art works that would otherwise be inaccessible. This could have a significant cultural impact on our generation. Before these types of technology capabilities, people were limited to experiencing culture through their local museums, books, or television. A Kentucky student would never have the opportunity to experience artworks from the small island of Puerto Rico. Creating digital and virtual museums as well as a web page, allows people to truly experience what they were unable to experience before. Actually watching a sculpture from all angles or zooming in on a detailed painting is much more interesting and beneficial than reading about it or seeing a flat art image in a book. Allowing widespread access to different cultures through something as readily available as the Internet can educate people in a whole new dimension.

Digitizing paintings and sculptures is also a way to preserve and "repair" the artworks. Damage done by the natural elements or storage can often ruin a piece forever. However, if an image is displayed in a virtual museum, there is no damage done to the piece. As shown above, it is relatively easy to "replace" a

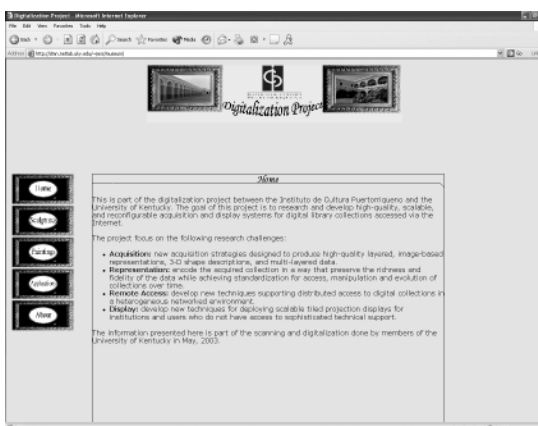


Figure 5. [dmn.netlab.uky.edu/~jess/museum/](http://dmn.netlab.uky.edu/~jess/museum/)



Figure 6. Projected gallery

piece of a sculpture that has been broken off in the past. "Repairing" sculptures through technology allows the work to be viewed in a whole new way, yet does not cause any change to the actual object; viewing value is added but no value is lost from the actual physical sculpture. We also have the capabilities to enhance artworks. Not only can a missing part be added, but colors can be enhanced or specific detail can be focused upon. The possibilities are endless. Digitizing museum pieces can improve the appearance and educational value of artwork and dramatically change how we view and experience art.

### Implications for an elementary teacher

As a future elementary school teacher, I was required to take a one credit technology class. In the class, we were taught the basic functions of the *Microsoft* programs. Although it is necessary to teach basic software applications, the class only scratched the surface of ways to incorporate technology into the classroom. There were no in-depth talks about why or how one can realistically use technology in a real school setting. Future and current teachers alike need to learn how to use technology to enhance education. Anyone who is taking the responsibility of educating the youth of America into his or her hands needs to be prepared to incorporate technology.

It is no surprise that many teachers feel that they do not have the time or ability to use technology in the classroom. It can be intimidating to use a machine that one day simply appears in the classroom. Many teachers have the belief that they need to be "experts" on technology applications and be proficient in trouble shooting (Burns, 2002, p. 298). This misconception can be a great barrier for teachers and their desire to incorporate technology into the classroom in a variety of ways. In a recent on-line survey conducted by the Fayette County Public schools (2003, p.10) only 42 percent of teachers responded that they use a variety of teaching strategies that incorporate technology each week, and only 22 percent reported incorporating it daily. Yet in the same survey, 91 percent of the teachers responded that they felt that technology increases student motivation. These percentages are telling. If teachers are aware that students are motivated by technology, why are fewer than half of them choosing activities that incorporate the use of technology?

I feel that we are doing our students a significant disservice if technology is not incorporated into the day-to-day classroom activities. At home, many children have computers, the Internet, DVD players, digital cameras, and video game systems. It is limiting and naïve for teachers to act as if technology is not

already a major part of children's lives. Teachers need to embrace a child's technology experiences and build upon them. "Digital technologies can enable students to become more active and independent learners. The Internet will allow new 'knowledge-building communities' in which children and adults from around the globe can collaborate and learn from each other. Computers will allow students to take charge of their own learning through direct exploration, expression, and experience. This shifts the student's role from 'being taught' to 'learning' and the teacher's role from 'expert' to 'collaborator' or 'guide'" (Muir-Herzig, 2004, p. 114). Future teachers need to be prepared to teach with technology, not just incorporate a word processing task to check technology off the list.

I know that teachers of all grades can realistically incorporate technology into the classroom. However, school systems do not typically have the software that I used with my Puerto Rico project, but the *Microsoft* programs are usually available. Many schools also have video and digital cameras. Students need to be taught at the beginning of the school year and have concepts reinforced throughout the year via the use of specific applications; teachers need to be creative in the ways that they incorporate the technology into the state curriculum. For example, if a student has to prepare a presentation of moon phases, which is consistent with the Kentucky curriculum, he or she could do this presentation using information found in the student textbook, displayed on a paper poster board, or the student could create a digital presentation. The student can use actual pictures he or she took of different moon phases and use research gained through the Internet and science textbook. Immediately, the student's peers are interested by the technology and the real photographs, and the student who created the project learned more by actually documenting in a professional way his or her research.

Creating and using web pages is also a great tool in the classroom. Many teachers have a web page on which students can check homework assignments and view other's work. Students themselves should also be included in the creation of web pages. Students can display their personal work and keep it current with projects they are working on. The student who created a moon phase *PowerPoint* presentation could display his or her moon phase photographs and give ideas for others to view and benefit from.

Teachers also need to be aware of all the resources that are available on-line. There are many wonderful databases that are kid-friendly and safe. There are also sites similar to the one I created on which students can take virtual tours of places they normally would not see. I used a virtual firehouse tour with

kindergarteners. These students had all seen a fire truck before, but through the website tour they were able to “walk” through a fire house and explore a fire truck. This exploration gave students choices. They chose where they wanted to “walk” and explore next. This made a much larger impression on the students than just a class discussion or picture book.

The possibilities are endless, but teachers need to take the initiative. Every teacher should be capable of incorporating technology into the classroom for authentic activities. Educators need to be on the same track as society and take the risks and explore the opportunities that technology can provide.

Teachers are not the only people who need to be held accountable. School districts also need to provide support in order for teachers to be successful. Once teachers have the desire to incorporate technology, they often become discouraged due to the lack of current resources and enough resources for each child. It is difficult to use a computer that is out-dated and extremely slow. It is also challenging to use technology if there are not enough resources available in the schools. One computer lab is not sufficient in meeting a school’s needs, if all teachers begin to integrate technology into their curriculums. I know that it is not realistic to ask the school districts to put twenty new computers with current software and access to the Internet into every classroom across the state of Kentucky, but I do feel that many improvements can be made. Parents, teachers, professionals, administrators, and other members of the communities need to unite and begin providing support to the school systems. One cannot lay all of the responsibility for what occurs in the schools on the teachers and administrators — it is the responsibility of society as a whole.

### **What will I do now?**

As I leave the University, I am faced with the question “what *will* I do now?” Many recent graduates are intimidated about the possibilities that lie ahead, but I cannot wait to jump right into the work force. My possibilities as a new graduate seem endless and I am enthusiastic about getting started. I plan on teaching in Lexington beginning in the Fall of 2004. In the near future, I also plan on returning to school and earning a masters degree. I have yet to decide specifically what I want to study for my masters; I am waiting to see where my career leads me. I know now that having the background in education will provide many career opportunities in the future. Working with technology for two years has helped me to see how education is integrated into every career field.

My experiences as an educator in the world of computer science have been extremely beneficial to my future. Although it was a job, it was a job with a future and great impacts on my career. In fact, I cannot think of another area I could have been involved with as an undergraduate that could have influenced my life as much as working in the Computer Science department. I plan on using my experiences in the DMN lab to the fullest extent possible in the classroom. I will apply what I learned to influence children and the type of learning that occurs in my classroom. I want my students to value technology and learn how it applies to their own lives and understand how it can enhance their educations. Incorporating technology into the reading, writing, math, social studies, science, art, and music curriculums will allow students to learn and express themselves in a whole new dimension. I know now that I can be a leader in the use of technology and not follow the fear that is often associated with it. I want my students to leave elementary school with confidence to excel in the areas of technology and I feel that I can guide them on this path.

### **Acknowledgements**

I gratefully acknowledge the support of the National Science Foundation under the Research Experience for Undergraduates program (grant #0121438). I also thank Adlin Rios for access to the *Instituto de Cultura Puertorriqueño* and for continued collaborative support.

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Figure 1. Original image



Figure 2. Image after chromakey

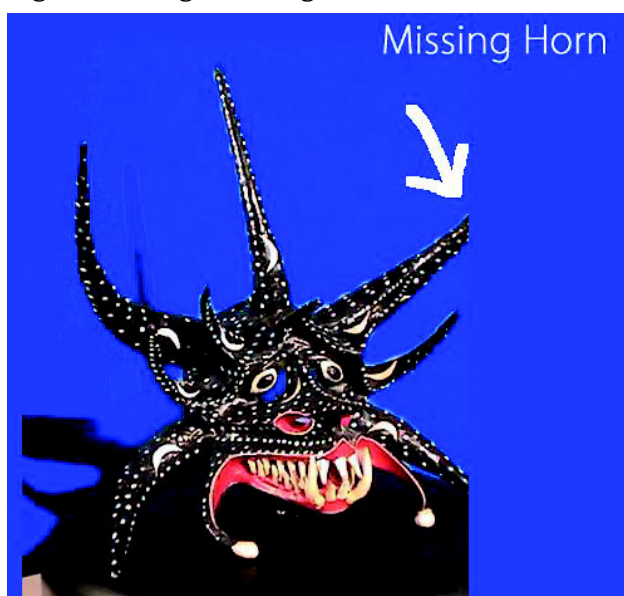


Figure 3. Damaged sculpture

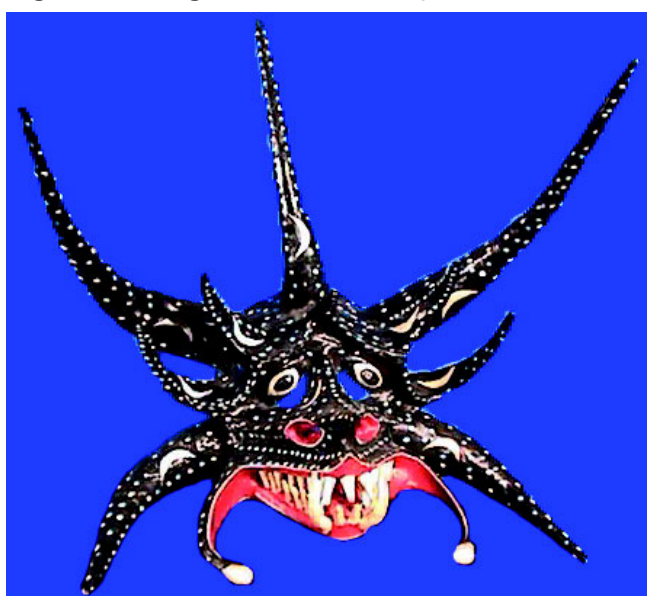


Figure 4. Final, "repaired" image

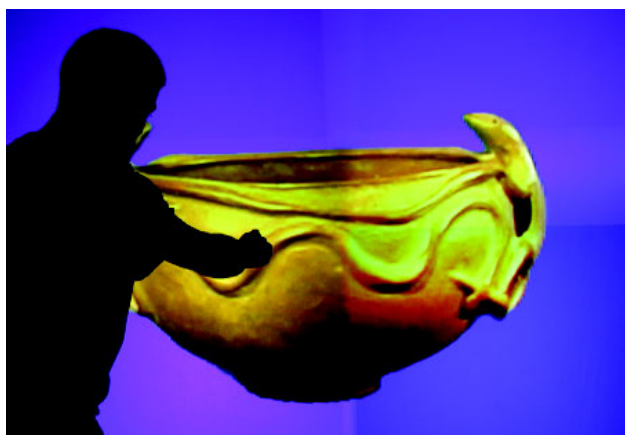


Figure 7. Digital, projected museum image



Figure 8. Virtual museum



## AUTHOR Kate Shannon



I graduated from the University of Kentucky in the fall of 2003 with a Bachelor of Fine Arts degree and an emphasis in studio art. My time at the University of Kentucky served as an invaluable period of growth and self-discovery, which I hope is reflected by my photography. These photographs are from my senior thesis exhibition entitled *Mirrored Imbalance*. Most of the photographs included in this exhibition are self-portraits intended to reflect my inner being. But, in reflecting the self, these portraits must also show my limitations.

My greatest hope in creating art is that I might be able to take the weakness that exists within myself and capture its innate, natural beauty. In my life, I have struggled with the body that I was born into and the person that I have become. I have learned that an aesthetic and conceptual beauty exists in the natural "wrongs" and in the personal correction of inadequacies.

My self-portraits are taken alone, using a timer on my camera. Through this process, an intimate bond is created between me and the machine through which I create. The camera has become a source to which I tell my deepest secrets, and to which I show myself completely, with no inhibitions.

Jackson Pollock believed that art should serve as a mirror from the artist through the art to the audience, and back. When viewing my photography, my hope is that my audience will be able to see into the person that I am, and the feelings that are not always on the surface.

Pollock also once said: "Put up and shut up"

## Mirrored Imbalance

### Abstract

My photographs are almost always self-portraits, which has created a unique bond between me and the machine with which I will eventually make art. The camera becomes not just a tool, but a source to which I show myself completely with no inhibitions. In my work, my main concern is my physical appearance and its relationship to interior emotion (the outward vs. the inward). It is my hope that I communicate emotion through images of my body and, in turn, create a dialogue between me and my audience. It is my goal to create photographs that can communicate feeling without a needed explanation in words, which would please my favorite artist, Jackson Pollock, who once said, "Put up and shut up." With Pollock's sentiment in mind, I will leave any further explanation to my photographs.

### Acknowledgements

I would like to thank the University of Kentucky Art Department faculty, especially Bones Carpenter and Ruth Adams.

### Biographical Information

I graduated Cum Laude the Fall of 2003 with a Bachelor of Fine Arts in Art Studio (Emphasis: Photography). I was presented the Dean's Purchase Award in 2002. My extracurricular activities at UK included Trombone Choir, and Concert and Marching bands.

My future plans include applying to graduate school in photography and doing whatever it takes to make a living as an artist. My gallery here is important because my main goal is to communicate and share with others, so any exposure is needed.

The photographs included in my gallery are all from my senior exhibition, *Mirrored Imbalance*. The exhibition included work from my senior year in the photography department. The work was a result of helpful critiques by faculty and students, as well as overwhelming support (physical and emotional) from my peers.

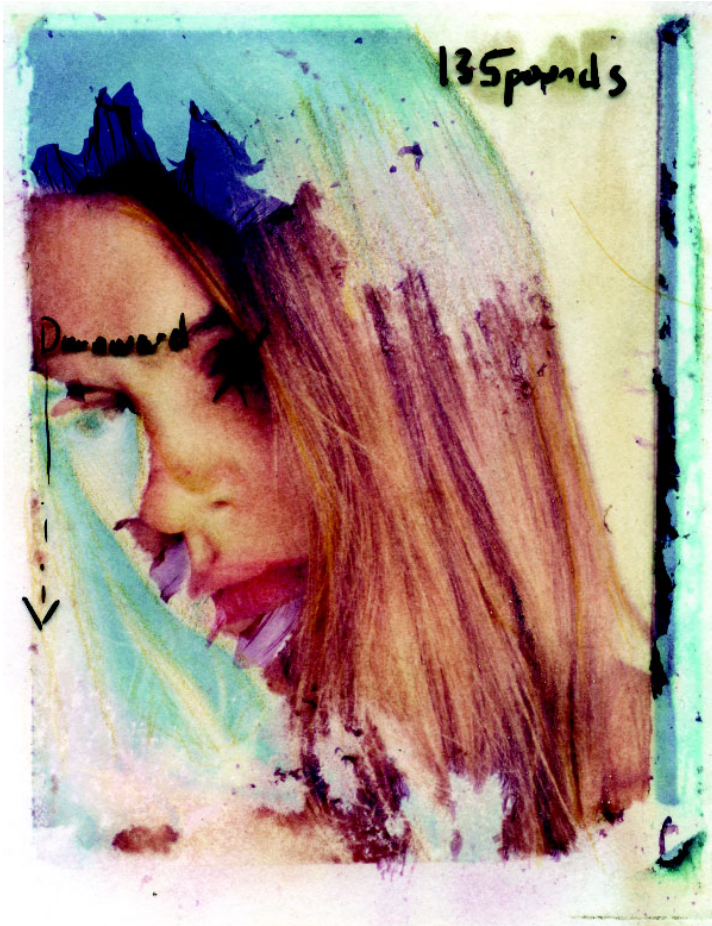
More images can be seen in the on-line version of the journal at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004).



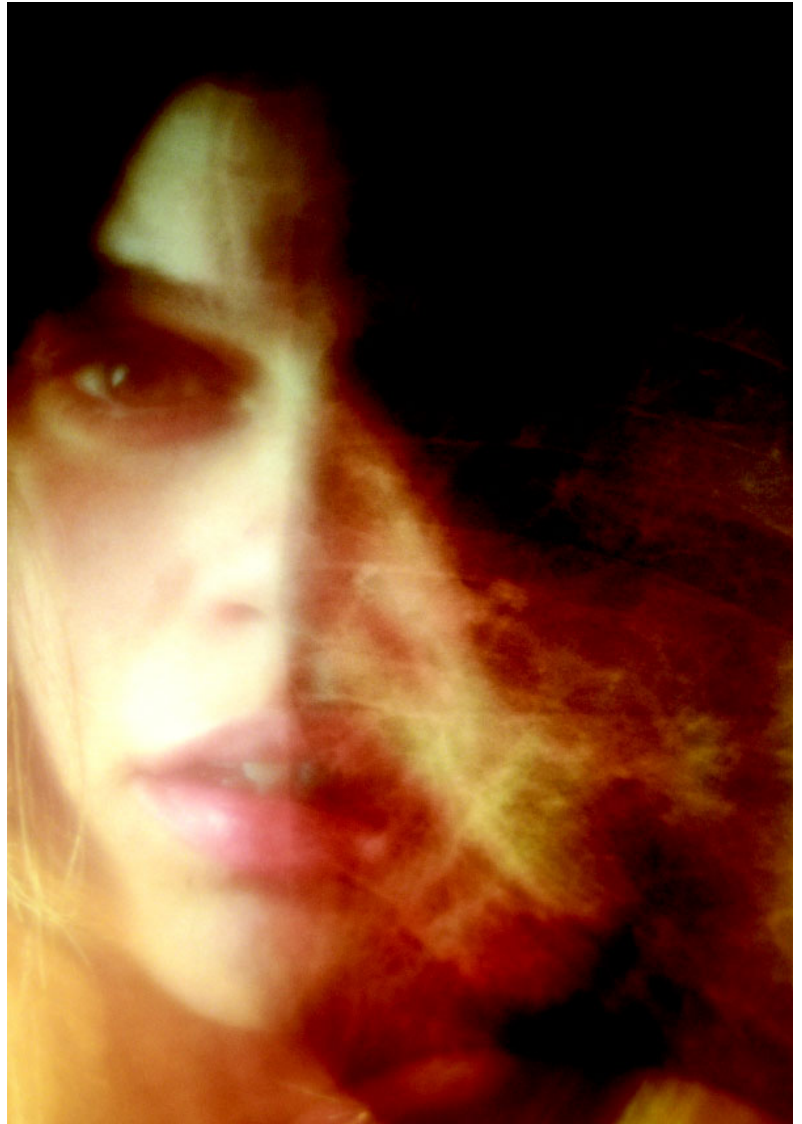
**Mentor:**  
**Ruth Adams, Assistant Professor,**  
**Department of Art**

It is always a joy when you are graced with a student who is artistically self-motivated. Kate is one of those students. She has been photographing herself, exploring difficult issues, for the last several years, always finding new ways to express herself through her art. The work created for her Bachelor of Fine Arts show, *Mirrored Imbalance*, stems from very personal issues and ones that many artists have addressed in the past. Kate has tackled the topics of women's body image and the contradictions we feel between our outward appearance and inward challenges without being didactic or obvious, and addressed them using metaphor and grace in many different photographic media. *Mirrored Imbalance* is superficially a beautiful group of images of women, which alone might be enough to hold our interest; but, conceptually, Kate has made us take that extra time to explore the images to find their inner meaning. All in all, what every artist wants.









## AUTHOR Alexis Redish



I am a senior majoring in French, and Foreign Languages and International Economics (FLIE). I am an Honors Student and a member of the Golden Key International Honour Society, and Pi Delta Phi French Honor Society. I have received a Bluegrass Merit Scholarship for all four years and the Zembrod Scholarship in Spring, 2003. In addition, I have been on the Dean's list for each semester of my four years at the University and have been placed on the National Dean's List. I graduate in May of 2004. I plan to return to France in the Fall of 2004 to teach English and, following this, perhaps pursue my masters in French, perhaps with a special interest in the 18<sup>th</sup> and 19<sup>th</sup> century, comparing literature to other artistic expressions.

In the beginning, this study was written in French for a class on the Commedia dell'Arte. In this course, I became fascinated with the social commentary that was expressed through so many artistic media, specifically painting and theatre. I loved writing the paper and studying the paintings when I first wrote it in French. After this, I gained the experience of translating my own work into English and discussing the topic in greater depth. My faculty mentor and I worked on the translation that I did and the organization of the paper after it was translated. In addition, she would give helpful input concerning the way in which I expressed my ideas in the paper.

I am also a dancer in the UK Dance Ensemble, where I find an outlet for my creative expression as a classical, modern, and contemporary dancer. I both perform and choreograph for the Dance Ensemble. In addition, I am very involved in the work at my church, Quest Community Church, where I often dance, help with Sunday mornings, and work with the kids worship team.



**Mentor:**  
**Suzanne R. Pucci**  
Professor of French  
Director of Graduate Studies in French

## The Masquerade in Watteau and Marivaux

### Abstract

The bourgeois French of the 18<sup>th</sup> century were characterized by a social code that required a certain manner of speech and action in the areas of dress, love, parties, and childhood. Following these rules rendered one elegant, charming, and elite, in addition to ensuring social success and proving one's inner nobility. The comedic works of Marivaux and the breathtaking paintings of Watteau's collection *La Fête Galante* eloquently summarize this mode of life. Under the guise of art and entertainment, Watteau and Marivaux, respectively, reveal the lifestyle and intentions of the bourgeois community in the same indirect manner by which that very community led their lives. In his work, *Arlequin, Poli par l'Amour*, Marivaux introduces Arlequin into the masquerade lifestyle of the bourgeois and Arlequin slowly becomes accustomed to the requirements of this world of rules and fêtes, primarily as they apply to love. Watteau produced two works, *La Danse*, which reveals a microcosm of the adult world through children's playtime, and *Le Faux Pas*, which gives insight into the rules of gallant love. Further examination and comparison of these modes of critique uncovers new commentary concerning the French bourgeois lifestyle of the 18<sup>th</sup> century.

This study explores important interdisciplinary parallels and intersections between painting and theatre in eighteenth-century France. Through careful analysis of two paintings of Watteau, *La Danse* and *Le Faux Pas*, and Marivaux's captivating romantic comedy, *Arlequin, poli par l'amour* [*Arlequin Polished by Love*], the reader comes to understand conventions of love and sociability during this period as belonging to the realms of both the theatrical and the natural. The enchanting world of Watteau's *fête galante* blurs the distinction between the country life of simple peasants and the pastoral amusements of courtly society, as does Marivaux's world of the Italian *Commedia* in French context. Tableaux and text depict the changing roles and costumes of theatrical disguise. But this masquerade was harbinger a of a society poised to become more flexible in this new emphasis on shifting identities. One of the most interesting facets of this essay is not merely the concern with parallels between painting and literary text but those that Alexis shows to exist between these and the arts of dance and music within the paintings. Alexis Redish manifests her love of and commitment to the arts through her work as a dancer as well as through scholarly activity, which, when possible, relates literary and social concepts to the domains of art, music, and dance.





Jean-Antoine Watteau  
(1684, Valenciennes; 1721, Nogent sur Marne)  
*La Danse (The Dance)*  
Oil on canvas (97 x 116 cm)  
1716-18  
Dahlem, Staatliche Museen, Berlin



Jean-Antoine Watteau  
(1684, Valenciennes; 1721, Nogent sur Marne)  
*Le Faux Pas (The Mistaken Advance)*  
Oil on canvas (40 x 31.5 cm)  
1716-18  
Musée de Louvre, Paris



Early eighteenth century France included several social classes whose status was distinguished by their mannerisms. For the French upper bourgeoisie and aristocracy, certain codes of self-presentation prevailed in all aspects of social interaction. These codes informed conventions of dress as well as of communication and were especially conspicuous and detailed in the rules of love. One had to appear gallant and maintain an air of charm and superiority. After a person transforms him- or herself into an ideal member of society, he or she is said to have proven inner nobility (Plax, 2000, p. 112). In order for members of this society to follow this code of sociability, they must take lessons, specifically in the areas of music, dance, and love. Many of these lessons were taught through the example and advice of others more advanced in the art of sociability. While, at the same time, other lessons were taught through formal instruction.

This was a strict and often hypocritical society, for their actions were representations of the code of sociability more than an honest representation of their feelings. For example, in regard to love, a person must resist amorous advances and control his or her desires in order to be gallant. Much literature of the period dealt with teaching and learning how to understand and how to assimilate these codes, how to practice the art of sociability.

In the romantic comedy by Marivaux, *Arlequin, Poli par l'Amour* (originally written and performed as a play in 1720), a magical fairy, representing the fashionable aristocracy of the time, kidnaps the main character Arlequin with whom she falls precipitously in love. She attempts to train him in the acceptable social conventions of love. Through dance lessons and bribes she attempts to create a suitable partner for herself. Yet, the initially coarse Arlequin remains untaught and far from the sophistication of this aristocratic society. Instead, he falls in love with the simple peasant Silvia. Their interactions parody the conventions of love that were influential at the time.

In this play, there are examples of lessons taught by instruction and advice: first, the Fairy who had kidnapped Arlequin insists that he submit to dance lessons, which are to train him in the codes to which her society adheres; second, later in the play, the cousin of Silvia advises her on the way in which she is to treat the romantic advances of Arlequin. These lessons exemplify the required code of sociability in the areas of dance, music, dress, and communication. More importantly, they show how the rules of love were influential in the countryside (Silvia and Arlequin are peasants) as well as for members of the upper class, who must control their desires in order to maintain their noble appearance.

In the same century, Jean-Antoine Watteau painted representations of this gallant upper class, using an impressionistic and dreamy style. His paintings communicated a commentary on the social interactions of the upper class. Two paintings in particular also indirectly demonstrate the situations of Silvia and Arlequin. The first, *La Danse* or *The Dance*, describes through its images the case of Arlequin as the Fairy attempts to teach him the proper social codes. It contains children playing instruments and dancing outdoors. On the one hand, they seem to imitate what they have noticed in the life of the adults. On the other hand, they are practicing what they have been learning in their lessons. In their playtime, they imitate the artificial and gallant lifestyle they see in their parents and superiors, which symbolizes their position in society (Plax, 2000, p. 118).

The second painting, *Le Faux Pas* or *The Mistaken Advance*, shows a peasant man attempting to kiss a woman. The woman seems to push the man away, but one cannot be certain if she teases or if she truly wishes to be left alone. If the former is the case, one could say that the woman, like Silvia, follows those rules of love demanded by the high society of the period, to refuse advances of love in order to obtain it.

It seems that many questions can be asked relating to these paintings and the period. Are the children in *La Danse* really playing or are they practicing the artificial rituals of their upper class world? Concerning the painting *Le Faux Pas*, the status of the characters is questionable, because they appear to demonstrate the rules and conventions of the upper bourgeois and aristocratic societies towards love. Are these characters really peasants of the countryside? This last question arises from the following description. In the book, *La Fête Galante: Watteau et Marivaux*, Robert Tomlinson cites Alfred Jeanroy to describe "the thirst of sophisticated people for a simple life," in precisely this way:

En somme la pastourelle a été en Provence ce qu'a presque toujours été la poésie pastorale: l'amusement d'une société élégante qui se repose d'elle-même en se travestissant sous un aimable costume. Ce sont en effet, on l'a souvent remarqué, les sociétés les moins simples et les moins innocentes qui jouent le plus volontiers à la bergerie (Tomlinson, 1981, p. 77).

[In summary, the pastoral life in Provence was defined by pastoral poetry: the amusement of an elegant society that relied upon dressing in likeable costumes. This was the effect often remarked, that the least simple and least innocent societies most voluntarily play as peasants.]

The social identity of the upper classes was often ambiguous with regard to their dress, because they enjoyed costumes of all types. In the same way, Watteau's characters in *Le Faux Pas* may not have clearly defined identities.

Both paintings contain several clues that reveal their actual subject. At first glance, they communicate very different messages than originally seemed to be the case. Just as Marivaux's play emphasizes particular social customs, Watteau's paintings illuminate hidden aspects of

the societies. By further scrutiny of the facial expressions, colors, and style, one discovers many of Watteau's possible intentions. After comparing these with Arlequin's situations in *Marivaux*, one reaches a further understanding of the mannerisms and conventions within the French upper bourgeois and aristocratic societies of the period.

A deeper analysis of *Le Faux Pas* may uncover further commentary of this gallant lifestyle. In particular the elements of line, color, organization and facial expressions serve an important role in the overall effect of the painting. Before studying these elements closely, this painting seems a simple pastoral scene; through closer scrutiny, one begins to see many details that suggest otherwise. First, the lines appear for the most part curvy and very fluid, demonstrating an action that the character has yet to finish. For example, the lines on the back of the woman's shirt show the tension exerted by the hand of the man. These lines accentuate the opposing forces of the man trying to hold the woman and her attempts to push him away. Furthermore, the thin lines on their shirts give a wrinkled appearance that renders their clothing less formal, less elegant, and more natural.

Second, the colors communicate multiple emotions and bring up several questions. For the most part, Watteau painted in various shades of brown in order to formulate a natural scene. The hair and shirt of the man, the earth, and even the plants vary in brown shades to produce a monochromatic natural effect. This technique induces thoughts of peasants in their normal atmosphere; yet some clues suggest the contrary. First, the red cape on the ground beside the woman presents an interesting enigma. It raises several questions such as, how did it end up on the ground? Did the woman voluntarily allow it to fall to the ground? If the answer to the latter question is yes, then that reveals some inclination on her part toward the man's advances. At the same time, the color of the cape is highly significant. Red expresses a certain confidence, freedom, sexuality, and directly opposes innocence and nature. This cape may reveal some of the actual desires of the woman, which are traditionally less obvious than those of the man. According to the rules of love, her advances cannot take the form of responsive actions, but they must be controlled and almost resistant.

Next, the way in which Watteau painted the sky transforms the natural setting into a sort of unreal dream. The sky contains blue, purple, red, and green to form an incredible and almost unreal mixture. At this point, the sky seems less natural and even begins to resemble a backdrop to a play. Such a dreamlike sky is often seen in theatrical representations, such as

plays or ballets, in order to make the scene seem something it is not. This finding is supported in Tomlinson's introduction, in which he describes Watteau's paintings, saying:

L'amour est le thème central, vu à travers un symbolisme érotique inhérent au choix des cadres rustiques et c'est sous la forme d'un débat sur l'amour dans un décor naturel que la fête galante reprend le genre pastoral en y ajoutant l'optique du théâtre (Tomlinson, 1981, p. 2).

[The central theme is love, seen through erotic symbolism inherent in the chosen rustic surroundings and it is in the form of an amorous encounter in a natural setting that the gallant festival recalls the pastoral genre and adds a theatrical illusion.]

Suddenly, the peasants become characters in their own play, in which their actions may or may not portray the real state of their emotions. It is possible that Watteau did not wish for his painting to represent a scene from a play, but to communicate that the love within the painting symbolizes the game of love played by the nobles. Their actions are rehearsed from their code of sociability. If this is the case, then we would regard the refusal of the woman more as a flirtatious gesture, as she controls her actual feelings and desires. This motion embodies the advice of Silvia's cousin. In *Arlequin, Poli par l'Amour*, the cousin of Silvia counsels her in this way:

Garde-t'en bien, ma cousine, sois bien sévère, cela entretient la passion d'un amant ... il ne faut point aussi lui dire tant que tu l'aimes (Marivaux, 1720, Scene 9, p. 131).

[Protect yourself well, my cousin, be severe, that will maintain a lover's passion, also you must not tell him too often that you love him.]

Watteau wishes to present the woman as severe in this case, just as one would expect to see in the

game of love. A woman's actions are of primary importance in the rituals of love, as she must appear controlled and must give the appearance of keeping the man at a distance. For this reason, she appears illuminated in the center of the scene. His use of dark colors in most of the painting has the effect of illuminating the woman. The dark atmosphere emphasizes that their meeting is in secret, hidden from the world. The woman, illuminated by her pale skin and light shirt, becomes the focal point of the painting. This aspect is important in the overall organization of the painting. The visual path is easy to locate. One's eyes are drawn first to the red cape, then to the man as he attempts to kiss the woman, then to the woman as she reacts to his advance, and lastly to the sky and scene in general. In my opinion, Watteau used the red cape as an attention grabber in order to communicate that the subject is love. The cape and actions of refusal represent love in its eighteenth century form, as a game or a series of rehearsed actions that maintain the actors' noble appearances.

Finally, one must examine the young man's face in order to see the variety of emotions expressed. For example, his eyes communicate patience and an attempt to persuade the woman to submit to his advances. At the same time, his forehead wrinkles slightly, showing his frustration with this difficult woman. The shape of his lips seems to betray the entire scene. His lips form a slight smile as if he understands and enjoys the game of flirtations and desire in which he and the woman are entangled. This multiplicity of emotions mirrors those found between Arlequin and Silvia in scene 11 of *Arlequin, Poli par l'Amour*. In this scene, Arlequin and Silvia have their second encounter and are flirtatiously getting to know one another, yet Silvia has recently received and processed the advice of her cousin.

Arlequin: (Arlequin ici badine, et l'interroge pour rire.) M'aimez-vous beaucoup?

Silvia: Pas beaucoup

Arlequin, sérieusement: Ce n'est que pour rire au moins, autrement...

Silvia, riant: Eh! Sans doute.

Arlequin, poursuivant toujours la badinerie, et riant: Ah! Ah! Ah! Donnez-moi votre main, ma mignonne.

Silvia: Je ne le veux pas.

Arlequin, souriant: Je sais pourtant que vous le voudriez bien.

Silvia: Plus que vous; mais je ne veux pas le dire.

Arlequin, souriant encore ici, et puis changeant de

façon, et tristement: Je veux la baiser, ou je serai fâché.

(Marivaux, 1720, pp. 133-134)

[Arlequin (Arlequin is joking here, and questions Silvia hoping for a laugh): Do you love me a lot?

Silvia: Not a lot.

Arlequin, seriously: It was only a little joke, otherwise...

Silvia, laughing: Eh! Without a doubt.

Arlequin, continuing the joke, laughing: Give me your hand, my sweet one.

Silvia: I don't want to.

Arlequin, smiling: I know nonetheless that you would like to very much.

Silvia: More than you; but I do not want to say it.

Arlequin, smiling again, then changing his mood, and sadly: I want to kiss it or I will be angry.]

One sees here how Arlequin, like the man in *Le Faux Pas*, becomes frustrated, even though he understands that both he and Silvia are teasing. In the game of love, when desires are hidden and actions are misleading, one is always subject to doubts about the true thoughts and feelings of the other person.

The question now arises, are the characters of Watteau's painting really peasants after all? There are many reasons why they may not be who they seem. According to the studies of Amy Wyngaard, the nobles quite enjoyed going to the countryside for their vacations. They gave expensive pastoral parties and many times dressed as peasants on the one hand for fun and on the other hand to relax (Wyngaard, 2000, p. 533). The poet René de Bonneval described their circumstances and actions in the following way:

Cette bergère si simple dans ses habits, et dans ses manières, est peut-être une Princesse qui veut se débarrasser ce soir des respects qu'on doit à son rang. Cette autre dont la parure éclatante annonce quelque personne distinguée, n'est pourtant qu'une bourgeoise qui prétend s'attirer l'hommage des plus grands seigneurs. (de Bonneval, 1717, p. 110-1)

[This peasant woman, so simple in her dress, and in her mannerisms may be a Princess, who wants for the evening to be rid of the respect owed her status. This other, of whom her stunning appearance suggests a distinguished person, is no more than a bourgeois woman pretending to attract the homage of the greatest Lords.]

A second example of dressing other than one's class is that of Peirre Pasquereau as told by Gueullette:

Sous le nom de Bertrand et sous l'habit du vrai paysan, il copiait avec tant de naturel et de perfection

les gens de ce caractère, pour le langage, pour le chant et pour la danse, que si, changeant de figure et de vêtement, on le faisait souper avec les personnes qui ne l'avaient vu que cette fois, elles ne le reconnaissent pas, et lorsqu'on le démasquait, pour ainsi dire, ne pouvaient croire que ce fut le même qu'elles avaient vu dans l'après midi (Gueullette, 1938, p. 69).

[Under the name of Bertrand and dressed as a real peasant, he so very naturally and perfectly imitated the people belonging to this class, in his speech, his singing and his dancing, that if, changing his mannerisms and his clothes, he would dine with people who had seen him only at that one time, they would not recognize him and when he unmasks himself, so to speak, they could not believe it was the same man they had seen in the afternoon.]

These examples show that people may seem most naturally to belong to a certain class and yet this might not always be the case. Furthermore, disguising oneself in the manners and dress of another social class was a very enjoyable pastime for many among the aristocratic and upper bourgeois societies. At the same time, the social code of the aristocracy and nobles demanded that one control one's desires in the area of love (Plax, 2000, p. 112). On the other hand, disguising oneself, in particular as a peasant, could free a person of these rules and he or she could then treat love with the rustic passion of peasants.

In *Le Faux Pas*, the mixture of aristocratic ritual and natural peasant love seems enhanced (Wyngaard, 2000, p. 537). In this rustic atmosphere, the nobles allowed themselves to experience freedom in love. At this time, we can once more address the subject of the red cape, for this cape does not seem to be made with the simplicity of one we might expect for a peasant woman. It may, in fact, distinguish between the outward appearance of the lovers and their true social identity. Upon closer inspection, one may notice that the collar is gold. Such a rich collar added to an already elegant cape seems unlikely to belong to a peasant. Once again, the red may suggest passion and freedom and the gold suggests a higher class and richness that does not belong in such a natural atmosphere. Even if they are only peasants, one must

remark on the ambiguity caused by their apparent desire to impersonate those of higher status and to act out their love in a fashion regimented by rules. In light of all these instances in which dressing and acting as though one belonged to another class occurred, it seems possible that these peasants are not who they seem.

Next, let us analyze another of Watteau's works, *La Danse*. There is little question of the class to which these children belong. They wear clothes of a very rich texture covered with bright and elegant cloth in satin and lace. In this painting, line, color, texture, and facial expressions also play a very important role. Above all, line demonstrates many aspects of the children. The children seem elegant and delicate, due to the thinness and fineness of the lines, not the natural, rustic, harsh, and thick lines used to represent peasants. Although the lines curve where necessary, they remain for the most part straight and still. For example, each child either stands or sits with his or her back very rigid and straight as required by the code for his or her social status. They seem to remain fixed in the protocol they have learned since birth.

Second, Watteau used a variety of bright, beautiful, and rich colors, including gold. Without a doubt, the gold represents the nobility of these children. Such a variety of color and fabric further symbolizes the richness of the families to which these children belong. In order to make the scene appear gallant and joyful, the colors are primarily bright. The pale skin of each child signifies both their innocence and their status. These children are not required or even permitted to work outdoors as peasants; on the contrary they must remain indoors to tend to their lessons.

At the moment they were painted, one child plays the recorder while the girl in the center of the painting dances. They seem to practice the artificial rituals of the society as if it were an ordinary way of life. Their playtime is a microcosm of what they have learned in their lessons and what they have seen in the masquerades of the adult world. As all children, these mirror what they observed their parents doing. Therefore, their playtime becomes a representation of the dancing, music, and costumes that constitute the masquerade.

What are the social implications of this seemingly simple painting? First, the lessons of these children prepare them for the masquerade. They must learn to dance and appear controlled in order to give an impression of sophistication and gallantry. The dance in itself often leads to love; it is an act of seduction. According to Tomlinson, "La danse mène à l'amour" (Tomlinson, 1981, p. 35). [The dance leads to love.] The game of love begins with a dance,



whether at a masquerade, a ball, or in the country. Tomlinson discussed this role of dance further, citing Léandre Vaillat:

L'antique jeu des avances amoureuses se reconnaît au raffinement de ses saluts, de ses petits pas et de ses glissés, au rapprochement, puis à l'éloignement des danseurs, à leur manière de se chercher et de s'éviter, de se croiser et de se tenir côte à côte, de se faire vis-à-vis et de se détourner avec regret, mais non sans espoir de retour (Tomlinson, 1981, p. 36).

[The age old game of amorous advances is recognized in the refinement of greeting, small steps, glides, proximity, then the distancing of the dancers, their manner of reaching for one another, then avoiding, then crossing, and holding to one another's sides, to facing one another and turning away with regret, but not without the hope of returning.]

Thus, one realizes that in the masquerade and the game of love dancing plays a large role. With this fact in mind, one can easily decipher the strategy of the Fairy in *Arlequin, Poli par l'Amour*. She wants Arlequin to take dance lessons, for she knows that this type of action could lead to a love between them. She desires that he learn not only the dances, but the appropriate reverences and courtesies of the code of sociability in order that he might become more obliging and thus the possibility of a relationship between them would become more real. Arlequin's untamed nature, his lack of nobility, makes it difficult for him to follow this code.

The following text exemplifies this fact:

La Fée: Voulez-vous prendre votre leçon, pour l'amour de moi?

Arlequin: Non.

Après avoir lui donné la bague de la Fée.

La Fée: La voilà, en revanche, recevez votre leçon.

Alors le maître à danser apprend à Arlequin à faire la révérence. Arlequin égaie cette scène de tout ce que son génie peut lui fournir de propre au sujet.

Arlequin: Je m'ennuie.

(Marivaux, 1720, Scene 2, p. 119)

[The Fairy: Would you like to take your lesson, for my love?

Arlequin: No.

After giving Arlequin her ring.

The Fairy: There, now, take your lesson.

So the dance master taught Arlequin how to bow. Arlequin amuses himself with all his mind could come up with in this area.

Arlequin: I'm bored.]

In this scene we can perceive the desperation of the Fairy, as she gives away her magical ring, and the limitations of Arlequin concerning the life of nobility. On the contrary, the children portrayed in *La Danse* question nothing of their life and the rules of nobility that it contains. They simply go through the motions they have been taught.

Finally, this painting is also highly theatrical. Color and perspective are the primary indicators of this illusion. The sky, a mixture of blue, white, purple and green, contains colorations that seem unreal. The clouds seem purposefully placed and lack any sense of motion. They appear simply painted on, to render the scene more beautiful and rich. This also gives the impression of a backdrop. The chateau and trees seem to lack perspective and pertain more to a backdrop than to an actual countryside. The trees, for example, to the left back of the painting lack depth and detail. All this lack of perspective and the idyllic imagery enhance the theatrical aspect, making this captured moment appear more posed. Just as in a play or a ballet, the setting is motionless and serves a more decorative purpose. The only perspective in the painting is among the children in the foreground, similar to what one would expect to see in a theatre. The real action occurs in the actors who were placed in an unreal scene. Furthermore, the obedience of the children seems slightly unreal. According to Pierre

Schneider, these children are small versions of the adults who frequent the masquerades and other paintings of Watteau (Schneider, 1967, p. 70).

Similar to actors in a play, these children train themselves for life. Their actions, their dances, and their manner of speech come from years of lessons in order to appear “natural.” These children seem to have memorized their actions and movements, as if they have repeated them millions of times and require little concentration. They seem almost bored or, as with the girl dancing, a little sad. The girl in the center is the only child who seems to look out of the painting at the viewer. Her lips form a half smile, but her eyes communicate a feeling of sadness and emptiness as if the child within has been stolen.

Even the dog sleeps, lacking any interesting diversion. At this moment, they represent students of the noble life; just like *Arlequin*, nothing exists to entertain them at this stage. Yet, unlike *Arlequin*, these children know that they require these lessons in order to survive in their society, so they do not refuse to attend to and practice them. *Arlequin*’s rejection of his lessons signaled his coarseness and his boredom as well as his subversive nature. By the end of the play, he seems well aware of the code of sociability and uses this code to his advantage in order to gain the kingdom and power of the fairy. At this point, his ignorance seems feigned and he is no different than the members of the upper class who use the tricks of their code in order to attain more wealth and notability.

In summary, the illusions in the paintings of Watteau and in the text of Marivaux reflect perfectly the ambiguities of the noble life and their manner of communication. The important elements in *Arlequin, Poli par l’Amour*, such as the dance lessons, advice concerning love, and the teasing flirtation between *Arlequin* and *Silvia*, are the same integral aspects found in Watteau’s art. One does not know for certain if the children of the court really enjoy the game of their music and dance lessons, but it is certain that these lessons are necessary in the society of the aristocracy and upper bourgeois, specifically concerning amorous relations. This necessity explains the rather strong desire of the Fairy to see that *Arlequin* follows his lessons.

On the other hand, the peasants of *Le Faux Pas* represent the game of love as described by the cousin of *Silvia*. The painting contains signs of the flirtation between “peasants” similar to that of *Arlequin* and *Silvia*. The rituals of love involve a battle between control and freedom of desires. The upper bourgeoisie and aristocracy must suppress and control these desires; yet, through the disguise of peasants, they

may more easily break their own rules.

Finally, the effect of the theatre becomes very important. The actions represented in the paintings seem a mixture of the life in court and a play. This effect places these two worlds, that of the theatre and the court, in parallel. They embrace that training of people toward a particular goal and the disguising of oneself. The themes in *Arlequin, Poli par l’Amour* and Watteau’s paintings are not only symbols of myths and fairytales of the time, but also a real way of life and a specific code of sociability that controlled and determined the various classes found in early eighteenth century France. The masquerade lifestyle occurred at a significant moment, when a new flexibility in social representation began to emerge. Over the next several decades, actual social identities began to shift in the same way as was represented in the works of Watteau and Marivaux.

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I would like to thank the Musée du Louvre that houses the painting *Le Faux Pas* for the use of the image in my paper. In addition, I would like to thank the Berlin Dahlem, Staatliche Museen where the painting *La Danse* is housed.

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I am an economics and history senior in the College of Arts and Sciences. I am a second year Gaines Fellow, and a recipient of the English Speaking Union Scholarship for summer study at Oxford University, and a National Merit Scholar. On campus, I am the co-founder and Chairman of the Moderates, Vice President of Phi Alpha Theta History honorary fraternity, and a member of Kappa Alpha Order social fraternity. My goal is to work as an attorney in some issue of domestic or foreign policy, hopefully with an economic orientation. This paper discusses a major issue within macroeconomic policy circles and is the type of work I hope to do as a consultant or government official in the future. My work for this paper was part of a semester long term paper for Economics 491G.



**Mentors:**  
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In fiscal year 2004, the United States budget deficit is expected to exceed \$477 billion and be 4.2% of the Gross Domestic Product. As J. T. Knadler explains in his introduction, the impact of deficits on the overall economy is still a matter of debate in economics. J. T.'s paper carefully reviews this debate and proposes a model and estimation approach to test the implications therein. The two most important questions are whether increased deficits lead to higher interest rates, and if these deficits have an impact on private savings. Using standard macro-economic variables and models, J. T. estimates a three equation system that models the deficit, interest rates, and savings. His creative use of Military personnel as an instrument of the deficit, combined with the standard use of currency in circulation as an instrument for the interest rate, make this paper an interesting contribution to a long and important literature on this topic. J. T. finds support for the traditional view that increasing deficits raise the interest rate, and little support for the view that savings is simply adjusted by perfectly forward-looking consumers. This paper represents a contribution to an important question in the macroeconomic literature.

## The Consequences of the Federal Deficit: An Empirical Analysis

### Abstract

One of the major issues of political debate in the United States during the past 20 years has been the potential consequences of rising federal deficits. Some politicians and economists argue for the traditional view that deficits increase interest rates and erode private savings, while those who hold the Ricardian equivalence view believe that economic agents are forward looking and will realize that a tax cut today will cause a future deficit, thus they will not change their behavior in response to the increase in wealth from the tax cut. My research was designed to determine through econometric regression analysis whether deficits cause an increase in interest rates and or a reduction in private saving. When I used a standard, two stage, least squares regression, I found deficits a significant factor only in decreasing savings; however, when I used an instrumental variable regression, I found that deficits were significant in increasing interest rates and had no impact on private savings. Thus, I conclude that both the Ricardian and the traditional view of deficits may be valid, depending upon one's methodology.

One of the clearest economic results of the Great Depression that crippled the economies of the United States and the world in the first half of the 20<sup>th</sup> century was the coming to fashion of Keynesian economics. The basic thrust of that theory, from a policy perspective, was an intense focus on the short-run business cycle, with little attention paid to the long run because, as Keynes stated, "in the long run we are all dead." Keynesians advocated low taxes and large increases in spending to stimulate the demand for goods. The corollary of this theory is that large deficits are given little attention; however, the experience of the United States in the 1970s of high unemployment, high inflation, and increasing interest rates made many economists rethink the Keynesian system. Beginning in the 1980s, the deficit began to become an intense political issue that led to various movements toward a balanced budget amendment, which never passed. The common fear of the deficit is that it leads to high interest rates; however, presently we are experiencing ever-increasing deficits, yet our interest rates remain at historical lows.

## Background

Research in the area of deficits and interest rates is not an especially new topic; indeed, some of the most famous macroeconomic thinkers, including David Ricardo, Martin Feldstein, Robert Barro, and Milton Friedman, have considered this issue. However, what has not been a constant in this debate is the context in which government deficits are discussed. Edward Nelson points out, "During the 1970s emphasis was on the inflationary consequences of deficits. By contrast, the concern voiced since the 1980s about deficits rests on the argument that they put upward pressure on real interest rates." (Nelson, 2004, p.1)

Before I discuss the recent literature and the empirical study of the consequences of the deficit, I feel it is relevant to note the macroeconomic theory debate that underlies and motivates work on this topic. Essentially, the debate is between two schools of thought: the traditional view and the Ricardian view. The traditional view holds that deficits have real consequences in that they produce high interest rates, reduce private savings, and "crowd out" capital accumulation, thus inhibiting long run economic growth. The Ricardian view assumes agents are forward-looking and, as Greg Mankiw states, "The forward looking consumer understands that the government borrowing today means higher taxes in the future. A tax cut financed by government debt does not reduce the tax burden; it merely reschedules it. It therefore should not encourage the consumer to spend more." (Mankiw, 2003, p. 416)

One of the most noteworthy articles advocating the traditional view was a 1970 paper by Feldstein and Eckstein that examined the relationship between deficits, interest rates, and private savings during the period from 1954 to 1969 on a quarterly basis. Although the authors found that the federal deficit was not significant in explaining interest rates, they did find that "the decline in the real per capita publicly held Federal debt put downward pressure on interest rates." (Office of the Assistant Secretary for Economic Policy, 1984, p. 37)

However, Feldstein and Eckstein's conclusion "is weak in that it is only of marginal statistical significance." (Office of the Assistant Secretary for Economic Policy, 1984, p. 37) Since its publication, the Feldstein and Eckstein paper has been the subject of much debate. One noteworthy criticism, and the work that has since become one of the most widely cited Ricardian papers, is a 1985 article by Paul Evans, an economist at Ohio State University. Evans examined the period between October 1979 and December 1983, because "the Federal Reserve stabilized

interest rates over most of the postwar period, perhaps hiding the true relationship." Furthermore, "Prior to the 1980s the deficit was rarely large and did not vary much and during this period the Federal Reserve largely freed interest rates to seek their own levels." (Evans, 1985, p. 83) From his regressions, Evans concludes "Not that the large deficits in 1982 and 1983 lowered interest rates, but rather that there is no evidence that they produced the high interest rates that have prevailed since October 1979." (Evans, 1985, p. 85)

Evans offers two explanations for his findings. He cites the work in a 1983 paper by University of Michigan economist Roger Kormendi who "suggests that changes in the deficit have been offset by essentially equal changes in private saving, thereby removing the need for interest rates to change." (Evans, 1985, p. 85) Evans's second explanation comes from a theory of Harvard economist Robert Barro that refutes the standard notion that government deficits are essentially taxes on future generations. Barro states that most intergenerational transfers are among family members. Barro then concludes, "The shift from taxes to deficits does not offer the typical person a new opportunity to extract funds from his or her descendants. Rather, the response to higher deficits would be a shift in the private transfers by an amount sufficient to restore the balance of income across generations that was previously deemed optimal. In this case, the shift from taxes to deficits has no aggregate wealth effect." (Barro 1990, p. 360)

Given the research cited, it is evident that there are no definitive conclusions to the question of the economic consequences of deficits; rather, many of the conclusions lie in the type of methodology employed by the researcher. However, overall, it would be a disservice not to note that the Ricardian view is the conclusion of the majority of empirical evidence for the United States that was presented in the 1984 Treasury report for the period we are discussing.

Therefore, the basic questions my research sought to answer are: first, are deficits responsible for high interest rates or is it the reverse; and, second, if not, what can explain high interest rates. A secondary question was to examine the effect of deficits on private savings to see if deficits erode private savings. Given that there are a multitude of interest rates, I chose to use the secondary market rate on three month treasury bills (a standard nominal interest rate) as my dependent variable. The time period of my data was in quarterly sets beginning in 1948, because this was the first post-World War II year that contained all the data for the independent variables I wanted to use. The data ends with the third quarter of 2003. I began



by running some simple single variable regressions that include interest rates, deficits, and savings relationships. Then I ran regressions with almost all of my independent variables to capture the impacts of multiple variables. From there, I went on to show some of the regressions used in previous empirical work that pertain to the data sets that I am using. Finally, I used a series of instrumental variable regressions to see if that makes a difference in the relationships I was attempting to capture.

### Methodology

My independent variables (the parenthesis are how the variable appears in the output tables) are the following:

- currency in circulation (currency)
- civilian labor force participation rate (civilian)
- current government expenditure (currente)
- current government receipts (currentr)
- fixed private investment (fixedpri)
- GDP deflator measured in 2000 dollars (gdpdefla)
- net exports (netexpor)
- real GDP measured in 2000 dollars (realgdp)
- West Texas spot oil prices per barrel of oil (spottexa)
- federal non-defense investment (federaln)
- industrial production (with 1997 = 100) (industri)
- federal national defense investment (var1)
- real disposable personal income (realdisp)
- the number of United States active military (activemi)
- gross private savings (grosspri)
- the deficit (deficit)
- The interest rate notation is nominali.

All of the independent variables that are in dollars are measured in billions of dollars.

I wanted to include some type of exchange rate; however, I could not find data available for some of the beginning years of my data set. For the interest rate I would have preferred the federal funds rate, because it is more closely tied to policies of the Federal Reserve, however, it was not available prior to 1959; therefore, I chose to capture more data by using the three month Treasury note rate. Furthermore, M2 would have been a better monetary aggregate, but it also was not available prior to 1959, so I used currency in circulation. All of the data that I used came from the FRED II section of the Saint Louis Federal Reserve's website database. All of the variables I used, with the exception of the nominal interest rate, currency in circulation, civilian participation rate, spot oil prices, and industrial production, were given quarterly. I took those monthly sets and calculated a quarterly average

for the three months of the respective quarters so that all data was in quarterly form.

### Results

Please note that for the sake of brevity only the special interest variables are discussed in detail for the rest of this paper. For the summary statistics of each independent variable and the regression results of all variables included in a particular regression, please see the on-line version of this paper available at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004), which includes complete output tables and a more detailed and technical discussion of all variables used.

Most of the independent variables, shown in Appendix 1 in the on-line version of this paper, had sample sizes of 223 or 222 (the number of quarters from 1948 to 2003), depending on the data available from the FRED database. The mean of the nominal interest rate was 4.89% with the minimum being an astounding .79% and the maximum making it to 15.05%. The average current expenditure was \$681 billion and the average receipts were \$619 billion, which means that the United States government, on average, ran a deficit in the years for which I have data.

Over the period, the United States did average a deficit, yet it was only a small one compared to recent numbers, at about \$62 billion. The minima and maxima of this variable are quite interesting because the maximum surplus was \$212 billion and our largest deficit was \$506 billion. What is even more interesting about these numbers is that both of them are within the past decade. The GDP deflator was around 50 in 2000 dollars; therefore, this is the weighted average of various goods over the period measured in 2000 dollars. Gross private savings for the country had a mean of \$537 billion.

Before I formally discuss the regressions that are the basis for the conclusion of this paper, I think it is appropriate to spend a moment discussing some statistical terminology. The coefficient value is the change in the dependent variable that would result from a one unit increase in that particular independent variable. The "t" statistic and the P value are both measures of statistical significance; however, all discussions of significance in this paper will use the P value in the  $P > |t|$  column. Given that this paper will use the standard 5% significance level, any independent variable with a P value of .05 or less indicates a statistically significant independent variable.

Because the goal of my work was to see if deficits raise interest rates and erode private savings, the three variables of special interest were the deficit, the interest rate, and gross private savings. The logical point

of departure for me was to regress each of these on each other to obtain a possible relationship among these variables. I first regressed the interest rate on the deficit (which was calculated from a comparison of the expenditure and receipts variables). The result of this showed that there was a negative relationship, although it was statistically insignificant. When I did the reverse and regressed the deficit on the interest rate, I found a negative correlation, but it was also statistically insignificant. The lack of statistical significance would seem again to demonstrate Ricardian equivalence.

Second, both of my regressions involving gross private savings and the deficit showed a negative relationship that was highly statistically significant with P values of 0. I was also interested in the role inflation plays in deficits and regressed the deficit on the GDP deflator and the reverse. What I found was that there is a high amount of statistical evidence that the two have a negative relationship; however, because both regressions were statistically significant, I could not prove causation either way.

Therefore, after having tried these simple regressions, I decided to go to the opposite extreme in regression six and run a regression that regressed nearly every variable on the interest rate (see Appendix 2 in the on-line paper). For the sake of brevity, I will dis-

regressions six and seven, except with fewer variables. Regression eight is a regression of various factors on the interest rate (shown in Appendix 4 in the on-line paper). It can be seen that the deficit is significant in this regression with a coefficient of .007. This result indicates that for a one billion dollar increase in the deficit, we will see interest rates rise by .007.

In regression nine I regressed a series of variables on the deficit (shown in Appendix 5 in the on-line paper). The nominal interest rate was significant in this regression with a coefficient of 18.604, indicating that a 1% increase in the nominal interest rate will increase the deficit by \$18.6 billion. This increase actually is quite small, unless interest rates increase by large amounts as we saw in the 1970s and early 1980s.

In regression ten, I tried to replicate the Evans' equation, in which Paul Evans regressed the interest rate on government spending, the deficit, the money supply, and inflation. I used current expenditure, the deficit, currency in circulation, and the GDP deflator in my regression, so I do have slightly different measures than Evans. However, what is important is that my regression (shown in the table below) did reach the same conclusion as Evans: that the deficit does not have a statistically significant effect on the interest rate; my t statistic on the deficit was only 1.122.

Therefore, using the variables that Evans used, I have shown Ricardian equivalence; however, I have also run a regression in which the deficit had a significant effect.

My final regressions were an attempt to confront the relationships of deficits, interest rates, and private savings through the use of an instrumental variables approach. First, for my two-stage least squares interest rate regression, I used a

series of variables and regressed them on the interest rate. The variable that is of special importance is the currency in circulation variable because it impacts the interest rate but not the deficit. After running this regression, I obtained a predicted value denoted as "n" that will be the instrumental variable that I will later regress on the deficit. For my two-stage deficit regression, I used a series of variables and regressed them on the deficit. Similar to my interest rate equation, I took this regression and obtained a predicted value denoted "d." The variable of special importance in regression 13 was the active military variable, because it impacts the deficit but not the interest rate. In regression 15, I used all of the previous

#### Regression 10: Regression Modeling the Evans Equation

| nominali | Coef.      | Std. Err. | t      | P >  t | [95% Confidence Interval] |
|----------|------------|-----------|--------|--------|---------------------------|
| deficit  | 0.0026655  | 0.0023753 | 1.122  | 0.263  | -0.0020159-0.007347       |
| currente | -0.0282032 | 0.0056795 | -4.966 | 0      | -0.0393969-0.0170095      |
| currency | 0.0148534  | 0.0096351 | 1.542  | 0.125  | -0.0041364-0.0338432      |
| gdpdefla | 0.5536981  | 0.0680048 | 8.142  | 0      | 0.4196671-0.6877291       |
| _cons    | -6.244723  | 1.228341  | -5.084 | 0      | -8.665668-3.823778        |

cuss only the variables that are of special interest to the project or results that are especially intriguing. What is significant to note is that the deficit did not have a statistically significant impact upon the nominal interest rate. Given the lack of a statistically significant value for the deficit, it would seem again that Ricardian equivalence would hold.

I next decided to regress my entire data series on the deficit in order to see which factors were statistically significant (see regression seven). It is noteworthy that the nominal interest rate was not significant at the five percent level, which again would buttress the Ricardian equivalence argument.

My next two regressions were similar to

variables that impact the interest rate and the instrumental variable “d” for the deficit.

I found that the deficit has a statistically significant positive effect of .0111 on the interest rate. Essentially, a \$1 billion increase in the deficit will increase interest rates by just over one tenth of a percentage point. Furthermore it should be noted that our regression model is fairly accurate, in that the value of R squared is .823. In regression 16, I regressed variables that impact the deficit and the instrumental variable “n” for the interest rate on the deficit.

I found that there was a highly statistically significant positive relationship again of 31.77. This means that for a 1 percent increase in the interest rate, the deficit will increase by \$31.77 billion. In my final regression (regression 17) I wanted to find a relationship among deficits and private savings. I regressed various factors that impact private savings plus my two instrumental variables, “n” and “d.”

I found that deficits do not have a statistically significant impact upon private savings. One interesting finding from this regression was the statistical significance of the inflation variable. For a one dollar increase in the GDP deflator, gross private savings increased by \$12.645 billion, which makes sense because people have to save more to make up for the lost value of their money due to inflation.

My instrumental variable regressions have proven only one of the traditional view’s propositions. Indeed, there was no impact on private savings; however, we have learned that deficits do indeed raise interest rates. Nonetheless, we must also remember that some of the earlier regressions, including the Evans’ equation, did not show a statistically significant relationship between deficits and interest rates. Therefore, the conclusion of this paper must be that, similar to the finding of the 1984 Treasury Report, the empirical proof of the relationship between deficits and interest rates is very much a question of econometric methodology, with different methods that can each prove either the Ricardian or the traditional view of deficits.

### Acknowledgements

I would like to thank Professor Chris Bollinger, my able and knowledgeable econometrics professor, and Professor Jim Fackler, who was always willing to provide macroeconomic expertise and to discuss policy implications of macroeconomic policy. I would also like to thank Professor Dick Gift for stimulating my interest in economics.

### Regression 15: Various Factors on the Interest Rate Using 2-Stage Least Squares

| nominali | Coef. | Std. Err. | t     | P >  t |
|----------|-------|-----------|-------|--------|
| d        | 0.011 | 0.003     | 3.637 | 0.000  |

### Regression 16: Various Factors on the Deficit Using Two-Stage Least Squares

| deficit | Coef.  | Std. Err. | t     | P >  t |
|---------|--------|-----------|-------|--------|
| n       | 31.774 | 6.195     | 5.129 | 0.000  |

### Regression 17: Various Factors on Private Saving Using Two-Stage Least Squares

| deficit | Coef.  | Std. Err. | t      | P >  t |
|---------|--------|-----------|--------|--------|
| d       | -0.190 | 0.105     | -1.807 | 0.072  |

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I graduated Summa Cum Laude in May 2004 with a Bachelor of Arts degree in Mathematical Economics. I have been an active member of Alpha Kappa Psi Professional Business Fraternity and am also a church lector for the University of Kentucky Newman Center. Throughout the majority of my undergraduate career, I was fortunate to take part in the Computer Science, Engineering, and Mathematics scholarship (CSEMS) program funded by the National Science Foundation. I plan on working until I get married in the spring of 2005, after which I am considering attending graduate school for economics. My personal relationship to the situation presented in this paper has made completing this project a very interesting and also satisfying process.

## Declining Survivor Benefits and Labor Force Participation

### Abstract

Social Security Survivor Benefits aim to mitigate the problem of raising children on a single income by granting a widow monthly payments in her child's name. However, as each child reaches the age of 18 (or 19, if he or she is attending elementary or high school full-time) his or her benefits are discontinued. As is increasingly common in today's society, simply turning 18 is not indicative of financial independence. This paper attempts to discern whether a widow changes labor force habits when her children become legal adults and survivor benefits are reduced or discontinued. Though many of my results do not give convincing evidence that labor force habits of widows change relative to other women when their children turn 18, I did find that these women are more likely than their non-widowed counterparts to move from part-time to full-time work.

### Background

The death of a husband is clearly a traumatic experience for any wife, both emotionally and financially. And, widows with children are put under the additional stress of caring for children on an often drastically reduced income. Social Security Survivor Benefits aim to mitigate this problem by granting the widow monthly payments in her child's name. However, as each child reaches the age of 18 (or 19, if he or she is attending elementary or high school full-time) his or her benefits are discontinued. This continues as each subsequent child becomes a legal adult and the widow is left with no further child survivor benefits. As is increasingly common in today's society, simply turning 18 is not indicative of financial independence. The legal adult will most likely enroll in some form of post-secondary education and will be confronted with the staggering costs of higher education. The widow, however, is given no additional financial support, though the cost of providing assistance to her son or daughter may actually be higher than when the child was covered by survivor benefits. Furthermore, costs associated with raising a family, such as house or car payments, do not go away when the last child



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The Social Security Survivorship benefit pays over \$5 billion per month to 6 million recipients. Amanda's research is a serious contribution to understanding how the structure of the program affects female labor supply. She observed that the survivor benefits decrease when the children of the deceased turn 18. However, because most individuals do not become self-supporting then, this may induce surviving spouses to work more. Amanda utilized the 1996 panel of the Survey of Income and Program Participation. She constructed a set of variables that measure quarterly changes in labor force participation over a four-year period. She found that widows were far more likely to move from part-time to full-time status as their children turned 18. This finding suggests that there is a substantial effect of the policy on labor force participation. It suggests further research into the well being of these families is important, and her conclusions suggest some interesting and potentially fruitful possibilities for future research. The paper is well done and highly professional.



turns 18. This may make it difficult for the widow to maintain the same standard of living held prior to the discontinuation of survivor benefits.

My research followed the behavior of widows before, during, and after the time at which their Social Security Survivor Benefits were discontinued. In particular, I studied changes in labor participation over the period in which survivor benefits began to decline.

The most relevant research on this topic by Brien et al. (2003) addresses the marriage penalty induced by Social Security Survivor Benefits provisions. Their research suggests that because the marriage penalty for widows receiving survivor benefits is greater than the penalty in the tax code, which has been shown to discourage marriage, the survivor benefits penalty will also discourage marriage. Though their paper suggests that survivor benefits are substantial enough to be considered in a decision to marry, it does not discuss whether a similar reduction in benefits due to children reaching the age of 18 affects labor force participation changes by the widow. Other related research on this topic deals only with the increased poverty rate associated with becoming a widow, but does not look specifically at characteristics of women at the completion of survivor benefit disbursement.

A study by Myers et al. (1987) suggests that "the transition into widowhood means higher poverty rates for all subgroups of women, but the difference among the subgroups of widows is considerably smaller than when they were married" (p. 754). Their sample included women who received survivor benefits. If the poverty rate rises for widows compared to their married counterparts, even with federal assistance, I am led to wonder how these women behave when this assistance is dropped. It seems that such a drastic drop in monthly income would require a counter-reaction by the widow, such as obtaining another job, moving from part-time to full-time work, or simply decreasing her standard of living. The change in income and the necessary adjustments to it by this specific group of women appear to have received little notice. My research attempted to discern whether the discontinuation of survivor benefits placed a further substantial hardship on widows, enough hardship to induce them to change labor force habits. I hypothesized that widows will take some action to make up for lost compensation, whether it takes the form of starting work altogether or increasing hours worked.

## Methodology

I obtained my data from the 1996 panel of the Survey of Income and Program Participation (SIPP) conducted

by the United States Census Bureau. Using the fourth reference month of waves 1-12 of this data, I was able to track the behavior of each subject over a period of time. I determined the wave in which the woman became widowed and the waves in which her children reached the age of 18, signaling a decline in or the end of survivor benefits. The main independent variables were dummy variables that distinguished widows who have at least one child who has reached age 18 and those whose children have not. I tested for any changes in labor force participation, particularly whether the widow began working or changed from part-time work (less than 35 hours per week) to full-time work (greater than 35 hours per week). These variables, along with variables that account for movement out of the labor force or a shift from full-time to part-time, served as the dependent variables for four models.

The original sample included 119,475 observations of women age 29-50. However, I had only 794 women who were widowed or became widowed from one wave to the next. I assigned women the status of "became widowed," those who were not widowed in the previous wave but are in the current wave; "always widowed," those who were widowed in the previous and the current waves; and "never widowed," those who were not widowed in the previous nor the current wave, as a control group. From this point, I created interaction variables for each of these three subgroups. Each subgroup was classified as having some children under 18, "have children;" or as having one or more child who turned 18 from the previous wave to the current wave, "lose children." Then, I was able to identify the exact wave in which a woman became widowed and when some of her children became legal adults, indicating a decline in survivor benefits. After compiling observations from each of the 12 waves, I was able to test for changes in labor force participation around the wave in which the change took place. For an alphabetical listing of variables, accompanied by reference numbers and variable definitions, see the Appendix included in the on-line version of the journal at [www.uky.edu/Kaleidoscope/fall2004](http://www.uky.edu/Kaleidoscope/fall2004). All variables will be referred to by their reference numbers in the analyses.

## Results

Table 1 presents demographic statistics for each category described above. Information for variables that presumably do not change when children reach age 18 include age, race, and highest level of education attained by the widow. Note that education level may range from 31 to 47, with 31 indicating a less than first grade education and 47 representing a doctorate

**Table 1: Descriptive Statistics**

| Reference Number | Variables                     | Sample Size | Education |           | Age     |           | White | Black |
|------------------|-------------------------------|-------------|-----------|-----------|---------|-----------|-------|-------|
|                  |                               |             | Average   | Std. Dev. | Average | Std. Dev. |       |       |
| 3                | Always Widowed, Have Children | 701         | 39.88     | 3.30      | 41.71   | 5.60      | 73 %  | 22 %  |
| 4                | Always Widowed, Lose Children | 45          | 39.96     | 2.92      | 44.60   | 4.52      | 76 %  | 18 %  |
| 6                | Became Widowed, Have Children | 43          | 40.37     | 3.45      | 40.47   | 6.20      | 74 %  | 14 %  |
| 7                | Became Widowed, Lose Children | 5           | 41.00     | 4.06      | 47.60   | 1.95      | 80 %  | 20 %  |
| 15               | Never Widowed, Have Children  | 77,962      | 40.44     | 2.94      | 36.18   | 6.81      | 84 %  | 12 %  |
| 16               | Never Widowed, Lose Children  | 2,878       | 39.98     | 2.99      | 40.74   | 6.56      | 82 %  | 13 %  |

**Table 2: Start Work**

| Reference Number | Variable                     | Coef.   | Std. Err. | t       | p-value   |
|------------------|------------------------------|---------|-----------|---------|-----------|
| 1                | Age in Years                 | -0.0011 | 0.0005    | -2.696  | < 0.001** |
| 2                | Always Widowed               | 0.0202  | 0.0298    | 0.679   | < 0.497   |
| 3                | • Have Children              | -0.0235 | 0.0417    | -0.564  | < 0.573   |
| 4                | • Lose Children              | -0.2180 | 0.0663    | -3.293  | < 0.001** |
| 5                | Became Widowed               | 0.0215  | 0.0356    | 0.603   | < 0.547   |
| 6                | • Have Children              | -0.0340 | 0.0493    | -0.690  | < 0.490   |
| 7                | • Lose Children              | -0.2110 | 0.0858    | -2.461  | < 0.014*  |
| 8                | Change in Education          | 0.0137  | 0.0009    | 15.202  | < 0.001** |
| 9                | Change in Number of Children | -0.0170 | 0.0020    | -8.651  | < 0.001** |
| 10               | Education Level              | -0.0025 | 0.0001    | -20.710 | < 0.001** |
| 12               | Have Children                | 0.0268  | 0.0412    | 0.652   | < 0.514   |
| 13               | Lose Children                | 0.1930  | 0.0638    | 3.018   | < 0.003** |
| 14               | Never Widowed                | 0.0078  | 0.0294    | 0.265   | < 0.791   |
| 15               | • Have Children              | -0.0192 | 0.0412    | -0.465  | < 0.642   |
| 16               | • Lose Children              | -0.1860 | 0.0637    | -2.925  | < 0.003** |
| 18               | Race                         | 0.0030  | 0.0006    | 5.321   | < 0.001** |

\*Significant at the 5 % level.  
\*\*Significant at the 1 % level.

degree. The value of the education variable increases steadily throughout its range, but a one unit increase does not always indicate an additional year of education, rather, it may represent a few years of education at the lower level, or an additional degree at the higher level.

For all categories of women, average education ranges from high school graduate to some college but no degree. Also, women with children reaching the age of 18 are, on average, older than their counterpart group who have children; women who have never been widowed are, on average, younger than those who became widowed or have always been widowed. The majority of each category is white, with black being the second largest group. As can be seen from the table, the sample size of each category varies widely. Of the categories that I have defined, fewer than 1 % of my observations became widowed or have always been widowed. This small sample size makes

finding statistically significant results challenging.

I began my analysis by running four standard OLS regressions. The four dependent variables were dummy variables that indicate whether the woman has started working, switched from part-time to full-time and, to check the opposite scenario from what the hypothesis predicts, the other two variables indicate whether a woman has actually stopped working or switched from full-time to part-time. Using the linear probability model, I was able to determine the effect of a one unit change in the independent variable on the dependent variable. In particular, the coefficient of each independent variable represents the change in the probability of being in the set of the dependent variable when the independent variable changes by one unit. My independent variables included all subgroups of women described above: became, always, and never widowed, and dummy variables for those who have children and those whose children are turning 18, as well as interaction variables among these groups. I also included change variables that indicate a difference in the number of children under 18 and the amount of education attained from one wave to the next. Other variables included those listed above in the descriptive statistics table: education, age, and race. The results of the first regression, regressing the dummy variable that indicates whether a woman started working in the period on the other independent variables, are shown in Table 2.

Many of the variables were not statistically significant. However, the variables “became widowed” and “always widowed” are positive, indicating there may be some validity to the hypothesis that widows are more likely to begin working than non-widows. Variables that are significant include numbers 1, 4, 7, 8, 9, 10, 13, 16, and 18. It is not surprising that many of the demographic variables are significant; these variables have a quite substantial number of observations compared to the interaction variables. Furthermore, it makes sense that increasing the amount of education one receives increases the likelihood of that person beginning work, as she may have been in school and out of work in the previous wave.

The probability that a person begins working decreases with age; this can be attributed to job stability and completion of education that is characteristic of older individuals. Also, those with a greater amount of education are less likely to go from not working to working; this agrees with the assumption that more education is indicative of increased ability to hold down a job, as well as increased job stability. An increase in the number of children under the age of 18 decreases the probability that a woman will begin

working, and women who have some children turning 18 are more likely to start working. These scenarios are easily explained; women do not generally begin working when they have an additional child to care for, but may have more time to work once the child is grown.

Although these variables are highly statistically significant, they are not the variables of interest. I am more concerned with women who have lost children, whether they have always been widowed, became widowed, or have never been widowed (variables 4, 7, and 16). Unfortunately, though they are statistically significant, they are significant in the opposite direction than I had hypothesized. My analysis suggests that any of the three categories of women are less likely to begin working when some of their children reach the age of 18. This may be accurate for women who have never been widowed, but, for women who have become or always been widows, this absolutely contradicts the hypothesis.

For completeness, the next regression was run to check the opposite of the hypothesis. I regressed the dummy variable “stop work,” an indicator of women who were working in the previous period but are not working in the current period, on the same independent variables as above. Results are shown in Table 3.

Once again, variables 1, 8, 9, and 10 are statistically significant. Both “change in number of children” and “change in education” have opposite signs from the previous regression, indicating that the assumptions above also hold for the opposite situations. Because “age in years” and “education level” have the same sign, one may conclude that women of all ages and education levels may be prone to starting or stopping work at any time for any given

**Table 3: Stop Work**

| Reference Number | Variable                     | Coef.   | Std. Err. | t       | p-value   |
|------------------|------------------------------|---------|-----------|---------|-----------|
| 1                | Age in Years                 | -0.0009 | 0.0000    | -20.261 | < 0.001** |
| 2                | Always Widowed               | -0.0034 | 0.0287    | -0.119  | < 0.905   |
| 3                | • Have Children              | -0.0365 | 0.0402    | -0.909  | < 0.363   |
| 4                | • Lose Children              | 0.0124  | 0.0638    | 0.194   | < 0.846   |
| 5                | Became Widowed               | -0.0251 | 0.0343    | -0.073  | < 0.465   |
| 6                | • Have Children              | 0.0573  | 0.0474    | 1.207   | < 0.227   |
| 7                | • Lose Children              | -0.0171 | 0.0826    | -0.207  | < 0.836   |
| 8                | Change in Education          | -0.0083 | 0.0009    | -9.438  | < 0.001** |
| 9                | Change in Number of Children | 0.0370  | 0.0019    | 19.563  | < 0.001** |
| 10               | Education Level              | -0.0018 | 0.0001    | -15.544 | < 0.001** |
| 12               | Have Children                | 0.0338  | 0.0396    | 0.854   | < 0.393   |
| 13               | Lose Children                | 0.0042  | 0.0614    | 0.069   | < 0.945   |
| 14               | Never Widowed                | -0.0073 | 0.0283    | -0.258  | < 0.797   |
| 15               | • Have Children              | -0.0306 | 0.0396    | -0.772  | < 0.440   |
| 16               | • Lose Children              | 0.0487  | 0.0613    | 0.794   | < 0.427   |
| 18               | Race                         | 0.0005  | 0.0005    | 0.872   | < 0.383   |

\*\*Significant at the 1% level.

**Table 4: Part-Time to Full-Time**

| Reference Number | Variable                     | Coef.   | Std. Err. | t      | p-value   |
|------------------|------------------------------|---------|-----------|--------|-----------|
| 1                | Age in Years                 | -0.0005 | 0.0001    | -7.058 | < 0.001** |
| 2                | Always Widowed               | -0.0565 | 0.0478    | -1.183 | < 0.237   |
| 3                | • Have Children              | 0.12100 | .0668     | 1.811  | < 0.070   |
| 4                | • Lose Children              | 0.2290  | 0.1060    | 2.159  | < 0.031*  |
| 5                | Became Widowed               | -0.0815 | 0.0570    | -1.430 | < 0.153   |
| 6                | • Have Children              | 0.1280  | 0.0789    | 1.620  | < 0.105   |
| 7                | • Lose Children              | 0.0525  | 0.1370    | 0.382  | < 0.702   |
| 8                | Change in Education          | -0.0012 | 0.0015    | -0.811 | < 0.417   |
| 9                | Change in Number of Children | -0.0096 | 0.0032    | -3.036 | < 0.002** |
| 10               | Education Level              | -0.0035 | 0.0002    | 18.151 | < 0.001** |
| 12               | Have Children                | -0.1150 | 0.0660    | -1.744 | < 0.081   |
| 13               | Lose Children                | -0.1190 | 0.1020    | -1.164 | < 0.244   |
| 14               | Never Widowed                | -0.0361 | 0.0470    | -0.768 | < 0.443   |
| 15               | • Have Children              | 0.0999  | 0.0659    | 1.515  | < 0.130   |
| 16               | • Lose Children              | 0.1160  | 0.1020    | 1.133  | < 0.257   |
| 18               | Race                         | -0.0032 | 0.0009    | -3.577 | < 0.001** |

\*Significant at the 5% level.  
\*\*Significant at the 1% level.

reason. This also means that women are less likely to stop working than to remain working, not just start working. The reverse is also true. In this regression, none of the variables of interest were statistically significant, however, “always widowed, have children” and “became widowed, lose children” (variables 3 and 7) are negative as predicted.

The third part of my analyses regresses the dummy variable “part-time to full-time” on the same set of independent variables. Results are shown in Table 4.

Probably for the same reasons, variables 1 and 9 are statistically significant in the same direction as

**Table 4: Part-Time to Full-Time**

| Reference Number | Variable                     | Coef.   | Std. Err. | t      | p-value    |
|------------------|------------------------------|---------|-----------|--------|------------|
| 1                | Age in Years                 | -0.0005 | 0.0001    | -7.058 | < 0.001 ** |
| 2                | Always Widowed               | -0.0565 | 0.0478    | -1.183 | < 0.237    |
| 3                | • Have Children              | 0.12100 | 0.0668    | 1.811  | < 0.070    |
| 4                | • Lose Children              | 0.2290  | 0.1060    | 2.159  | < 0.031 *  |
| 5                | Became Widowed               | -0.0815 | 0.0570    | -1.430 | < 0.153    |
| 6                | • Have Children              | 0.1280  | 0.0789    | 1.620  | < 0.105    |
| 7                | • Lose Children              | 0.0525  | 0.1370    | 0.382  | < 0.702    |
| 8                | Change in Education          | -0.0012 | 0.0015    | -0.811 | < 0.417    |
| 9                | Change in Number of Children | -0.0096 | 0.0032    | -3.036 | < 0.002 ** |
| 10               | Education Level              | -0.0035 | 0.0002    | 18.151 | < 0.001 ** |
| 12               | Have Children                | -0.1150 | 0.0660    | -1.744 | < 0.081    |
| 13               | Lose Children                | -0.1190 | 0.1020    | -1.164 | < 0.244    |
| 14               | Never Widowed                | -0.0361 | 0.0470    | -0.768 | < 0.443    |
| 15               | • Have Children              | 0.0999  | 0.0659    | 1.515  | < 0.130    |
| 16               | • Lose Children              | 0.1160  | 0.1020    | 1.133  | < 0.257    |
| 18               | Race                         | -0.0032 | 0.0009    | -3.577 | < 0.001 ** |

\*Significant at the 5% level.

\*\*Significant at the 1% level.

**Table 5: Full-Time to Part-Time**

| Reference Number | Variable                     | Coef.   | Std. Err. | t      | p-value    |
|------------------|------------------------------|---------|-----------|--------|------------|
| 1                | Age in Years                 | -0.0042 | 0.0001    | -5.723 | < 0.001 ** |
| 2                | Always Widowed               | -0.0561 | 0.0458    | -1.224 | < 0.221    |
| 3                | • Have Children              | 0.0417  | 0.0642    | 0.650  | < 0.516    |
| 4                | • Lose Children              | 0.1130  | 0.1020    | 1.107  | < 0.268    |
| 5                | Became Widowed               | 0.0252  | 0.0548    | 0.460  | < 0.646    |
| 6                | • Have Children              | -0.0269 | 0.0758    | -0.354 | < 0.723    |
| 7                | • Lose Children              | 0.2240  | 0.1320    | 1.699  | < 0.089    |
| 8                | Change in Education          | -0.0057 | 0.0014    | -4.027 | < 0.001 ** |
| 9                | Change in Number of Children | -0.0179 | 0.0030    | 5.926  | < 0.001 ** |
| 10               | Education Level              | 0.0038  | 0.0002    | 20.482 | < 0.001 ** |
| 12               | Have Children                | -0.0460 | 0.0633    | -0.727 | < 0.467    |
| 13               | Lose Children                | -0.0847 | 0.0982    | -0.863 | < 0.388    |
| 14               | Never Widowed                | -0.0397 | 0.0452    | -0.880 | < 0.379    |
| 15               | • Have Children              | 0.0270  | 0.0633    | 0.426  | < 0.670    |
| 16               | • Lose Children              | 0.1120  | 0.0981    | 1.145  | < 0.252    |
| 18               | Race                         | -0.0051 | 0.0009    | -6.022 | < 0.001 ** |

\*\*Significant at the 1% level.

they are in the first regression. However, this regression yields positive coefficients for four of the interaction variables, 3, 4, 6, and 7. Furthermore, variables 3 and 4, “always widowed, have children” and “always widowed, lose children” are significant at the 7% and approximately 3% levels respectively. This indicates that, on average, women who have always been widowed and have kids are 12% more likely to move from part-time to full-time work than their complement group. Also, women who have always been widowed and whose children are reaching the age of 18 are 23% more likely to move from part-time to full-time

work than their complement group.

The final analysis regressed the “full-time to part-time” variable on the independent variables used in the previous analyses. Again, this regression was run to detect behavior that would contradict the hypothesis. Results are shown in Table 5.

Again, variables 1, 8, 9, 10, and 18 were statistically significant. Variables 1, 8, and 9 have the same sign as in the regression run using “stop work” as the dependent variable, which supports the hypothesis that stopping work and decreasing hours to part-time are similar types of behavior. Because “education level” is positive for both “part-time to full-time” and “full-time to part-time,” and negative for “start work” and “stop work,” I am led to believe that women with increased amounts of education are more likely to move between part-time and full-time work than to completely enter or leave the labor force at any time. In this regression none of my variables of interest are statistically significant.

For further analysis, I performed F-tests to determine whether any of the interaction variables had the same coefficient, in hopes that categories

of women with children would behave differently than those losing children, and that women who have never been widowed would not behave the same as those who had. Statistically significant results are listed in Table 6.

Using the “start work” regression, the F-test shows that variables 3 and 4 do not have statistically the same coefficient at the 1% level. The same is true for variables 6 and 7 in the “start work” regression at approximately the 6% level. This indicates that women who have always been widowed and have children have a different likelihood of entering the



labor force than those who are losing children. Also, women who became widowed and have children have a different likelihood of entering the labor force than women who became widowed and have children reaching the age of 18. This result may indicate that widows behave differently when their children become adults but, unfortunately, the coefficients on each of these variables were negative, the opposite of what was hypothesized. In the “stop work” regression, of women who have children turning 18, those who have always been widowed and those who have never been widowed have a different likelihood of leaving the labor force at the 5% level. Once again, these coefficients had the “wrong” sign in the original regression.

The only significantly different coefficients with the hypothesized sign occurred in the “part-time to full-time” model. Of women who have children turning 18, those who have never been widowed and those who have always been widowed behave differently when it comes to moving from part-time to full-time work. In the “part-time to full-time” regression (Table 4) the coefficient of variable 4 is twice as large as the coefficient of variable 16 (though variable 16 is only significant at just above the 25% level), indicating that women who have always been widowed and have children reaching the age of 18 are only slightly more likely to move from part-time to full-time work than their non-widowed counterparts.

Overall, none of the regressions showed very convincing evidence that labor force habits of widows change relative to other women when their children turn 18. I attribute this mainly to the small sample size of widows. Also, four months may not have been enough reaction time for the widow to start working or change to full-time once her children began turning 18. It could also be possible that many of the widows in this sample did not initially rely on the benefit; therefore, taking it away was not detrimental enough to require changes in labor force participation. Another possible outcome that cannot be detected by this analysis is a decrease in the standard of living. The widow may not make up for lost income through additional work hours, but may instead be forced to take other action such as moving into a smaller house or selling a car, etc.

In future research on this topic, I would extend my period of observation to two or more waves. Thus,

the effects of a decline in survivor benefits would have more time to be realized, possibly increasing the likelihood of the widow changing labor habits. I would also control for total income in the period before survivor benefits were reduced and the total amount of the benefit received, in order to compare responses to reduction in survivor benefits of low and high income widows. One final addition would be to include observations from other panels of SIPP data, controlling for changes in the economy. This would substantially increase my sample size, making it more possible to identify changes, if any, in labor force participation of widows due to a decrease in survivor benefits.

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**Table 6: F-Test**

| Reference Number  | Regression             | Relationship Tested  | Variable Numbers Tested | F-stat | p-value    |
|---|------------------------|--|-------------------------|--------|------------|
| 17  | Part-Time to Full-Time | Always Widowed, Lose Children<br>= Never Widowed, Lose Children  | 4 = 16                  | 14.85  | < 0.0001** |
| 18  | Start Work             | Always Widowed, Have Children<br>= Always Widowed, Lose Children | 3 = 4                   | 7.10   | < 0.0077** |
| 19  | Start Work             | Became Widowed, Have Children<br>= Became Widowed, Lose Children | 6 = 7                   | 3.41   | < 0.0647   |
| 20  | Stop Work              | Always Widowed, Lose Children<br>= Never Widowed, Lose Children  | 4 = 16                  | 4.21   | < 0.0401*  |
| *Significant at the 5% level.<br>**Significant at the 1% level. |                        |  |                         |        |            |

I graduated from the University of Kentucky in December of 2003, completing the requirements for the Bachelor of Fine Arts Degree with an emphasis in Photography and Digital Imaging. While there, I was on the Dean's List from the fall semester of 2002 to fall 2003. I have also recently been accepted to Virginia Commonwealth University, where I plan to complete my Masters of Fine Arts Degree in photography.



While pursuing my BFA, I spent many hours in the lab with professors and peers working to perfect my images and concepts. Overall I have taken four classes with Ruth Adams ranging from slightly advanced black and white photography to advanced non-traditional methods in photography. Professor Adams was always one to push me and urge me to try different things. She encouraged me

to be open with my first series of self portraiture and allowed me to feel more comfortable putting myself out there for everyone to see. She has also been a great friend to me and was always there to just hang out or get a quick lunch (especially where you can't understand the menu).

My work was exhibited at the Barnhart Gallery in a solo exiting show entitled *Interior Personas*. Selected images were also shown in the Tuska Gallery of Contemporary Art in an exhibition arranged by El Anatsui, a visiting artist from Africa. Some were also shown in "What Matters? Art Matters," a show to benefit the United Way at the O. A. Singletary Center for the Arts in the President's Room.

I enjoy reading the *New Yorker*, writing, and exercising in my spare time. I work for the University Press of Kentucky as an assistant in the marketing department. I feel fortunate to have the opportunity to work with authors, research new books, and be a part of the publishing process.



**Mentor:**  
**Ruth Adams,**  
**Assistant Professor, Department of Art**

It has been said that every time a photographer makes a photograph he or she is making a self-portrait. With this body of work, Bryce has brilliantly illustrated this statement. What started as a simple exercise in taking pictures of a face, grew into a deep exploration of self through images, first of just Bryce and then of those close to him. The images that made up Bryce's Bachelor of Fine Arts exhibition, *Interior Personas*, range from traditional Black and White photographs to multi-layered digital composites. But, the consistent theme through all of the work is using the external portrait to convey an internal message about the subject. Images of Bryce, his family and friends, and text that convey his and their emotions and feelings, blend to create a composite of Bryce himself. It takes a courageous artist to bare his or her soul through images in a way that keeps an audience's interest, and Bryce has succeeded in doing just that.

## Interior Personas

### Abstract

With this body of work, I attempted to truly get inside the human persona. People tend to wear a mask that they feel best represents what they think everyone wants them to be. They tend to hide or brush away important aspects of their personality in fear of persecution or rejection from others. I started with myself, looking inside to reconsider my own beliefs and how I portray myself to society. The combination of that photographic self-discovery and written journal entries came together in a series of self portraits that I felt were a true representation of who I really was at that point of my life. I then moved on to other people, mostly my peers, trying to get a similar result using their own ideas as a model for my work. I did this using straight or traditional photography sometimes in combination with digital techniques to meld the information together into a cohesive image. One main aspect that I tried to incorporate was the use of text in my work. I incorporated journal entries, my own personal reaction to the images, and ideas gathered from interviews with my subjects into the images to create a complete idea.

### Interior Personas

For over a year and a half I have been exploring myself, my thoughts, and my emotions through film and photography. Many of the themes in my self-portraiture deal with expressing myself in ways that people normally do not see — letting parts of myself out that I usually keep guarded and confined. I have touched on the effect that I have on society, as well as the effect it has on me. I am also very interested in how people interact with each other, be they long-time friends or total strangers. Dealing with these themes in my life has been very therapeutic, allowing me to get issues and ideas out into the open and expressing something from inside me that rarely gets out.

More recently, I have expanded this theme, attempting to capture the hidden, intimate facets of other people. To involve myself more deeply with my subjects, I have attempted to explore the aspects of others that made them uncomfortable



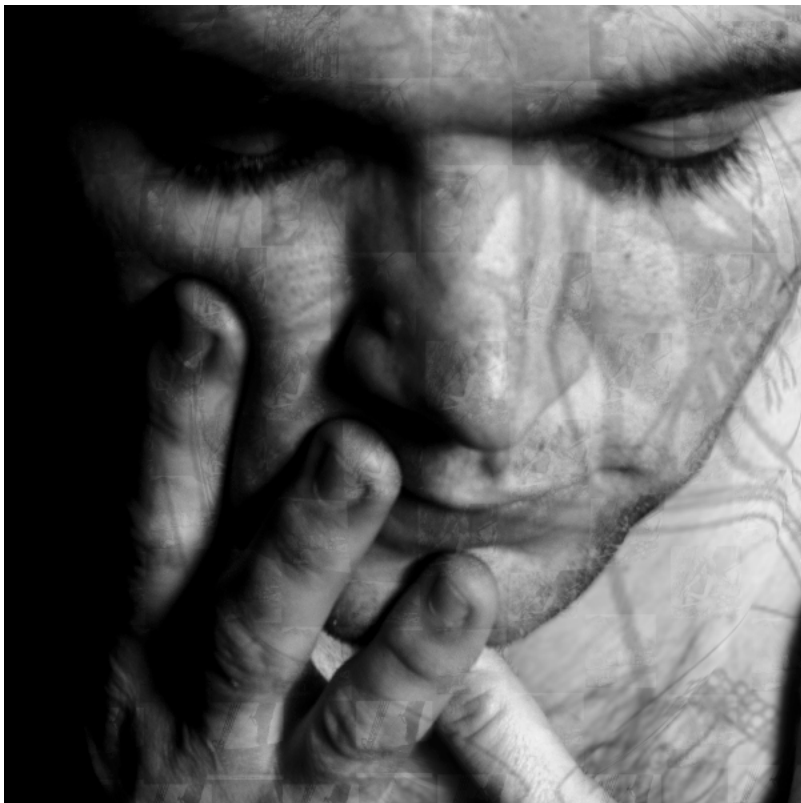
*Self-portrait Series*

or burdened. I then tried to portray my own interpretations of those aspects through my photographs. I worked with my subjects closely and talked with them about things that most people do not want to address: the faults or weaknesses they see in their own lives. I then took their words and incorporated them back into my work. I used photography to capture the image of the person and then digitally combined the photograph with their words to produce a complete image. In yet another phase of this project, I allowed others to take part in the creation of my art. I produced images from the ideas and perceptions that I already had about them and then allowed them to react to that image directly by physically writing on the print. This work then becomes a culmination of both art and artist, which allows the subject to also have a personal connection to my work.

More recently, while considering graduate school,

my mind became a mishmash of concerns, worries, ideas, and excitement. With so much school and work in my life the past few years, I never really slowed down long enough to think about what I truly wanted to do. I love my work, and I love being able to react and interact with my subjects through my images. Portraiture has always been a major component of my work, and I have always seen my portraits as more than a mere image. I enjoy the conversations and personal connections I form with my subjects — these conversations allow my portraits to transcend the mere surface of my subjects' physical characteristics, to expose their intimate qualities. I had not realized until recently, though, that I might be able to make that same connection through teaching — connecting with the students and helping them with their own work. Teaching will give me both the opportunity to connect with people and to continue my work. Attending





*Self-portrait Series*

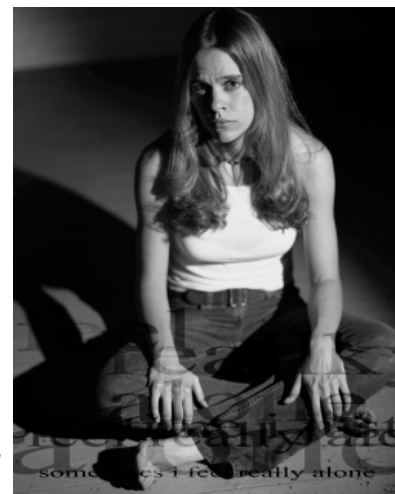


graduate school will allow me to obtain the degree required to teach, while also giving me the opportunity to focus and refine my own work. I still think there is a lot of room for me to grow in my work and I definitely have a lot more to say through my art. I have just been accepted to the Photography and Film Department of Virginia Commonwealth University and will begin my graduate studies there in the fall. I think that graduate school will give me the chance to enhance my work and will push me to find more of myself.

**More images can be seen in the on-line version of the journal at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004).**

### **Acknowledgements**

There are so many people who allowed this work to finally come together. First I would like to thank my professors for all the attention that I required through this process we call art making. Ruth Adams has constantly pushed me to be open and honest about my work and to not be afraid to put it all out there. Dennis "Bones" Carpenter was always very strict when it came to content in our work, making sure that not only did we have a visually pleasing image, but enough sound concept behind the work to make it worth doing. Heather Freeman actually introduced me to the idea of digital work and helped me learn the techniques necessary to pull it all together. I would also have never made it if not for my family. At all times they were there to support me, even when they had no idea exactly what I was doing in art school. Finally, I would like to thank my sister Cassey. She somehow seemed to be a test subject for almost every one of my crazy new ideas that never seemed to work out right the first few times. Thank you for always being so patient.



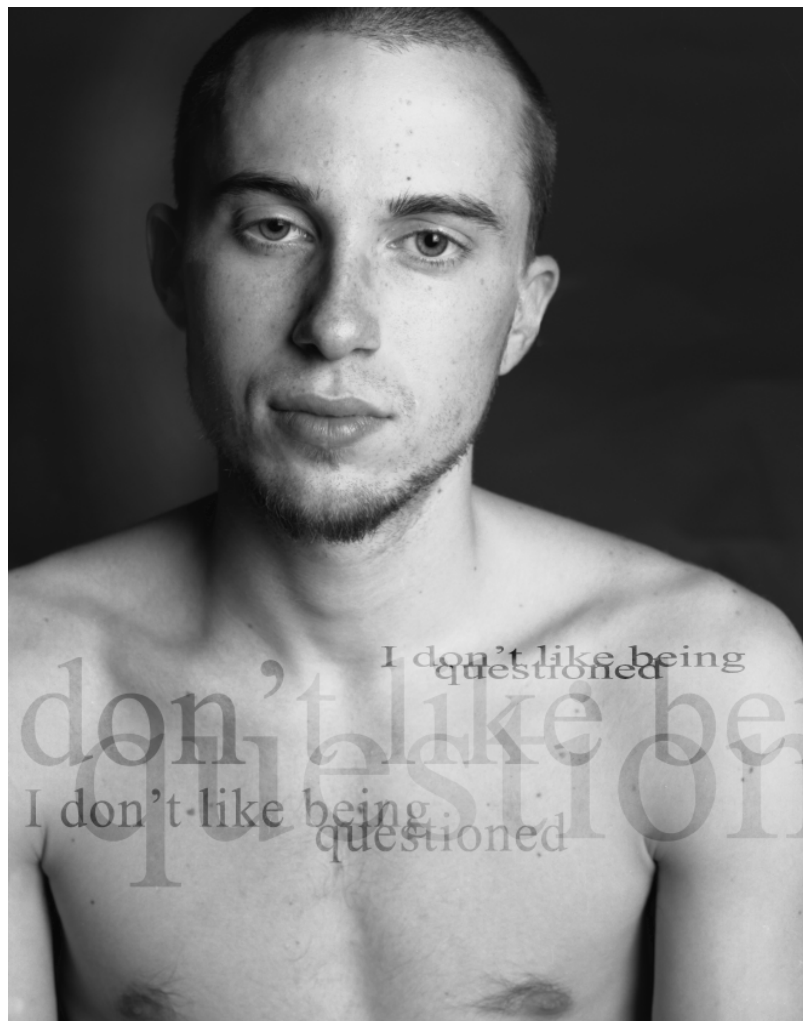
*Interview Series*



Interview Series



Interview Series



Reaction Series



Reaction Series

# 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 twice, and was selected to participate for three years beginning in 2002. The University will be invited to reapply in the fall of 2004 when its current award is completed.

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; 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 2003-2004 are Anna Rothert (mentored by Professor Sylvia Daunert) and Megan Flynn (mentored by Professor Robert Houtz). During the year 2002-2003, the University's Beckman Scholars were Garrett Sparks (mentored by Professor Robin Cooper) and Robin Petroze (mentored by Professor D. Allan Butterfield). In the following articles, the 2003-2004 Scholars explain and discuss their research, and their mentors reflect on the experience of mentoring undergraduate researchers.

The Beckman Scholars named for the year 2004-2005 are Stephanie Logsdon (mentored by Professor Robin Cooper) and Brandon Sutton (mentored by Professor Diane Snow). For more information on the Beckman Scholars Program at the University of Kentucky, visit [www.uky.edu/beckman](http://www.uky.edu/beckman).



*Anna Rothert*



*Megan Flynn*

# Reflections on Undergraduate Research Mentoring

**Robert L. Houtz, Ph.D.**  
**Professor, Department of Horticulture**  
**Plant Physiology/Biochemistry/Molecular**  
**Biology Program**  
**Chair, Coordinating Committee,**  
**Agricultural Biotechnology**  
**Undergraduate Degree Program**

The active involvement of undergraduates in meaningful and rewarding research projects has become more prevalent than in previous years, due in part to requirements from Federal funding agencies and undergraduate degree programs. Much, if not all, of this new emphasis is driven by the recognition that research experiences instill a multitude of advantages to undergraduates that extend well beyond formal classroom training, such as increased written and oral communication skills, as well as critical assessment abilities for objectively evaluating highly technical information.

As Chairman of the coordinating committee for the undergraduate degree program in Agricultural Biotechnology, and as coordinator for the Independent Study course ABT 395/399, I have had the pleasure of experiencing first hand the diversity and quality of undergraduate research projects from many different departments and colleges. I am continually impressed and amazed at the level of sophistication in these research projects and the performance of our undergraduates here at the University of Kentucky. Without exception, both students and research mentors communicate the mutual benefits, rewards, and enjoyment they have had working together.

My own experiences have done nothing but reaffirm the truly rewarding experiences that can be derived from mentoring undergraduate research projects. As an example, recently my laboratory became engaged in collaboration with a well-known and respected structural biologist at the National Institutes of Health (NIH). An enzyme that had been the focus of my research program for many years turned out to represent an ideal candidate for structural studies aimed at elucidat-



ing a novel and important protein structural motif. At the time, I had recently accepted an undergraduate in

the laboratory, and she was quite interested in this project. The research turned out to be a race with several other laboratories for who would be the first to elucidate this structure and its associated functional significance. Unfortunately many personnel in the lab were away for the Christmas holiday, but the undergraduate was remaining in Lexington, because her home was not far away, in Somerset.

I vividly remember the eagerness with which she accepted my request to assist me in making all possible attempts to acquire the necessary information for our collaborator, and how excited she was at its possible significance. We both worked hard, including some evenings and weekends. I remember thinking that I had not seen the level of commitment and effort that she put forth from many of my previous graduate students, and how impressed and rewarded I felt at the excitement and satisfaction she exhibited when experiments worked and the discoveries we were after began to appear.

The work was completed and subsequently published in a prestigious journal with, of course, this undergraduate as a co-author. I will never forget the instrumental and important role Megan Flynn played in my research program during this time, or the gratification I felt seeing the rise in her self-confidence, interest, and abilities in scientific investigation. Megan will move on, as all students do, to meet new and additional academic challenges, in her case in graduate school at Berkeley.

I feel quite proud of the fact that I had the opportunity to work with Megan and serve as her research mentor. More than ever, I have come to realize that the real contribution research mentors provide for undergraduates seeking experiences in research are opportunities, and these opportunities provide the setting and outlet for our undergraduates to demonstrate their outstanding capabilities, and to capitalize on their academic education and intellectual curiosity.



## One milimolar is one micromole per milliliter, which is ...

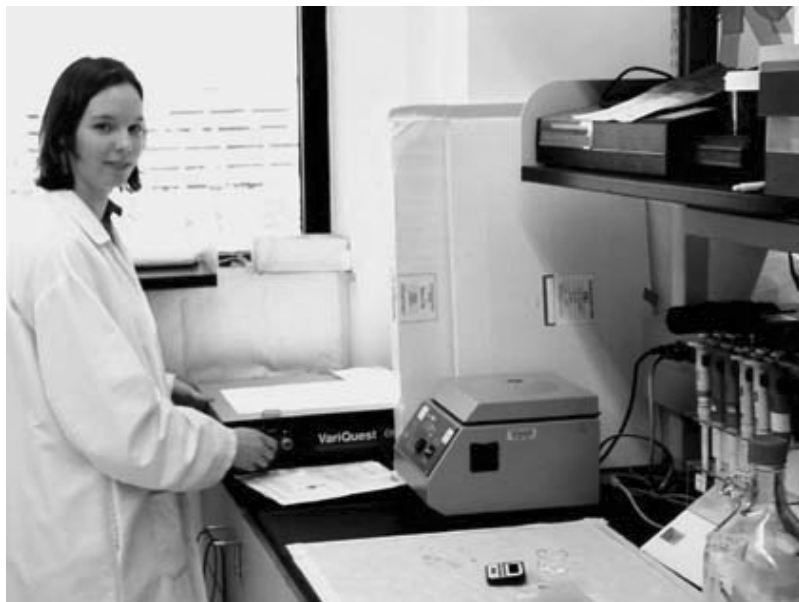
### Background

"One milimolar is one micromole per milliliter, which is one nmole per microliter... if you take the  $K_m$  of AdoMet for LSMT and you are in a pre-steady state system..."

When I began research in Dr. Robert Houtz's lab in January, 2002, I heard a lot of this... very quick, concise information... but to me, mumbling that didn't quite make sense where some words rang a bell. I felt that my year and half of college training was quite insufficient for successful discernment of Dr. Houtz's instructions and suggestions. However, after acquiring explicit *written* directions of what he was trying to communicate and a little trial and error, I began to understand and flourish with scientific research.

Up to that point academically, I was one of numerous undecided college students. I had started in the Biosystems Engineering program at UK, but found this to be unaligned with my interests. Also, I knew I wasn't "pre-med/vet/dental/pharmacy/P.A./P.T., etc.," which almost everyone else who studies biological sciences seems to be. However, after being fully immersed in my research and experiencing the joy of a successful, data-producing experiment, I decided that a Ph.D. followed by a teaching/research position at a large university might be the right path.

My first significant contribution to my lab's work was in the summer of 2002. Up to that time I was learning basic skills and deciding what type of project I wanted to devote myself to. The enzyme that I work with, Rubisco Large Subunit Methyltransferase (LSMT), had been classified as containing a newly identified protein fold, the SET domain. This fold is ubiquitous to almost all organisms and is of great interest, because it is found in some proteins that influence gene silencing, chromatin formation, and certain cancers. Consequently, National Institutes of Health crystallographer, Dr. Jim Hurley, became interested in our enzyme and solved its 3-D structure. I was then



able to learn first hand the difficulty and the beauty of enzyme kinetics. The lab's efforts turned into a publication in the prestigious journal *Cell*, with two other crystal structures of SET domain containing proteins in the issue. A précis of the three articles clearly stated that our paper was the best (and made the cover!) due to the resolution of the structure and the extensive functional data.

There are two types of people as far as enzyme kinetics are concerned: those who understand them and those who don't. The learning curve is steep, mainly because after fully understanding kinetic constants, which are usually denoted by  $k$  and some subscript ( $k_{cat}$ ,  $k_m$ ,  $k_a$ ,  $k_d$ ,  $K_D$ ,  $k_{ia}$ ,  $k_p$ , etc.), you comprehend the majority of enzyme kinetics. Second, you have to learn how to interpret the complex data and be able to know when the values you obtain are reasonable or are not, a skill that develops with time. I am proud to say that I have become proficient in enzyme kinetics, which has not only trained me to be very precise, but has also helped make me become a better experimentalist.

Undergraduate research is extremely rewarding. Not only do I know a little bit about enzyme kinetics, I have been published, and have become well versed in other areas of experimental biology. I appreciate the evolution I have made as a student due to undergraduate research — now I am more analytical, critical, and capable of designing and implementing independent thought. I feel that I have gotten the most out of my education and have truly prepared myself for the next step — graduate school at the University of California at Berkeley.

Now, new students in the lab look at me in a similar, puzzled way as I did to Dr. Houtz two years ago. I take great pride in being a legitimate source of information and a person who can analyze data and teach certain skills. Furthermore, I feel lucky and humble to be on a career path that I feel confident about and drawn to; as well, I am grateful for all of the help I have received along the way.

Being awarded the Beckman scholarship has been a critical part of my growth intellectually and scientifically while an undergraduate. Receiving such a prestigious award serves as an affirmation of my abilities and a source of encouragement to achieve more, and is a great reward



for all of my efforts. Furthermore, at the Beckman Symposium in the summer, 2003, I interacted with incredibly talented scientists. This provided another source of inspiration to become more proficient myself.

Although research may seem esoteric and narrow to some, all contributions of information are used to solve larger problems. I am pleased to take this realization away and to have developed into a good scientist during my undergraduate career.

### My Research

Protein methylase III enzymes are a unique class of post-translational processing enzymes responsible for the mono-, di-, or tri-methylation of the  $\epsilon$ -amino groups of internal lysyl residues in a diverse group of proteins. Many S-adenosyl-L-methionine dependent protein methyltransferases contain a highly evolutionary conserved secondary structural domain composed of 110 amino acids known as the SET (Suppressor of variegation 3-9, Enhancer of zeste, Trithorax) domain. During my time as a Beckman scholar, I have investigated and largely characterized specific functions of Rubisco LSMT, a member of this group, using structure as a guide.

### Rubisco LSMT: investigation of successive methyl transfers

First, I have focused on the trimethylation by Rubisco LSMT on Lysine 14 of large subunits. Kinetic analysis of LSMT reveals characteristics of a ping-pong reaction mechanism; however, similar analysis of SET7/9, a histone methyltransferase that catalyzes the mono-methylation of histone H3 Lys-4, is random order. Because the disassociation constant ( $K_D$ ) for the Rubisco LSMT complex is approximately 50,000 times lower than the Michaelis constant ( $K_M$ ) of the enzyme for Rubisco, the kinetic plots may be distorted from the actual reaction mechanism.

Alternatively, the bi-polar arrangement of substrate binding sites in the SET domain are geometrically ideal for successive methyltransfers without disassociation of the protein substrate, and this phenomenon could be responsible for the appearance of a ping-pong like reaction mechanism. A SET7/9 mutant, Y305F, performs both mono- and di-methylation of histone H3, and its kinetics are altered in a manner that resembles the distorted plots of the reaction mechanism of LSMT. The similarity in the kinetic plots of LSMT and the SET7/9 Y305F mutant suggests that each enzyme obeys the same reaction mechanism and that the protein substrate remains bound during consecutive methyltransfers.

Through product analysis, I have found that

Rubisco LSMT is a processive enzyme. That is, three methyl transfers occur before the enzyme dissociates from the protein substrate Rubisco. This finding corroborates structural data that would suggest a successive mechanism of methylation.

### Rubisco LSMT: a structurally unique enzyme

Rubisco LSMT is the only SET domain containing protein with a structurally unique C-terminal domain, while the N-terminal domain of the enzyme contains the functional SET motif. Thus, to examine the role that the C-terminal domain plays in catalysis as well as substrate binding, I have expressed truncated clones of the LSMT enzyme. These attempts may help determine if the C-terminal lobe of LSMT has a structural or biochemical importance.

Based on models mimicking the binding between Rubisco LSMT and Rubisco, the C-terminal domain may contribute to the specificity and interaction between these two proteins. Also, expression of N-terminally truncated forms of Rubisco and subsequent binding analysis using ELISA suggest that the C-terminal domain can interact with Rubisco in the absence of the N-terminal catalytic SET domain. I am investigating homologous Open Reading Frames (ORFs) from humans and mice for analysis of protein methyltransferase activity and the role, if any, that the C-terminal domain assumes in these proteins. The function of the C-termini in the interaction of Rubisco and Rubisco LSMT may have important implications for other protein methyltransferases given that this sequence is found with 80% consensus in *Neurospora crassa*, *Drosophila melanogaster*, *Bos Taurus*, and *Sus scrofa*.

### Conclusion

My work in the Houtz lab has helped reveal more functional/mechanistic data about Rubisco LSMT, a SET domain-containing protein methyltransferase. I have found that it is a processive enzyme, which helps explain its distorted reaction mechanism kinetics. Furthermore, I have explored the structurally unique C-terminal domain of the enzyme and found that it is essential for binding to the protein substrate Rubisco and truncated forms of the enzyme possess no enzymatic activity. This information is of great significance because it reveals more information about a class of proteins with SET domains. SET domain-containing proteins are found in many organisms, including human histone methyltransferases that are linked to human cancers, chromatin compaction, and gene silencing.

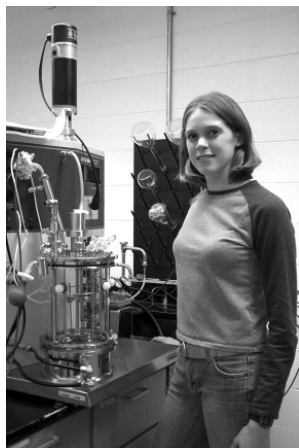
## Thoughts On Why I Love School

If there is one thing you should know about me, which I will admit to you with pride, it is that I really like school. Oh yes, I was that kid who got so excited to go back to school in August that I couldn't sleep the night before the first day of class. In fact, when I think about the course of my life thus far, other interests seemed to come and go, but my love for learning has remained constant. Now I know that some may question why anyone would think that school-work is fun, so I must explain why it is that I truly enjoy going to class, doing homework, and learning new information (at least most of the time).

Before I go any further, I should mention that all subjects do not share my love equally. While I do find almost any class that I take to be interesting and beneficial in at least some aspect, my passion has always been science and math. Curiosity is part of my nature, and so I am amazed and excited each time I learn something new about how things work.

When I took AP Biology in high school, I realized that it is the existence and workings of living organisms that amaze me more than anything else. I find that this feeling of wonder returns again and again, each time I take a new class and reach a new level of complexity and depth in my knowledge. Biological systems are so incredibly complex that it would be nearly impossible to know everything, or even most things, about most of the systems found in a particular organism. At this point, we can at least come very close to complete understanding of very simple organisms, but when it comes to the elaborate workings of our own bodies, understanding becomes much more difficult. It seems that, as more is learned about biological systems, the levels of complexity deepen and new questions emerge that must be studied.

As a Biology and Chemistry major here at UK, I have had the opportunity to take some very interesting classes that have sparked my curiosity. Yet, I often felt myself wondering what it was that my professors weren't telling me — what else is there to know that has not yet been uncovered? Being able to take part in new scientific discoveries



is one of the main reasons why I wanted to be involved in undergraduate research.

As a sophomore I had begun working as a technician in Dr. Sylvia Daunert's Bioanalytical Chemistry lab. As I learned about the research going on there, I found that it utilized an interesting mixture of concepts from Biology and Chemistry for analytical applications. I already knew that I wanted to be involved in research and Dr. Daunert's lab seemed like an exciting place to get started. Luckily, she always has room for more researchers, so I started working on my own project in the lab the next summer. Dr. Daunert is involved in developing

biosensors that can be used for a wide range of analytical applications. Many of these biosensors employ fluorescent and bioluminescent proteins that enable detection of a molecule of interest as a result of the readily measurable light they produce. The methods that are used to couple the light emission of these proteins with the presence or activity of a particular molecule are often quite innovative and fascinating. Really, you are simply taking advantage of a system that nature has already produced, and using it in a clever and applicable way. Sensing systems for markers of heart disease, environmental toxins, and many other important molecules have been developed using biological systems in Dr. Daunert's lab.

### On my Research Project

The main project that I have worked on in the lab involves the use of a fluorescent protein, GFPuv, for arsenic detection. This project is exciting because it incorporates aspects of molecular biology, mechanical engineering, and analytical chemistry for the creation of an optimized biosensor. This sensor makes use of a natural resistance that some bacteria have to arsenic. The genes that confer resistance on the cell are grouped together in the *ars* operon and are only transcribed when arsenite (an arsenic ion) is present in the environment.

We can make use of these genes for sensing purposes by engineering the gene for the fluorescent protein GFPuv into the DNA of the operon, so that it will also be expressed when arsenite enters the cell. Because the *ars* operon is transcribed more often when a greater amount of arsenite is present in the cell environment, the amount of fluorescence produced by GFP should be related to the concentration of arsenite in the environment. Using bacterial cells as sensors may actually provide useful information about the concentrations of arsenic that would be harmful to humans and other animals. The bacteria will only 'sense' arsenite ions that pass through their cell membrane and, in effect, they help us to quantify the bioavailability of this toxic compound.

We are working toward making this type of whole-cell biosensor a completely portable system that could be taken directly to a contaminated site. The ability to test environmental samples quickly and simply could provide tremendous advantages over current testing methods, which often require expensive equipment and skilled technicians. The basis for our portable sensor is a centrifugal microfluidics platform that needs only a minimal number of samples and amount of reagents, and has a

built in mixing system. We have found that we are able to detect levels of arsenite more rapidly in these miniaturized samples than with larger volumes of samples and reagents. In the future, this system could be automated, so that someone with minimal training could simply inject a water sample into the device and receive a readout indicating the level of arsenic in that sample.

This biosensing system could perhaps be utilized in areas of the world, such as Bangladesh, that continue to have problems with arsenic contamination in groundwater. The advantages of the centrifugal microfluidics platform used in this system could also serve as a model for the development of biosensing systems for molecules that require frequent testing in a hospital, such as markers of disease or infection.

### On Being a Beckman Scholar

I must say that being named a Beckman Scholar at the University of Kentucky has been vital in shaping both my last year and a half as an undergraduate and my future goals and aspirations. The resources that the Beckman Foundation has generously put within my reach have allowed me to truly experience the life of a researcher as an undergraduate. In the past year I have had the opportunity to travel to several scientific meetings, at which I presented my research to other scientists and students. I will also be traveling to an international conference in Spain this summer. These presentations have been a wonderful learning experience for me because they required me to explain the ideas and impacts of my research to other people from a broad range of scientific backgrounds. I realized that I developed a better understanding of the scope of my research after each presentation.

Beyond the valuable learning opportunities provided by research and presentations, it is quite exciting to know that I am now an integral part of the worldwide scientific community. There is definite personal satisfaction to be had from seeing your name in print attached to something that you worked hard to accomplish. Just for fun, I recently typed my name into the "Google" search engine and found several hits related to the research I have done in Dr. Daunert's lab. Being a Beckman Scholar has helped me to get my name out into the world of science and also to make a clear decision about my future as a scientist.

Before I began doing research, I was unsure of my future career plans. I had no idea what life as a graduate student was like and, frankly, the thought

of getting a doctoral degree sounded a bit daunting. However, just a short time working in the lab erased any fears or uncertainties I may have had about graduate school. Being able to interact with and learn from current graduate students and post-doc's has been an invaluable experience for me. These students treat me as their equal, and I now find that I am answering questions almost as often as I am asking them. My time doing research as an undergraduate helped to finalize my decision to attend graduate school next year. I now feel confident that I know what to expect from a graduate program, as well as what will be expected of me.

The opportunities I have had here at the University of Kentucky are an excellent preparation for what lies ahead of me. In the fall, I will be leaving for the University of Wisconsin-Madison where I will pursue a Ph.D. in Nutritional Sciences. I really like the idea of studying this subject because its applications are so obvious and practical. I think that most people do not have an appreciation for how profoundly nutrition affects every aspect of their lives. When you consider it for a moment, you realize that what you are putting into your body is becoming a part of you and will affect you in countless ways. There are obvious needs in all parts of the world for a clearer understanding of the complex ways in which our bodies are affected by nutrition. I hope that my future research in graduate school and beyond will make a significant contribution to this effort.

The following is a list of the presentations that I have made at the conferences I was able to attend thanks to the Arnold and Mabel Beckman Foundation. I have included those presentations to which I made a significant contribution, as well as the publications that I have co-authored.

Jessika Feliciano, **Anna Rothert**, Sapna Deo, Libby Puckett, Lori Millner, Jan Roelof Van der Meer, Marc Madou, and Sylvia Daunert. "Bacterial Biosensing Systems for Arsenic Detection: From the Laboratory to the Field." 2003 Superfund Basic Research Program, Hanover, NH, November 9, 2003.

**Anna Rothert**, Sapna Deo, Libby Puckett, Lori Millner, Marc Madou, and Sylvia Daunert. "Adaptation of a whole-cell based reporter gene assay for arsenite and antimonite to a compact disc centrifugal microfluidics platform." 55th Southeast Regional Meeting of the American Chemical Society (SERMACS), Atlanta, GA, November 16-19, 2003.

Received 2<sup>nd</sup> place award for presentation of this poster at the undergraduate poster session at the SERMACS conference.

Received an honorable mention award for presentation of this poster at the Regional Undergraduate Chemistry Poster Competition at UK, April 23, 2004.

Delegate to the 8<sup>th</sup> World Congress on Biosensors, Granada, Spain, May 24-26, 2004.

**Anna Rothert**, Sapna K. Deo, Lori Millner, Libby Puckett, Marc J. Madou, and Sylvia Daunert. "Whole Cell Reporter Gene-Based Biosensing Systems on a Compact Disc Microfluidics Platform," submitted for publication in *Analytical Biochemistry*, 2004.

Urvee Desai, **Anna Rothert**, Sapna K. Deo, and Sylvia Daunert. "Bioluminescence Properties of Obelin Mutants: Influence of the Native Cysteines in the Generation of Bioluminescence," in *preparation*, 2004.

# The Importance of Research in Undergraduate Education: The Impact of the Beckman Scholars Program

**Sylvia Daunert, Ph.D.**  
**Distinguished Professor,**  
**College of Arts & Sciences;**  
**Gill Eminent Professor of Analytical**  
**and Biological Chemistry;**  
**Professor of Pharmaceutical Sciences**

I should start by describing a bit of my philosophy concerning undergraduate education. I am a firm believer in undergraduate research as part of a student's formation in any scientific discipline. While coursework allows students to gain theoretical knowledge in their discipline of choice, it is essential that they realize how what they learn in class relates to day-to-day life and to the advancement in science. This connection can only be made if the students have hands-on experience in a laboratory setting that stimulates their imagination and enhances their critical thinking process. In the UK Department of Chemistry, we have several mechanisms by which students can be exposed to research and gain the needed experience. Students can perform research by enrolling in CHE 395. The course can be taken for up to nine credit hours and the student chooses an advisor from among



all the faculty members of the Department of Chemistry. Often, the students continue being an active member of the chosen research group even after completing their CHE 395 requirement. For students who are considering a research career or a medical profession, this is an

invaluable experience.

In addition to CHE 395, over the last ten years, our Department as well as the Center for Membrane Sciences has been sponsoring with funding from the National Science Foundation (NSF), a "Research For Undergraduates" (REU) Program. These REU Programs typically run over eight weeks during the summer months, and in some cases have activities that continue throughout the next academic year. Given my interest in undergraduate research, I served as the Director of the NSF Program of our Department during a number of years. As part of the two-month summer program, the student participants are involved in research projects in the laboratories of the REU faculty. These projects are selected carefully to be within the abilities of the students, but at the same time to be challenging and to promote interactions among the participants, the faculty, and the graduate and postdoctoral student members in each REU advisor's research group.

Through the preparation of an interim report at the beginning of July and a final research report at the end of the summer, the students experience how scientists organize and present their data. All students participate in an "in-house" Research Conference at the end of the summer at which they give poster presentations of their research. A series of talks are organized during the summer to introduce the students to various aspects of a research career. The topics range from scientific ones to career-oriented ones, so the students are exposed to the different aspects of the life that they will encounter if they choose to pursue higher education. Often, students who live within driving distance of our University continue their research during the academic year.

As part of this program, REU students attend and present papers at scientific meetings. In 2003, our REU students once again received competitive awards at these meetings for their REU research, continuing our 16-year-long tradition of students receiving competitive awards for their work. A large number of manuscripts have resulted from work performed by these undergraduate students. There is no doubt in my mind that opportunities such as REU program pre-





pare undergraduate students better for their future careers in research.

Another mechanism by which talented undergraduate students can receive support to pursue research within a specific laboratory at the University of Kentucky is through the Beckman Scholars Program. This is an extremely competitive program that awards two scholarships a year. I have had the pleasure to be involved with the Beckman Scholars Program from the beginning, and one of my students, Anna Rothert, has been the recipient of a 2003 Beckman Scholarship. Anna first began working in my laboratory as a technician during her sophomore year at UK. Realizing that she was a hard-worker with great scientific aptitude, Dr. Sapna Deo, an Assistant Research Professor in our Department and I encouraged her to perform research within our group. Anna eagerly accepted, and soon began working on her own project mentored by Dr. Deo. In the two and a half years that Anna has been a member of my group, she has shown a level of maturity and understanding that is uncommon in undergraduate students. She demonstrated her dedication to research by always finding time for research in the midst of a full schedule of classes, which usually included several at the graduate level. Anna is extremely intelligent and managed to maintain a perfect GPA through her undergraduate career. Needless to say, Anna is not only a very independent and capable researcher, but also highly productive. In that regard, she is already the co-author of several research presentations and publications. Anna is able to manage different projects at the same time, and is currently serving as mentor of other undergraduate students. On a personal note, Anna is one of the most delightful and kind individuals who has passed through our laboratory. She is always willing to help, listen to advice, and is prompt to tackle new challenges without hesitation. Everyone in the Daunert group loves Anna! Anna has chosen to pursue a Ph.D. in Biochemical Nutrition at the University of Wisconsin and is scheduled to start in the Fall of 2004. I am certain that she will be a star student there, and let me assure you that we all are going to miss her!

In reflecting on how the Beckman Scholars Program influences the career of a student, I think that we should also consider what kind of an impact the Program has on the research group that hosts the Scholar. There is no doubt that such an award helps propel the career of a student by allowing him or her to focus on research without the need for the student to worry about finances, as the scholarship funds are quite generous. Moreover, because it covers a full

year of research, and sponsors a trip to a conference of choice, even overseas, "allows the students to perform meaningful projects that result in research that can be presented in scientific meetings and/or in publications. The Beckman Scholars Program is also beneficial to the laboratory that hosts the student because it is always important to have students who are talented and can serve as role models for the incoming junior ones.

As I mentioned earlier, I think that it is very important to support and encourage undergraduates that want to be involved in research activities. My laboratory typically has about five or six undergraduates working in our group over the course of a year. These students each have their own independent research projects and are given direct guidance by graduate students, post-doctoral students, Dr. Deo, and myself. Through the years, many of the undergraduate students who have worked within our group have received prestigious fellowships and awards for their research. These students are typically very successful once they graduate and go on to pursue graduate studies in Chemistry, Chemical and Materials Engineering, Pharmaceutical Sciences, or attend Medical School. In our research group, the senior undergraduate, graduate, and postdoctoral students have a sense of pride when one of "them" is recognized for their work or achieves such an honor as to become a Beckman Scholar. In my view, having the research of a laboratory recognized by an award to a student is as important or more so than when the honored individual is the head of the research group. It is an incredible motivator for the students as well as for the research advisor, and stimulates the desire to reach for the "stars" in all of us.

# UK Undergraduate Research Program

The UK Undergraduate Research Program is intended to offer students, particularly in their first and second years, the opportunity to begin to engage in research and scholarship with a faculty mentor. Students in this program may enroll in a special research methods course designed to provide them with practical research and scholarship knowledge, such as how and where to seek funding, how grants are administered, using library and Internet resources effectively for research, and writing research and scholarly abstracts and reports. The following abstracts were the final papers submitted by students who took this methods course in the Spring of 2004 and reported on their on-going research.

## The Neural Effects of CO<sub>2</sub> in *Drosophila* Larvae

Nicolas Badre, Research Assistant to Dr. Robin L. Cooper

### Introduction and Background

Carbon dioxide (CO<sub>2</sub>) is commonly used as an anesthetic for adult *Drosophila melanogaster*; however, the mechanism of its actions is unknown. This mechanism is important because it could possibly lead to the discovery of new types of insecticides with the potential to be innocuous to plants and plant eaters. Because mosquitoes have been shown to have sensory structures that detect CO<sub>2</sub>, we postulated that *Drosophila* must also contain similar types of receptors, because they share the same kind of environment. Larval insects have never been examined for CO<sub>2</sub> sensory neurons. Previous experiments supposed that carbon dioxide affected larvae in the same way that it affects humans: an increase in body fluid acidity causing different behaviors, including anesthesia (Biston and Sillans, 1979). Those experiments also showed that CO<sub>2</sub> had different effects than hypoxia, because a high concentration of CO<sub>2</sub> and oxygen could also cause anesthesia (Sillians et al., 1969). However, the objective of this current research is to find sensory neurons on the larvae capable of detecting the CO<sub>2</sub>.

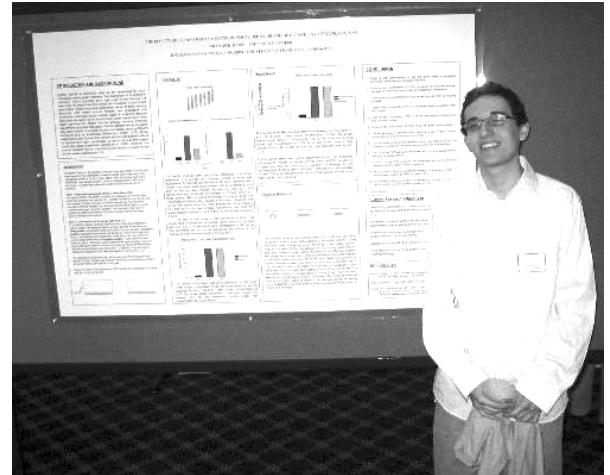
### Methodology

We tested Canton S, the common "wild-type" laboratory strain of *Drosophila melanogaster*. This experiment focused on larvae at the beginning of the "wandering" phase of the third instar. Many of the techniques used in this experiment were already used by Cooper and Neckameyer (1999). Each larva was in a sealed agar plate with CO<sub>2</sub> injected into the container. We worked in two phases.

### Phase 1 – Proving the presence of receptors

#### Body wall movements (bwm) & Heart Beats (HB)

In phase 1, we injected CO<sub>2</sub> into the sealed container for a period of 10 minutes, after which the container was opened. We recorded the bwm for the first and last two minutes. If at any time bwm or the HB



stopped, the time would be recorded. If the HB stopped, the time when the HB started again, once the container was open, would be recorded. The objective of this test was to quantify the difference between CO<sub>2</sub> and hypoxia in the larvae, using common features of the animal.

### The reaction of the larvae to the CO<sub>2</sub>

In our effort to identify particular characteristics of the larval response to CO<sub>2</sub>, we coined several terms to quantify those responses. *Shell position* designates larvae that are in a curved position. *Elongated position* designates larvae that are flaccid and look longer than usual. *Contracted position* designates larvae that have returned to their normal shape after being in *elongated position*. The responses were tested by placing the larvae under anesthesia for approximately 5 minutes and recording the different behaviors of the larvae during the first minutes and the minutes following the end of the CO<sub>2</sub> injection. The objective of this test was to understand and detail the reaction of the larvae to CO<sub>2</sub>.

We repeated the experiment with N<sub>2</sub> to make sure that the results were specific to CO<sub>2</sub>. We also had a control, recording the natural bwm and HB of the larvae without the injection of any gas.

### Phase 2 – Finding the receptors

The same flies and methods were used to take care of the larvae at this level, but sealed plates were no longer used. The larvae were placed on tape so that their movements were limited, and a needle was used to aim the flow of the CO<sub>2</sub>. The CO<sub>2</sub> was projected at high pressure in order to prevent rapid diffusion, to enable the analysis of a particular section of the animal. We repeated the experiment with N<sub>2</sub> to make

sure that the results were specific to CO<sub>2</sub>. For this experiment, the time at which the heart beat stopped was not recorded, because the time to set up the experiment was rather long and adjustments were sometimes necessary. The animal was divided into two targeted regions: the head and the tail (with the spiracles). The needle was placed accordingly without touching the larva. The aimed flow test was performed on five larvae for each gas.

## Results

We have shown that larval *Drosophila* respond rapidly to CO<sub>2</sub> (< 1 min) by freezing their body movements and contracting the spiracles (respiratory structures). Larvae exposure to 100% N<sub>2</sub> gas results in a gradual slowing down of body movement over a longer period of time as compared to the CO<sub>2</sub>, and does not produce a closing off of the spiracles. Thus, we propose that CO<sub>2</sub> receptors drive the central nervous system to initiate particular motor commands that are different than those induced by hypoxia.

We have also shown that larval *Drosophila* only respond to CO<sub>2</sub> when it is projected toward the tail region of animal, suggesting that the receptors are located in the tail region.

## Future Objectives

Our main future objective is to expand the understanding of the mechanism involved in the neural response to CO<sub>2</sub>. In order to do so, we will perform a series of neurophysiologic experiments to test the response of each nerve and receptor to CO<sub>2</sub>. I am currently learning neurophysiologic setups that were recently created to allow the dissection of the larvae without cutting the respiratory structures.

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## Adapting Liquid Cooling Garments for High Altitude – Low Temperature Thermal Regulation

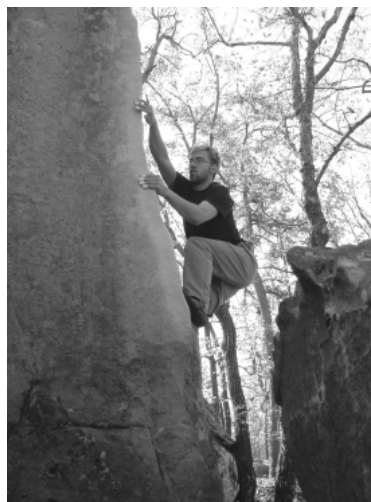
**Bram Bell**

**Mentor: Dr. Bruce Walcott**

Although major technological breakthroughs have allowed humans to routinely summit Earth's highest peaks, frostbite is still a common problem that has no easy solution. My research has focused on investigating the possibility of adapting liquid cooling garments, or LCGs, to redistribute the thermal energy a climber produces while making a summit attempt. Although this research centers on a very narrow application of current technology, there are practical implications not only for mountaineers, but anyone who exerts him- or herself in extremely cold environments.

While making a summit attempt, the amount of body heat given off by mountaineers varies greatly. At higher altitudes, the temperature can drop below -50°F and the wind chill can exceed -100°F. During periods of low activity or rest, body temperature drops considerably due to the reduction in thermal energy produced. As the body cools, blood is pulled from the extremities to the core in an attempt to save the vital organs. This results in the extremities experiencing a dramatic loss of thermal energy. In most environments, when one resumes vigorous activity, the body reverses this effect and the extremities regain their lost energy quickly. In the low pressure, low oxygen environment at altitude, the body is less efficient than at lower elevations. This inefficiency extends the time necessary for the body to generate sufficient thermal energy to warm the entire body. With each cooling, the extremities may fail to regain all of the thermal energy that was lost, causing the tissue to grow colder each time a mountaineer rests.

What is needed is a way for some of the excess thermal energy produced during exertion to be stored. It can then be redirected to the extremities when activity levels drop and the extremities cool. My research stems from the idea that a liquid cooled



# UK Undergraduate Research Program (CONT.)

garment, or LCG, could be used in reverse to store thermal energy and deliver it to the extremities, thus lowering the likelihood of frostbite. An LCG is a suit that has a series of tubes attached through which a cooled liquid flows. Designed by NASA for astronauts to stay cool in their spacesuits, the technology has seen many commercial applications in diverse areas, such as firefighting, mining, and auto racing. Although much research has been carried out focusing on the ability of these garments to cool, little has been directed to heating the body or redistributing the bodies' own thermal energy. Removing the cooling equipment reduces the system to the suit and pump, creating a unit light enough to be suitable for mountaineering applications.

There are several problems that this research will have to address. Does the LCG absorb enough energy from the core to transfer to the extremities? Is there sufficient transfer of that thermal energy to the extremities? Will too much energy be captured and induce overheating? Can the pump and battery be integrated into one unit that can be stored under the insulation layer? Can the suit fit ergonomically under the insulation layer worn by mountaineers, while still allowing freedom of movement and the wearing of a loaded backpack?

The next stage of research will address these issues and extend the practical applications of this technology. The ergonomics will be tested simply by carrying out the motions used in technical rock and ice climbing. The thermal transfer capacities of the suit will have to be tested in a cold environment such as a freezer or "cold soak chamber," while taking measurements of skin temperatures from various points on the body.

Future research includes utilizing a more useful design for people who are not mountaineering. Freed from the constraints of weight and size concerns, practical applications of this technology are possible. Utilizing a backpack design that includes a heater and more battery power, would expand human freedom in cold environments. Current research on LCGs includes increasing efficiency by mimicking the human circulatory system and creating an actual fabric woven of microtubules.

## Genotyping of Choline Transporter Knockout Mice

**Tabatha Doyle**

**Mentor: Dr. Subbu Apparsundaram**

After decades of research, the identity of the Choline Transporter has finally become clear. Choline is a vital amine that either can be a methyl group donor or used to synthesize structural membrane phospholipids and signaling phospholipids. In the lab, we are interested in Choline because it is used to synthesize the neurotransmitter Acetylcholine.

Choline enters cholinergic nerve cells through Choline Transporters (CHT) on the pre-synaptic terminal membrane. Once inside the nerve cell, it is combined with Acetyl CoA to produce Acetylcholine. If Acetylcholine is present in the body, it contributes to autonomic functions, motor activity, attention and memory,

aggression, pain perception, sleep and wakefulness, temperature regulation, and thirst and feeding. If Acetylcholine is deficient it could result in Alzheimer's disease and Schizophrenia; when Acetylcholine is in excess, it can cause Parkinson's disease.

To further understand the role of CHT in cholinergic function and dysfunction, Dr. Randy Blakely at Vanderbilt University generated CHT knockout mice. My project during spring, 2004, in Dr. Subbu Apparsundaram's Lab involved genotyping mice for the presence of CHT. Genotyping is required to identify the animals and correlate the levels of CHT expression with phenotypes including animal learning, choline transport levels in the brain, and acetylcholine levels in the brain. With regard to CHT knockout mice, initial studies revealed that the choline uptake in brain regions of heterozygous CHT knockout mice is comparable to normal mice, despite expressing only 50% of CHT. This finding suggests that heterozygous CHT mice have successfully compensated for the loss of CHT. We are investigating the mechanism of compensation with the ultimate aim of understanding mechanisms underlying CHT regulation. Currently, we are using CHT knockout mice for investigating the effects of estrogen and nicotine.

### METHODOLOGY

All animal protocols were carried out in accordance with the University of Kentucky Institutional Animal Committee policies. C57BL/6 Mice containing one allele of CHT (heterozygous CHT knockout mice) were mated. Following the delivery, 1 cm tail snips were collected from the 14-20 day old pups. The tail snips were then used to prepare Genomic DNA. This is a 4-step process that involves cell lysis, RNase treatment, DNA precipitation, and DNA hydration. Next, the samples are used to carry out a Polymerase Chain Reaction (PCR) to amplify the DNA. After completing the PCR, a DNA Agarose Gel Electrophoresis is run at 80 hertz for one hour. The charged particles cause the DNA to migrate down the gel, forming bands at 841 base pairs (bp) and 401 bp. These bands are next captured on a UV transilluminescence image. If a band appears only at 841 bp, the mouse is genotyped as homozygous wild-type. If bands appear at both 841 bp and 401 bp, the mouse is genotyped as a heterozygous CHT knockout mouse. If a band appears only at 401 bp, the mouse is genotyped as CHT-null mouse.

### RESULTS

Throughout my four month research period, I screened several DNA preparations. I found that in each screening one will identify some mice to be wild type, heterozygous, or null. The DNA from a single mouse is

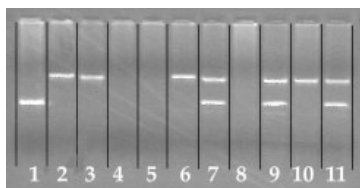




allowed to migrate in a single narrow band called a “lane.” Some lanes did not have enough DNA for PCR to take place, resulting in an empty lane. This result can be seen in lanes 4, 5, and 8 in the representative gel from one experiment at the right.

## FUTURE OBJECTIVES

After genotyping, pups are weaned and housed in the animal facility. When the pups reach about 8-10 weeks old, these adult mice are used in different experiments that investigate the role of CHT in controlling cholinergic neurotransmission in brain regions. These experiments are designed to help understand cellular signaling pathways involved in the control of CHT function and trafficking. Typically, these experiments involve administering different drugs that alter cholinergic neurotransmission, and then isolating brain regions for studying the levels of CHT function and expression. Results from these studies are expected to provide insights into mechanisms involved in the control of cholinergic neurotransmission in physiological and pathophysiological states.



## In vivo examination of hydroxyurea and the latest ribonucleotide reductase inhibitors trimidox and didox in combination with doxorubicin: suppression of uncontrolled, abnormal cell growth due to breast carcinoma

By: Amanda M. Fleming

Mentor: Dr. Vincent S. Gallicchio

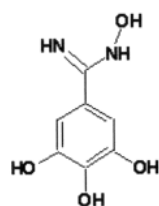
### Background

Inhibition of ribonucleotide reductase (RR) is a newly developed strategy for improving breast cancer chemotherapy. The need for advances in chemotherapy has gained attention, due to the development of severe cardiac toxicity induced by doxorubicin, an anthracycline used in chemotherapy treatment for breast cancer. Doxorubicin eradicates cancer cells by binding to DNA and stimulating DNA damage. Cytosine (Cyclophosphamide) is an alkylating agent also used in breast cancer regimens that interferes with DNA synthesis and repair. It cross-links with the nucleotides of DNA, further preventing the DNA double helix from unwinding. This study supports the idea

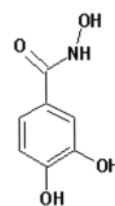
of using ribonucleotide reductase inhibitors (RRI) in combination with Doxorubicin (Dox) or Cytosine (Cyt) to enhance the survival of breast cancer patients.

The RR inhibitors Trimidox (TX) and Didox (DX) are the primary focus of this study. Hydroxyurea (HU) is another RR inhibitor used in this study, but it differs slightly from the other two. Studies with HU encouraged development of DX, which is a hydroxyl-substituted benzohydroxamic acid derivative of HU. TX's and DX's abilities to produce anti-tumor effects are due to their function as a chemotherapeutic target. They inhibit the enzyme that catalyzes the reduction of ribonucleotides into deoxyribonucleotides, the precursors of the deoxynucleotide tri-phosphates (dNTP) used in DNA synthesis and repair. Alterations of dNTP supplies cause DNA fragmentation and cell death by apoptosis, which is an ideal mechanism for eliminating cancer cells and does not cause damage to surrounding tissues. Additionally, RR inhibitors act as antioxidants, enabling stabilization of the damaging free radicals produced by Dox and, therefore, reducing toxic effects to the heart.

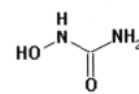
HU differs from TX and DX in that it acts primarily as an iron chelator rather than an antioxidant. HU bonds to iron molecules, which are necessary for free radical formation. However, studies have shown DX to inhibit the enzymatic activity of ribonucleotide reductase 17 times more times effectively than HU. The diagrams below show the primary chemicals in our studies.



Trimidox



Didox



Hydroxyurea

### Methodology

Mice were inoculated with mammary tumor cells. Beginning two days after inoculation, the mice were treated with Dox, Cyt, DX, TX, and HU alone or in combination. Animals were monitored daily and tumor measurements were taken three days a week. Body weights were recorded on a weekly basis. Upon completion of the study, the effects of RRI + Dox and RRI + Cyt were determined by plotting survival rates against treatment type. All drug treated groups showed enhanced survival versus tumor controls. All Cyt + Dx were alive and showing no signs of tumor after 60 days. Cyt mono-therapy animals survived 52 days. Dox + Dx survived slightly longer than Dox mono-therapy animals. DX mono-therapy animals survived 21-26 days. From experimental results, it is logical to conclude that combinations of DX + Dox allow animals



to survive longer than Dox mono-therapy, and that DX enhances the anti-tumor effects of Cyt.

## Conclusions

In vivo assessment of RRI has revealed prospective treatment strategies for breast cancer. Future studies will assess the need for alternative therapies for HIV infection. RR plays a role in the HIV virus and may aid in inhibiting HIV replication, also.

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## Acknowledgements

I would like to acknowledge the assistance of Dr. Vincent S. Gallicchio and Ryan L. Sumpter for kindly providing their time, patience, and encouragement. A special thanks to Dr. Elford for providing the pharmaceutical supplies necessary for this study.

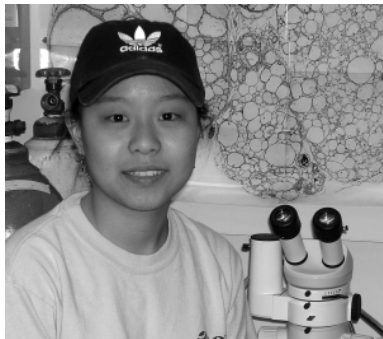
## The Effects of Temperature on Neuromuscular Development in Larval *Drosophila*

**HYE-MI LEE, Research Assistant to Dr. Robin L. Cooper**

**Department of Biology, University of Kentucky**

### Introduction

Different and changeable environments lead to biological adaptations for proper functions. In spite of the available information about temperature effects on the *Drosophila*, the mechanism in the functional relationships of temperature effects over various developmental stages has not been provided in detail. It is known however that higher temperatures (25-30°C) cause larval *Drosophila* to grow



more rapidly as compared to colder temperatures (15-18°C). As the animal develops, so must the skeletal muscles. By examining the development of the neuromuscular junction (NMJ) in larval *Drosophila* grown at different temperatures, some of the basic processes in the development and maintenance of the synaptic transmission might be revealed. Morphological differences of the nerve terminals can be examined at different levels. The objective of this research is to provide pertinent information regarding the effect of temperature on development of larval *Drosophila* with particular attention to the development of the larvae neuromuscular junction.

### Methodology

As soon as *Drosophila* eggs were hatched, the animals were placed into one of the following temperature environments: 18°C, 25°C, or 33°C. The larvae full body length, abdominal longitudinal muscle 6 (m6) in segment 4, and outgrowth of the neuromuscular junction changes were used as morphological indices for the whole animal and motor unit development.

### Results

When comparing the different growth rates for each temperature, the 1st instars did not have significant differences in body length. However, at 18°C, longer developmental periods were present for the 2nd instars and 3rd instars. The relative cumulative frequency from the mean values indicated that there is a faster rate of development for the higher temperature. Also the organisms showed a decrease in the locomotor activities at lower temperatures. With use of HRP staining, preliminary results indicate that the larva raised at 33°C developed more branched nerve terminals. It was serendipitously found that the HRP anti-body can be used on a preparation even after the tissue has been processed with mounting media. This also opens up the possibility of using secondary antibody staining, if the need arises in future studies.

### Conclusions

The results suggested a tight correlation between the temperature and development rate in the body level. There was a difference in the varicosities and branches of the NMJs, which supported the different temperatures affecting the nerve terminal morphology. From this study, we concluded that different temperatures lead to dramatic difference in larvae development. This conclusion leads to further investigations at the anatomical and the physiological level to understand the NMJ performance at different temperatures.

### Future Studies

Measurements for comparing the muscle dimensions and the NMJ development are still in progress in or-

der to compile enough data for statistical comparisons. I would also like to determine if the differing temperatures can lead to different levels of synaptic transmission, to correlate with the difference observed in morphology of the nerve terminals. Electrophysiology studies can also help us understand the influences in the synaptic strength or the homeostatic maintenance in development of the NMJs.

## Homeless Men in Temporary Settings with Families

**Shanna Sanders, Research Assistant  
to Dr. Joanna M. Badagliacco,  
Department of Sociology**

I am assisting Dr. Joanna Badagliacco in a study that focuses on homeless families in rural Kentucky, and the physical or sexual abuse that male household heads have encountered throughout their lifetime.

Dr. Badagliacco has interviewed 102 women in rural Kentucky homeless shelters about their viewpoints, childhoods, relationships, past and present sexual and physical abuse, experiences with substance abuse and alcoholism, income level, education, and children. I am examining the 16 interviews conducted with the men married to these women in the study. Before this time, the only homeless families that had been interviewed consisted of women and their children. It is rare, as seen from these interviews, for the male member of the household to stay with his family after becoming homeless.

Dr. Badagliacco has written a number of papers concerning homeless families' experiences with violence, the intergenerational transmission of poverty, and inequality. She teaches and researches social inequalities, especially with respect to families in poverty.

My responsibility has been to input quantitative data from the men's interviews into the SPSS (Statistical Package for the Social Sciences) database that contains 400 variables from the interviews. After this data set was created, statistical information, such as means and frequencies, were calculated from the data I input. I also examined the qualitative information that respondents supplied. It was then possible for me to see correlations among the interviewed men.



A voice is given to the homeless families in rural Kentucky through this research project and Dr. Badagliacco's upcoming manuscript. The homeless and the causes behind this country's homelessness must be understood before we can begin to solve the problems associated with this situation.

During this research project, we discovered that these men had experienced overwhelming amounts of both physical and sexual abuse throughout their childhoods. As an example of the physical abuse these men have encountered in their past, 80% of the men interviewed responded "sometimes" or "frequently" when asked if, "Before the age of 17, an adult threw something at, pushed, grabbed, shoved or slapped you."

We also discovered that these men had little education, most were not high school graduates. Although all had jobs, the average income for these men was less than \$10,000 annually. Because of their past experiences, these men could not be sufficient providers for their wives and children.

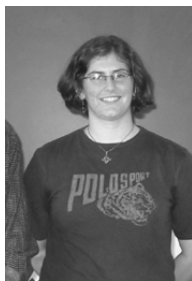
These men are faced with a daunting task. They have become fathers, a role for which they had no adequate model to learn from. Their childhoods were spent in unstable households, moving around, being faced with physical and sexual abuse, and being exposed to substance abuse and alcoholism. They do not know how to become the fathers they need to be.

Unfortunately, if something drastic does not occur, these men are likely to only pass the cycle of poverty on to their children. Change is necessary before homelessness in families becomes an even greater problem in the United States. We have proposed that public policy be altered so that the homeless can learn the skills necessary to live on their own.

Many future research possibilities are available related to these topics. At some time, I would like to examine statistical differences on these same questions between the homeless men with families and homeless men without families, homeless men who have left their families, and housed men with families.

## Uranium Immobilization with Borax

**Railey White,**  
Research Assistant to Dr.  
**David Atwood**



Uranium has been used in this country and around the world for many decades, but its use poses a serious threat to our environment. It has applications ranging from supplying heat to our homes to supplying the most destructive weapons the world has ever seen. But, regardless of its application, the use of uranium has the same unpleasant side-effects in the form of waste. One Department of Energy (DOE) facility that is attempting to manage such waste is the Gaseous Diffusion Plant in Paducah, KY. Currently, the uranium contaminated water in Paducah is contained in large holding tanks waiting for a method of remediation. These large tanks of  $UF_6$  (uranium hexafluoride) could produce large amounts of aqueous Uranyl ( $[UO_2]^{2+}$ ) which is the basis of our study (Friedman, 2004).

Brandon Conley (a former UK undergraduate researcher who is now on an NSF graduate student scholarship at M.I.T.) proposed that because the uranium is in an ionic form we should be able to find a counter ion, equal in size and charge, which would bind with the uranyl to form an insoluble precipitate (Conley, 2003). Conley and Atwood were funded for this study by the Kentucky Science and Engineering Foundation (KSEF) (Grant: 12-217-RDE-002 "Actinide Immobilization in Groundwater"). Several counter ions were tested, but they did not cause uranyl precipitation; however, promising results were obtained with selected boron reagents.

In our studies, we used an ICP-OES (Inductively Coupled Plasma Optical Emission Spectrometer) to determine the amount of uranium in solution. This instrument passes the sample through a plasma torch and captures the wavelength(s) of light emitted; the intensity of the wavelength is used to calculate the concentration of the sample. Each of the studies we conducted utilized this instrument. First, we conducted a concentration dependent study that held the uranium concentration constant and varied the concentration of the boron additives. The samples were centrifuged and the supernatant was decanted and analyzed. From this concentration dependent study, we determined the optimal concentration of boron for the best uranyl removal. This is now the basis of a UK patent application.

"Use of Boron Compounds to Precipitate Uranium from Water." After the concentration dependent study, we wanted to determine whether or not the precipitate formed would leach back into solution with time. The utility of our remediation technology would be reduced if the boron-uranium precipitate proved to be unstable. For the leaching study, eight sets of identical samples were created at ratios of 20 times and 30 times the amount of uranium present, and within each sample set, pH 4, 6, 8, and 10 were tested. These samples were centrifuged and left for 1, 7, 14, or 21 days, then analyzed. The results from this study showed that within this four week period, there was no significant difference in the amount of uranium in solution from day 1 to day 21. This test also reconfirmed our results from the previous study, that the higher amounts of boron remediates best, and that pH = 4 is the optimal pH level for removal.

A corollary study to the leaching procedure was conducted, which analyzed the pellet formed from the precipitate after centrifuging. This procedure was used to determine when precipitation occurs, and to measure the concentration of uranium in the pellet. One sample set was analyzed on days 1, 7, 14 and 21. On each day the samples were analyzed, centrifuged, the supernatant decanted, and the pellet was re-suspended into 1% Nitric Acid solution. This re-suspended pellet was analyzed, and it was determined that the vast majority of precipitation occurred before day 7.

Another study was conducted to determine the effect of surfactant (sodium dodecyl sulfate) on removal. The addition of surfactant to the samples resulted in no increase of uranium removal.

Our characterization of the precipitate indicates that it is a new material. A sample of the precipitate was sent to Borax, Inc. for characterization, and their results confirm our findings.

Based on these results, further characterization will be conducted as well as possible testing at increased concentrations of boron. Also, in the studies we conducted, centrifugation was used as a means to simulate gravity over time; however the real length of time required for achieving similar results is yet to be determined. Further investigation of these and other variables will help us to understand how boron compounds bind to the uranyl ion, and could help us achieve commercial application of this process.

Conley, Brandon D., Atwood, David A. Actinide Immobilization in Groundwater. 2003. <http://ksef.kstc.com/Relation/downloadFile.cfm?DocNum=145>

Friedman, Gregory H. Depleted Uranium Hexafluoride Conversion. 2004.



# Oswald Research and Creativity Program

Any current UK undergraduate (full- or part-time, enrolled for either semester) who does not already have a four-year degree is eligible for this competition and may 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 2003-2004 Oswald Research and Creativity Program.

(Extended versions of these entries are included on-line at [www.uky.edu/kaleidoscope/fall2004](http://www.uky.edu/kaleidoscope/fall2004).)

## CATEGORY 1:

### Biological Studies:

#### 1st Place

NAME: Fabiola Djojo

TITLE: West Nile Virus in the common house sparrow in central Kentucky



We analyzed blood samples collected from house sparrows (*Passer Domesticus*) for the presence of West Nile Virus (WNV). WNV is an RNA virus, so we performed RNA extractions on the samples and used reverse transcription to copy any RNA into DNA, which is much more readily manipulated in the laboratory with standard molecular techniques such as polymerase chain reaction (PCR). We used PCR to amplify a segment of the DNA known to correspond to part of the WNV genome. Gel electrophoresis was then used to visually confirm the presence or absence of WNV. Samples producing a band at the correct location were considered positive for WNV. We found that 38 of 133 house sparrows tested were positive. The gender of the bird and the type of primer we used had negligible effects on the rate of infection, but age of the bird, month the sample was collected, and location of the bird had significant effects. Younger birds, especially juveniles, had higher rates of infection, and most cases of WNV occurred in July, one month prior to the peak of human cases in Kentucky. In summary, WNV is indeed present in house sparrows in central Kentucky, particularly juveniles. Moreover, the timing of the peak infection rate suggests that an outbreak

in house sparrows may foreshadow an outbreak of human cases. Thus, detection of WNV in field-collected specimens, as done here, may act as an early warning system allowing us to better time mosquito control or other measures that might prevent transmission and disease among humans.

## CATEGORY 2:

### Design:

#### 1st Place

NAME: Andrew Watson

TITLE: Incorporating Housing/ Residential Use With Commercial and Industrial Areas



### Blue Grass Heights Design Concept.

Bluegrass Heights is a greenway community designed to provide a comfortable environment in which to live, and enjoyable place to work, a center for entertainment, shopping, and eating all designed around a greenway link to nature and outdoor recreation.

#### The objectives are:

- Utilize and protect environmentally threatened areas on site as a protected greenway unobstructed by automobiles that connects to the larger greenways system leading to the Kentucky Horse Park.
  - Greenway provides a non-vehicular route for neighborhood residents to access the main commercial area as well as for outdoor recreation and nature preserve.
  - Create amenities for all neighborhood residents while discouraging through offsite traffic on local streets. High density units create private recreational greens for occupants; town homes and garden apartments form similar spaces to create a sense of place for occupants, while medium density houses have private lots with small recreational parks dispersed throughout the neighborhood for children.
  - Boulevards with open greens, planted with street trees on either side provide views down ridgelines and pedestrian access to the central greenway.
  - Commercial/Professional practices accessible to pedestrians and automobiles throughout with a central pedestrian corridor leading toward and from the greenway. Mixed/stack zoning creates diverse interaction and walkable ease from place to place.
  - Create a commercial/retail center with large and small retailers, boutiques, restaurants, and entertainment such as in IMAX Theatre and other unique entertainment venues.
- Maintain existing fence rows on northern and eastern property boundaries for aesthetic views with roads designed for possible links to adjacent future development.

## CATEGORY 3

### Fine Arts:

#### 1st Place

**NAME:** Mary Lamb Nehring

**TITLE:** Jubilation (quilt painting)

—shown on the inside back cover

**Mono print on silk and cotton**

**Assorted embellishments**

This piece exudes joy and happiness — the feelings of pleasure and accomplishment. I devised this process while studying mono printing with Ross Zirkle last spring. I am a textile artist and tried to interpret the techniques that he taught into my medium, which is art quilts. “Jubilation,” completed in January of 2004, was a focal point in my BFA solo show entitled “Soft Reflections.” “Jubilation” was one of a group of quilts and mono-prints that I created for that graduation show. My deep and abiding love of art glass profoundly influenced me in creating “Jubilation.” Over the years I have yearned to impart glassine qualities into my quilts. Perhaps this textile expresses my emotions towards a journey that I completed in May, 2004.

My traditional training in quilting provided me a firm foundation while simultaneously and unintentionally constraining me. The concepts of layering, coloring, stitching and piecing have informed me, guided me, and offered me insight to explore to new and exciting places. This show represents a conscious attempt to break through preconceived boundaries and explore what for me are new and unconventional regions. For example, my earlier quilts all honored conventional ken, and featured straight edging. Now I purposely allow the fabric and shapes to inform me as to preferred locations and boundaries.

Perhaps the most challenging endeavor in my journey of growth was to impart the crystalline qualities that I so much admire in art glass into an opaque medium such as fiber. Traditional experiments with sheer silk and other transparent textiles proved to be enlightening but unfulfilling. Ultimately I settled on the following formulation:

1. Mono print with black ink onto white cotton
2. Ghost print onto sheer silk
3. Dye paint both layers
4. Add foiling and other embellishments to the cotton layer
5. Quilt the cotton layer
6. Add the silk layer, quilt the entire piece and embroider the finished product.

The result becomes two layers printed from the same mono print plate with duplicate, yet different images. Foiling and embellishments reflect through the individual layers adding depth, and offer the soft reflections suggestive of art glass.

My sincere thanks go to the following U.K. faculty members: Arturo Alonzo Sandoval—for putting the insane notion into my head that I actually possessed the talent, determination, creativity and capability to complete this degree program.

Ross Zirkle—for introducing me to the field of mono printing and encouraging me to make art for me and in my own definable style. Ross taught me that something as incredibly messy as oil based black ink could be used on fine silk. My hands have looked like a potato farmer's ever since.

## CATEGORY 4:

### Humanities: Creative

#### 1st Place

**Name:** Eric Rickert

**TITLE:** A Collection of Poetry

*The entire collection is available is at the on-line version of the journal at [www.uky.edu/Kaleidoscope/fall2004](http://www.uky.edu/Kaleidoscope/fall2004).*



## CATEGORY 5:

### Humanities: Critical Research

#### 1st Place

**Name:** Vanessa Johnson

**TITLE:** Anthony Van Dyck's Construction of Identity through Self-Portraiture

In 1613, at the age of 14, Anthony Van Dyck painted a simple self-portrait. This was the first self-portrait of his prolific career. He would later become the premier portraitist of Northern Europe and court painter to many monarchs. He would train with Peter Paul Rubens, the most famous artist of his time, and become a master in the painter's Guild of St. Luke. Van Dyck's construction of his identity would be affected by his experiences and would change as he matured into the artist he is remembered as. His identity would be influenced by his teacher, Rubens, his lifestyle, and his experiences.

In 1610, Van Dyck was apprenticed to the painter Hendrick Van Balen in Antwerp. Under his direction, Anthony painted his first self-portrait. A century earlier another young painter, Parmigianino, had painted a similar self-portrait to show his skill and to practice imitating reality. In this early self-portrait, Van Dyck's identity comes from his middle-class upbringing, family support, and natural talent that made his attempt at an artistic career relatively easy. The painting speaks of his great skill without any other visual clues about him. Here Van Dyck is already displaying his pride by viewing us expressionlessly and as if he has been interrupted.

In 1618 Van Dyck became a Master in the Guild of St. Luke and began his work in Rubens' studio as principal assistant. Rubens was a man of learning and a highly regarded artist who painted monarchs and aristocrats. His life modeled to Anthony the need to act and portray oneself as aristocracy if he wanted commissions from them. Their work was different, as were their personalities, but Rubens' lavish lifestyle and stately manners would influence the way Van Dyck would paint himself later.

Following his stay in Rubens' studio, Van Dyck went to Genoa, Italy where he found noble families without a portraitist. The self-portraits he painted during his time in Italy reflect his life at the time. He was influenced by Venetian



styles and began to paint with different brushstrokes. He also painted himself in rich clothing, in the stance of aristocracy, and, in one self-portrait, with a gold chain which was a gift from the Duke of Mantua, one of his patrons. Taking his cue from Rubens, he painted himself in a stately way, not only to show his rising status, but also to continue trying to increase it.

After his return from Italy, Van Dyck went to England where he became court painter for Charles I. He lived lavishly, with servants, and was even knighted in 1632. It was during this time that he painted his "Self-portrait with a Sunflower." The sunflower represented the relationship between monarch and citizen and it also represented the artist's turn to nature for his inspiration, as the flower turns to the sun. In one interpretation he illustrated his role at court and in the other his talent as an artist. Either way, he was constructing his identity based on his status. His pose here is similar to his first self-portrait, but the added details tell the viewer how much he has accomplished since age 14.

What we can learn about Van Dyck from his self-portraits is very valuable. His identity came from what he had done and what he wanted to do. His construction of identity not only showed him as what he was, in his own mind and to others, but also as what he aspired to be.

## CATEGORY 6:

### Physical and Engineering Sciences 1st Place

**Name:** Caroline Strasinger

**TITLE:** Gas Foaming in Preparation of Polymer Composites

## CATEGORY 7:

### Social Sciences 1st Place

**Name:** Ann Marie Hartell

**TITLE:** The Landscape of Retail Liquor Stores in Lexington, Kentucky

Liquor stores are a relatively common sight on the Lexington landscape. They are found in rich and poor neighborhoods, old and new buildings, as stand-alone structures, in strip malls, or as appendages to grocery superstores. Their commonness indicates that they are not anomalies, but rather an integral part of the city's physical, commercial, and cultural fabric.

During the fall of 2003, 25 of the 49 outlets holding retail package liquor licenses were visited, with special attention to signage, site layout, and store architecture. Given the strict regulatory control of the retail liquor trade, much of the evolution in physical appearance, business structure, and spatial pattern of liquor stores can be explained by changes in Kentucky liquor law. These regulations are rooted in societal attitudes, and may be evidence of attempts at social control. Close regulation also facilitates taxation by the state.



Source: Polk's City Directory.

Liquor stores have certain characteristics in common, particularly with regard to exterior signage. Because stores vary widely in style, size, and setting, they use prominent signage to identify themselves. Typically this includes neon in the windows, plastic banners featuring brand logos, and the word 'liquor' prominently displayed (often more prominently than the business name). Another common element is the presence of security measures ranging from exterior cameras, to window grates, to patrolling security guards. Liquor stores favor corner locations where they have maximum visibility. This can mean an actual street intersection or a contrived street corner at the end of a strip mall.

An examination of the ownership structure, size, and product mix of licensed liquor stores revealed three types of liquor stores: independents, large chain, and general stores that include liquor in their merchandise mix. Independents tend to occupy older buildings in the older central city. Many independents function as neighborhood gathering places permitting on-premise beer consumption in a tavern atmosphere. Large chain stores (e.g. Liquor Barn) only offer liquor for sale for off-premise consumption, but also prominently feature party supplies and deli products. These stores provide shopping carts to their customers, hinting at an emphasis on volume sales, and their site design is completely oriented toward serving customers arriving by automobile. Predictably, these stores are found along major commuter routes. General stores holding package liquor licenses are typically national drug store chains (e.g. Rite Aid). They prefer strip mall locations, but occasionally are attached to and operated by a major supermarket. The relationship between new construction and larger and more diverse businesses reflects a national trend toward increasing scale in retail operations, which means higher profits to offset the high rent costs associated with new commercial construction. Further aiding this trend, Kentucky recently deregulated the retail liquor business, allowing general merchandisers to hold retail liquor licenses. The combination of deregulation and economic factors favoring large-scale business has made it more difficult for independent liquor stores to compete. This is evidenced by an increase in the number drug stores in Lexington and, at the same time, a decrease in the number of specialty liquor stores.



# Undergraduate Awards and Honors

## Beckman Scholarship

**Stephanie Lynn Logsdon**  
**Brandon Michael Sutton**

Recipients for 2004-2005. 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 in 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. (\$17,600 each for two summers and one academic year)



Logsdon



Sutton



Challis



Gabbard

## NSF Graduate Research Fellowships

**John H. "Jack" Challis**  
**Ryan Gabbard**

Recipients for 2004. The National Science Foundation (NSF) awards about 900 fellowships in March of each year to the nation's most promising young mathematicians, scientists, and engineers who show the potential to make significant contributions to research, teaching, and industrial applications in science, mathematics, and engineering. The award carries a stipend of \$30,000 for one year and an annual cost-of-education allowance of \$10,500. Awards are renewable for up to three years. Jack plans to attend Yale to pursue a doctorate in physics. Ryan will study computer science at the University of Pennsylvania in Philadelphia.

## COLLEGE OF AGRICULTURE Department of Biosystems & AG Engineering

**Wanda Jone Lawson** **Frank Woeste Award**  
Monetary award given to the highest achieving Biosystems & AG Engineering Student

## Department of Family Studies Family & Consumer Sciences Education

**Amelia C. Brown** **Sullivan Award**  
The Algernon Sydney Sullivan Award is an annual award presented to an undergraduate male and female at graduation in recognition of their community service activities. The Sullivan Awards were established by the New York Southern Society in 1925 in memory of Mr. Algernon 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 con-

duct. 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 Algernon Sydney Sullivan award — sponsored by the Algernon Sydney Sullivan Foundation.

## Department of Merchandising, Apparel, and Textiles

**Megan Jeanette Sprigler**

Presentation of Paper: "The Portrayal of Women in Advertising between 1957 and 2000." Paper presentation of content analysis of ads in Vogue magazine to examine how women were being portrayed (agonic roles or hedonic roles) and dressed (feminine or masculine) at the Costume Society of American Region 6 Symposium. Megan is preparing the final stages of her publishable manuscript for submission to the *Family and Consumer Sciences Research Journal* (FCSRJ).

## COLLEGE OF DESIGN School of Architecture

**Students from the School of Architecture**

Received a \$7,500 Cash Prize from the 2004 National Council of Architectural Registration Boards (NCARB) in Portland, Oregon, June 2004. The UK entry, "The Comprehensive Project: A Practice-based Studio," was one of only five entries (out of 30) to be awarded a \$7,500 cash prize from the NCARB.

**Kelly Marie Eldridge**

**Recipient of the Maurice A. Clay Award**

The Maurice Clay award is sponsored by the UK Chapter of Omicron Delta Kappa (ODK) presented to the graduating senior in each UK college and is based on leadership among the student body.

**Michael Todd Hughes**

**Henry Adams Medal of the American Institute of Architects**

Each year the American Institute of Architects awards an engraved medal to the top-ranking graduating student in each architecture program accredited by the National Council of Architectural Accrediting Board.

**Michael Todd Hughes**

**Darren J. Taylor**

**Nominees for the prestigious Skidmore, Owens and Merrill Traveling Scholarship**

First awarded in 1981, the Skidmore, Owings & Merrill Traveling Fellowships programs have become benchmarks for academic and professional excellence. The purpose of the Fellowships is to allow gifted graduates the ability to pursue the knowledge and experiences of the built environment through independent travel.

## COLLEGE OF ARTS & SCIENCES Department of Aerospace Studies (Air Force Reserve Officer Training Center)

**Cadet Kyle Davis**

**Distinguished Graduate Award for the Detachment 290 class of 2004**

The Distinguished Graduate Award is limited to only one award for every ten commissionees and is recognition for excellence in military training, academic achievement, and leadership.



## Department of Biology

**Stephanie Logsdon** **Best Presentation**  
**Brandon M. Sutton** **Runner-Up for Best Presentation**  
Bluegrass Chapter of the Society for Neuroscience Awards for Undergraduate Presentation at the local meeting, Spring, 2004

## Department of Geological Sciences

**Thomas S. Deen** **Tarr Award**  
A National award presented to an Outstanding Senior Geology student for high academic and service accomplishments in the department. The winner receives the Geology Hammer.

**Matthew J. Zimmerer** **Pirtle Scholarship**  
A \$1000 cash award to the academically outstanding junior Geology Major.

**Rachael Vonn Mann** **KY Section of American Institute of Professional Geologists Student Award**

A \$300 cash award provided to an all-around geology student by the Kentucky Professional Geologists Association.

**Michael J. Caudill** **Published Abstract & Oral Presentation**  
“Paleoecology of an Early Cretaceous Dinosaur Trackway Site, Upper Glen Rose Formation, Sattler, Texas,” Geological Society of America Abstracts with Programs, v. 36, p. 116.

**Kristopher M. Clemmons** **Published Abstract & Oral Presentation**  
“Petrofabric Analysis of the Great Smokey-Snowbird Group Contact, Cove Creek Area, Eastern Great Smokey Mountains, North Carolina,” Geological Society of America Abstracts with Programs, v.36, p. 103.

## Department of Mathematics

**John Henton Challis** **Cater Fellowship**  
One of only 23 awarded by Alpha Lambda Delta, an academic honor society. Students apply for these awards during their senior year or after receiving their baccalaureate degree if they have maintained initiation standards throughout their college careers. The fellowships are used for graduate study.

## Spanish & Italian Department

**Laura Park Wills** **Zembrod Award**  
The Zembrod Fellowship Award is presented annually by the Spanish and Italian Department to an upcoming Junior or Senior and carries a monetary value of \$1,000 to be used for tuition, education-related expenses, or foreign travel of study.

## Department of Sociology

**Amber Brown** **Erin Hoben** **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.

## COLLEGE OF BUSINESS AND ECONOMICS

### Department of Biology

**Richard Neely** **James W. Martin Award**  
**Scott French**

The James W. Martin Award is presented annually to an outstanding senior in Economics. The intention is to encourage routine discussion and reaffirmation of our pedagogical ideas and department traditions.

## COLLEGE OF COMMUNICATIONS & INFORMATION STUDIES

### School of Journalism and Telecommunications

**Michael Brent** **Adelstein Award**  
The Adelstein Award is named for the late Carol 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.

**Eric Banks, Rebecca Colley, Kelsey Corcoran, Elizabeth Duncan, Claire Fangman, Christopher Filiciello, Katherine Gray, Lauren Hites, Kelley McCabe, McKensi Milburn, Jared Rapier, Breeanna Rosen, Cori Scanlon, Lauren Sutton and Ashley Tingle.**

**UK Team won District 5 Level Student Competition** in the American Advertising Foundation (AAF) Challenge. For the second year running, a team of 15 integrated strategic communications students won the District 5 American Advertising Foundation (AAF) competition held in Charleston, W.Va, April 24, 2004. Approximately 3,000 students participate annually and only 16 schools are selected to present their campaigns to a panel of industry executives at the national competition.

**Katherine Whitney** **12th Place Finalist**  
in the Features Category of the Journalism Awards Program, Hearst Television Broadcast News Competition Katherine tied for 12th place out of 63 students in the Features Category of The Hearst Journalism Awards Program that is presented annually under the auspices of the Association of Schools of Journalism and Mass Communication (ASJMC).

**Jennifer Mack** **Paper Presentation**  
Among the Top 6 Undergraduate Papers. “Uh . . . um, well . . . probably: Powerless Language and its Effect on Perceptions of Communication Competence and Gender” Southern States Communication Association Undergraduate Honors Conference held April 1-4, in Tampa, Florida. Of the 78 papers selected out of 104 submitted, 20 were from the University of Kentucky, by far the largest number from one school.

**Andrea Wimmers** **Paper Presentation**  
Among the Top 6 Undergraduate Papers. “Peer Pressure: The Relationship Between Personality Structure and Behavior”

# Undergraduate Awards and Honors (CONT.)

**Jamie Carter** **Paper Presentation**  
 "Effects of Childhood Religious Differences on Amount of Conflict and Conflict Severity in Marriages"

**Kelsey Clark** **Paper Presentation**  
 "The impact of Customer Service Orientation and Patient-Physician Relationships on Patient Satisfaction"

**Kellie Collins** **Paper Presentation**  
 "The Presence of Domestic and Foreign Issues and the Position Taken with Each: A Content Analysis of *The West Wing*"

**Anne-Bennett Cook** **Paper Presentation**  
 "A Feminist Critique of *Sex and the City*: Are the Character Men-Loving Feminists?"

**Devin Fension** **Paper Presentation**  
 Racism: A content Analysis of Racist Messages Identified on Primetime Television"

**Kimberly Fesmire** **Paper Presentation**  
 "Sports Media Involving Beer and Alcohol and the Drinking Influences of College Greek Students"

**Melissa Frantz** **Paper Presentation**  
 "Tricks of the Trade: Do Compliance-Gaining Strategies Really Affect Behavior Intent to Purchase?"

**Katrina Jackson** **Paper Presentation**  
 "Saying Nope to Dope?: A look at the Effectiveness and Perceived Message Sensation Value of Public Service Announcement with High School and College Students"

**Sallie Moles** **Paper Presentation**  
 "Go, Team Go: The Relationship between Local Sport Press Releases and Local Newspaper Coverage"

**Amanda Renbarger** **Paper Presentation**  
 "Gender Roles on Pime Time Television: A Content Analysis of *Friends*"

**Matt Setters** **Paper Presentation**  
 "The Effect of Self-Disclosure on Personal Identity"

**Phil Shay** **Paper Presentation**  
 "Music Fandom: An Exploration of Lyrical Dimensions"

**Caroline Skinner** **Paper Presentation**  
 "Self-Disclosure as Applied to an Interpersonal Context: A Critical Analysis of Parental Communication and Teenage Self-Disclosure"

**Joshua Smith** **Paper Presentation**  
 "Visitor's Identification: A Study of the Organizational Identification, Intercultural Communication, and Educational Experience of International Students"

**Beth Sublette** **Paper Presentation**  
 "Maternal Attitudes Toward Adolescent Dating: A New Twist on Agenda Setting Theory"

**Stephanie Watson** **Paper Presentation**  
 "Diabetes and the Effects on Communicative Behavior"

**Sarah Webb** **Paper Presentation**  
 "Forget symptoms, I want to talk about my personal life: A look at the amount of self-disclosure based on physician/patient demographics"

**Morgan Wells** **Paper Presentation**  
 "A Communication Battle of the Sexes: A Reexamination of Sandra Bem's Sex Role Inventory"

## COLLEGE OF ENGINEERING Co-op Program

**Amy Sandman** **Tim Arrowsmith**  
**Two of the five best nation's Co-op Students**

Amy Sandman and Tim Ironsmith was ranked among the top five engineering cooperative education students in the nation by the cooperative education division of the American Society of Engineering Education (ASEE) at the society's annual conference for Industry and Education Collaboration in Biloxi, Mississippi. The award is based on scholarship, performance, innovation at work, and leadership on campus.

## Department of Computer Science

**Stephen duBarry** **Presentation**  
 "Automated Image Labeling for Image-Based Electronic Editions of Medieval Manuscripts" 18th National Conference on Undergraduate Research, Indianapolis, IN, April 15-27, 2004

**J. Matt Downs** **Brandon E. Barker**  
**Jeremy Leachman** **Jean-Hugues Niclair**  
**Andreas L. Hunt** **Jamieson Unsell**  
**Poster Presentation**

"Bioinformatics Experience for Undergraduates: Software and Experiment to Assess the Accuracy of the Segmentation for MRI Images. 10th Annual EPSCoR (Experimental Program to Stimulate Competitive Research) Conference, Lexington, KY, May 13, 2004; Posters-at-the-Capitol, Frankfort, KY, January 20, 2004.

**Albert Kalim** **Algemon Sydney Sullivan Award**  
 The Sullivan Award is an annual award presented to an undergraduate male and female at graduation in recognition of their community service activities.

**Brandon E. Barker** **Oral Presentation**  
 "Organizing Data in Mass Spectrometry" 14th Annual Argonne Symposium for Undergraduates in Science, Engineering, & Mathematics, The Central States Universities, Inc; Argonne National Laboratory, Argonne, IL, October 24-25, 2003.

**Stephen duBarry** **NSF Research Experience**  
**Carole Loneragan** **for Undergraduates Program**  
**R. Andrew Duncan**  
**Steven Hayes**  
**Jean-Hughes Niclair**  
**Mathew Woodyard**

National Science Foundation (NSF) Research Experience for Undergraduates program in association with the ARCHway (Architecture for Research in Computing for the Humanities through collaborative research, teaching and learning).

## COLLEGE OF FINE ARTS

### **Brian Archinal**

### **Wallace Award**

The Wallace Award is presented to a single promising incoming Freshman based on recommendations from the UK music studio faculty and a rigorous audition competition among the elite members of the incoming class. The award provides full tuition and a stipend for all four years of the student's undergraduate career.

### **Vanessa Alexis Kemper**

### **Amy Lucille Noell**

### **Recipients of the**

### **Maurice A. Clay Award**

The Maurice Clay award is an award sponsored by the UK Chapter of Omicron Delta Kappa (ODK) presented to the graduating senior in each UK college and is based on leadership among the student body.

## Office of Student Activities, Leadership & Involvement (Student Volunteer Center)

### **Brandon Fenley**

### **Darrell VanMeter Award**

A selfless spirit award. Each year UK recognizes a student for The Darrell VanMeter Award in honor of Darrell A. VanMeter. Darrell, (a sophomore at the time of his death in 1991), was recognized by the University community and his home community for his positive contributions dedicated to serving others. The impact of his "good Samaritan" approach to helping others was apparent to faculty, staff and students alike. He touched the campus community with his selfless heart and continual acts of service.

## Office of the Associate Provost for Minority Affairs

### **Jonathan Beatty**

### **Tracy Bonilla**

### **Cheryl Jones**

### **Kelly Ruff**

### **Anna Gumbs**

### **2003 Spirit Award**

This award is dedicated to recognizing students who excel academically and contribute to the quality of student life through exemplary leadership and their achievements and contributions at UK and the greater community.

## UK Athletics

### **Melody Cook (Rifle)**

### **State Farm Post-Graduate**

### **Seth Stanley (Pitcher)**

### **Scholarships**

Recipients of the 2004 State Farm Insurance Post-Graduate Scholarship. Students are recognized not only for their athletic participation, but their academic achievements and their commitment to community service. Each student will receive a \$750 postgraduate scholarship to be used toward continuing his or her education in any accredited graduate degree program.

# Special Programs

## Solar Car Team

**[www.engr.uky.edu/solarcar](http://www.engr.uky.edu/solarcar)** UK's 20 member Solar Car Team competed for the 2nd Year in a Row and placed 2nd in the Stock Class Category in the Formula Sun Grand 2004 in Topeka, Kansas May 19-21, 2004. Named for the 1982 KY Derby Winner, The Gato Del Sol took 4 years and \$70,000 to build. Its nick name is the "Blue Bomb," and has shocks from a mountain bike and a steering wheel from a kid's dragster, as well as an aluminum chassis, an electric motor, 8 square meters of solar paneling on it fiberglass shell and a top speed of approximately 80 miles per hour. The project started as a student run engineering project with support from the College of Engineering. The team consists of multi-disciplines that require the best and most determined students. The team has individuals from electrical, chemical and mechanical disciplines as well as bio-systems, agriculture, and computer science engineering. Team Members: Donnie Jones, Adam Kelty, Qiang Li Saravana, Krishnan Kannan, Matt Hatfield, Adam Brown, Dale Reid, Zachary Jacobs, Michael Brown, Dennis Carter, Katie Arambasick, Joshua Johnson, Chris Morgan, Karen Robb, Tarik Aweimrin, BJ Hinkle.



## Wildcat Pulling Team

**[www.bae.uky.edu/qscale/tractor.htm](http://www.bae.uky.edu/qscale/tractor.htm)** The UK Pulling Team finished second overall in the Seventh Annual 1/4 Scale Tractor Competition in East Moline, Illinois. The objective of this competition is for students to be involved in all aspects of developing a product for the marketplace — a quarter-scale pulling tractor. Team Members: Will Adams, Katherine Christian, Benjamin Clark, Evan Conrad, Kathryn Duguid, Ryan Figgins, Courtney Fisk, Spencer Guinn, Justin Jackson, Michael Kennedy, Reynold Knasel, Brandon McDonald, Laura Meszaros, Charlie Sorrell, Tyler Mark, Matt Veal, Jonathan Waits, Jason Ward, and Grant Wonderlich. Faculty advisors are Rich Gates, Scott Shearer, Tim Smith, Tim Stombaugh, and Larry Wells.

## B.I.G. B.L.U.E II. Balloon-Launched Experiment

**[www.engr.uky.edu/bigblue](http://www.engr.uky.edu/bigblue)** BIG BLUE II was launched successfully on May 1, 2004 in Deer Trail, CO. After snow 2 days prior and long discussions of whether to scrub the planned launch from Saturday to Sunday, the day dawned bright and beautiful. The launch and lower ascent were as good as you can have. Although the balloon burst prematurely just over 6,000 ft, the wings were inflated and cured into great flying shape. The premature burst put the touchdown away from the grid of the recovery team. The aircraft was undamaged by the landing impact. B.I.G. B.L.U.E. (Baseline inflatable Glider Balloon-Launched Unmanned Experiment) is a flight experiment developed, designed, built, and flown primarily by students in the College of Engineering at the University of Kentucky. BIG BLUE was conceived as a demonstration of unique technologies with potential for application for Mars exploration. A team of over 40 undergraduate students from mechanical and electrical and computer engineering designed, fabricated, tested and flew a balloon-launched, high altitude, inflatable-wing glider.

Team Members: Project Manager: Will Wathen.

**For a complete list of all the team members, go to [www.engr.uky.edu/bigblue/team.php](http://www.engr.uky.edu/bigblue/team.php)**





# Summer Research and Creativity Grants

## How Much Can Positive Media Affect People's Opinions of Biotechnology?

**Abstract By Georgina Anderson**  
**Agricultural Biotechnology**

In recent years, agricultural biotechnology has been viewed in a very negative light by the general public. A lack of education about important advances in this field is partially responsible for the public's opinions. How easily are people reassured of the safety of agricultural biotechnology's contribution to the nation's food supply? This research project is trying to answer this question. By measuring volunteers' attitudes toward agricultural biotechnology. The volunteers will have access to a series of readings about agricultural biotechnology in the nation's food supply, and then the volunteers will take a second survey measuring their opinions of agricultural biotechnology after being educated in the basic ideas of agricultural biotechnology and how it relates to the nation's food supply.

Readers of the *Advocate-Messenger* newspaper in Danville, KY are being asked to take part in an internet survey about their opinions toward biotechnology. The survey utilizes Likert-like questions as well as open-ended qualitative questions to assess participants' positive or negative opinions of biotechnology, their perceived current knowledge of biotechnology, as well as standard demographic questions such as age, education level and occupation. Volunteers are then being directed to a series of four articles that will be published in the newspaper. These articles focus on historical and recent advances in biotechnology, as well as some of the major debates about biotechnology. A post-test will be given. The post-test's questions will be identical to those asked on the pre-test, with the addition of questions pertaining to how many of the published articles the volunteers read.

The quantitative data collected will be analyzed using the SPSS Data Analysis Software. The qualitative data collected will be analyzed to determine the major themes and concerns of the participants relating to the study.

A follow-up article will be published in the *Advocate-Messenger* Newspaper to inform volunteers and other newspaper readers of the results of the study. A scholarly paper based on this study will be submitted to the Anthropologists and Sociologists of KY 2003 Annual Meeting. The information gathered in this study could be used to create programs to educate the public so that people understand what biotechnology is really about and what major advances have been made in this field resulting in more and higher quality food being available to consumers world wide.

## Developmental Changes in Media Use in ADHD and Comparison Children

**Abstract By Rebecca Dayle Ashby**  
**Psychology and Education**

**June 15, 2004**

Many parents and professionals are confronting the challenges of raising and educating children who have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). The role of media habits in the lives of these children is a particularly controversial issue that has recently incurred much debate. While many parents report that television is one of the few activities that can sustain their child's attention, some experts postulate that the rapid pace of television may worsen, if not cause, ADHD symptomatology. Although the media habits of these children may pose a significant concern, little empirical research on this subject exists. This current study recognizes that in order to aptly report about the media habits of children with ADHD and those without the disorder, a few central questions must be answered. First, are the media habits of children with ADHD significantly different than those of comparison children? For instance, does television viewing replace reading among children with ADHD? Second, do parental beliefs about reading and television differ between these groups and are those parental beliefs manifested in their child's media use? Third, are the media habits of children with ADHD and non-referred children different across age groups? In addition to examining these questions, the longitudinal design of this study also allows us to investigate the ways in which media habits change and develop in specific groups over time. Participants in this study include the families of approximately ninety-five children diagnosed with ADHD and the families of approximately one hundred and fifty comparison children. When parents initially brought their children to the lab to participate in the ongoing television viewing and language development research project, they completed a "media habits questionnaire" that assessed a number of variables relevant to their child's reading and television habits and environment. The current study primarily seeks to examine the relation between that questionnaire and a new but similar "home habits questionnaire." Data have already been collected and entered for the majority of the participants and those data are being analyzed. Preliminary results obtained from this study are currently being developed into a poster that will be submitted for presentation to the Society for Research in Child Development biennial conference.

## The Effects of stress on the Liverwort, *Marchantia Injlexa*

Abstract By Jacob Ball

### Biology

During the summer of 2003, work began on an experiment to determine the growth patterns of the bryophyte, *Marchantia injlexa*. *M. injlexa* is found along streams, ranging from Tennessee to Northern Venezuela. This plant produces offspring via sexual reproduction (by spores) and via asexual reproduction (by gemmae within cupules).

When the experiment to determine the growth patterns of *M. injlexa* began, a sub-culture of the plant was also set-up in a growth chamber to further examine growth patterns. While growing this sub-culture in July of 2003, the observation was made that when *M. injlexa* encounters cold stress it responds by producing gemmae. Due to a malfunction in the growth chamber, the plants were subjected to a temperature of 0° Celsius for a period of approximately 12 hours. After the malfunction was corrected, and a period of time had passed, the plants had all produced cupules containing gemmae. Before the plants were exposed to the freezing temperature, none of them had gemmae producing structures. The objectives of the proposed study are to specifically test if cold and other relevant stressors induce plants to reproduce asexually. Other stressors that will be tested are breaking and drought.

### Current Progress and Future Plans

Currently, over 300 sample plants chosen from various random genotypes are growing in the greenhouse space provided by the University of Kentucky and Dr. N. Mcletchie. The results of a preliminary experiment on a greatly reduced sample size have thus far been promising, with cupules produced in a number of the plants. Once the plants have had adequate time to grow and recover from the initial stress of being relocated for this study, testing will begin on a much larger sample consisting of over 250 plants.

## Study of the Electronic, Structural, and Bonding Characteristics of Arsenic Thiolates

Abstract By Ronald Bakus, II and Taimur Shaikh

### Chemistry

As part of the chemistry proposal for a grant received from the University of Kentucky to study ways to achieve removal of oxo-arsenic species from water, several experiments were planned and performed during the past semester. Through the course of these experiments, it became obvious that the current knowledge available in the literature in regard to chelation of arsenic species is lacking in research into how different substituents on the arsenic center affect the bonding, structural, and electronic characteristics of arsenic. Therefore, a more fundamental approach is required

for the study of ways to remove oxo-arsenic species from water. Several experiments have been planned to study the electronic, structural, and bonding properties of arsenic in response to different substituents on the arsenic center. Based on previous research conducted in the Atwood group, and a strong literature precedent for arsenic sulfur bonding in nature, the focus of this research is turning toward a more fundamental study of arsenic thiolates. As part of this research, several novel ring compounds have been synthesized to study the effect of these substituents. Continued work on these compounds is planned this summer, with the end goal being a better understanding of the properties of arsenic, leading to more fruitful attempts at synthesizing a ligand capable of removing oxo-arsenic species from water.

## Effects of Direct-to-Consumer Advertising on Physician Prescription Intention

Abstract By Adam W. Craig

### Psychology

Spending on direct-to-consumer advertising (DTCA) tripled from 1996 to 2000 and shows the change in pharmaceutical marketing, a \$259 billion industry. Proponents claim this advertising facilitates the communication between physicians and their patients, but it may in fact be harming this relationship by exploiting it for marketing purposes and higher profits. With patients presenting persuasive messages from the drug companies, physician resistance may increase and result in an intention to prescribe generic drugs. This study evaluates the effect of DTCA on the patient-physician relationship by interviewing physicians and predicting their prescription behavior. Intention to prescribe alternatives is directly related to irritation and negative attitudes toward DTCA.

Eleven physicians ranging in specialties and years of practice have been interviewed in a semi-structured process to determine their perceptions and intentions toward the pharmaceutical industry. The participants were gathered based on convenience sampling procedures due to the impossibility of randomly sampling a group that is under very heavy time demands. Responses were examined by correlating attitude toward persuasive messages with intent to prescribe generic drugs in order to evaluate levels of resistance.

Among those sampled, physicians with more negative attitudes toward DTCA have report a greater likelihood to prescribe alternative pharmaceuticals in reaction to the pharmaceutical marketing efforts. Results of the study should provide a direction for further academic research regarding the processes involved in persuasion that DTCA promotes. Indications for future advertising and marketing efforts in the medical field will also be provided.

## Cuban Religious Folkloric Music Abstract

Abstract By Kyle Forsthoff

### Music

My proposed research project for the Summer of 2004 will be to perform an intensive study of Cuban religious folkloric music. Santeria, the principal religious community, is primarily derived from the religious ceremonies of the Yoruba tribe of West Africa, who were transplanted to Cuba due to the growing colonial slave trade. One of the primary methods of musical expression in Santeria is Bata drumming. The African influence on the music creates an incredibly intricate musical language that, although very different from Western classical music, betrays an enormous amount compositional complexity and maturity. The Bata musical tradition has been passed down through a long history of oral transmission and very little of the vast catalogue of music has been recorded or transcribed. As a way to keep the music sacred, only trained Bata priests were allowed to study and inherit the music of their religion. At this time, there are only 25 certified Bata priests living in the US. Due to the changing social atmosphere, recording and learning Bata without the religious connotation is not necessarily frowned upon.

During the last week of July, I plan to attend the annual Cuban Folkloric Workshop held by Humboldt State University in Arcata, California. I will be able to study intensively with several members of the Cuban community, including several Bata priests such as Michael Spiro, with whom I have had some prior training. While at the workshop, I will be able to videotape and make audio recordings, which will be significantly helpful in making transcriptions of the music. During the course of the summer, my faculty sponsor, Professor Jim Campbell, will be available for questioning, guidance, and proofreading/editing.

The expected benefits will be two-fold. The transcriptions and recordings will be available to students of the UK Percussion Studio for their use and study. Also, the process of studying, recording, and transcribing the music will allow me to gain insight into the Bata compositional process, which will culminate in me composing an original piece of music for Bata drums, with the goal that it be performed at my Senior Recital in the Fall of 2004.

## Piracy, Privacy and P2P: The Future of Copyright in the Digital Age

Abstract By Keith L. Hautala

### Journalism

The emergence of peer-to-peer file-sharing technology (P2P) has prompted a global controversy that pits the entertainment industry against software developers, librarians, academics, civil libertarians, and tens of millions of its own consumers. The technology, which allows computer users to share digital media through decentralized ad hoc networks, has come under fire by the entertainment industry

in general, and the recording industry in particular, because it allows users to access copyrighted works without purchasing licensed copies.

The industry has sought more stringent protection for copyrighted works through legislation, litigation and regulation. The Recording Industry Association of America, having secured an early win with the Napster decision in 2000, is now pursuing infringement cases against hundreds of individual P2P users directly. Pending legislation in both houses of Congress would regulate or restrict the use of P2P technology, diminish the privacy rights of online media consumers, and provide criminal penalties for online copyright infringement.

Software developers, Internet service providers, and "digital freedom" advocates complain that the measures demanded by the industry infringe on legitimate usage and hinder technological progress. Librarians, archivists, and academics express concern that these same restrictions may render "fair use" provisions obsolete. Civil libertarians say the industry's actions intrude on users' First Amendment and privacy rights. Consumer rights advocates allege that the industry overcharges consumers and seeks to maintain its oligopoly by stifling competition in the digital arena.

My research will consist of a comprehensive review of recent and pending litigation and legislation, as well as interviews with experts and interested parties. My report will provide a thorough overview of the issues, an explanation of relevant law and policy changes, and an examination of the merits of some proposed alternative solutions, such as copyright reform and compulsory licensing. Through this study, I hope to identify and advance policy objectives to safeguard fair use and free expression, while promoting the preservation and growth of the store of creative works in the public domain.

## Pinning the President: Political Cartoons of the Lyndon Johnson Administration

Abstract By John Knadler

### History

When we think of the landmark events in post World War II America, we naturally think of, among other things, the Vietnam War, the Civil Rights Movement, and the Kennedy assassination. One man who was at the vantage point of all of these events and many others was President Lyndon Baines Johnson, the flamboyant Texan and self proclaimed heir to the New Deal. His administration began with the most laudable ambitions for a better America; indeed, the ultimate goal was a Great Society. However, the best laid plans began to go increasingly awry with the escalation of the Vietnam War to the point of Johnson's decision not to seek the Democratic nomination in 1968.

Because so many Americans formed their impressions of the Johnson administration and its policies from newspapers, it is significant that we understand the message that they presented to the American people each day. If a picture is worth 1000 words, as the old maxim states, one of the most attention grabbing feature's of the newspaper is the daily political cartoon. It will be the goal of this thesis to

investigate how various political cartoonists depicted President Johnson and his policies, in order to gain an understanding of how these views progressed or remained constant over time. Once we understand this, my goal will be to compare these views to those of the American public in order to evaluate whether political cartoonists were representative of the public as a whole.

## Development of a Whole-Cell-Based Biosensor for Detectin2 Histamine as a Model Toxin

**Abstract By Samantha Meenach**

### Chemical Engineering

Recently, in Dr. Kimberly Ward Anderson's laboratory, a whole-cell potentiometric biosensor for screening of toxins has been developed. This biosensor consists of a monolayer of human umbilical vein endothelial cells (HUVECs) attached to the membrane of an ion-selective electrode (ISE). When the HUVECs are attached to the surface and form the monolayer, tight junctions form between the cells, inhibiting the response of the ISE to ions in solution. When the monolayer is exposed to agents that affect the permeability of the endothelial cells, the ions can diffuse through the membrane and a potential response on the ISE is achieved. The measured potential on the electrode depends on the concentration of the permeability-modifying agent and a relationship between the potential value and concentration can be achieved. For the development of this biosensor, histamine has been used as the model toxin, because it increases the permeability of HUVEC mono layers.

My role in this project will be to continue the testing of this biosensor with histamine to obtain more data points to further our progress. This data will then be used to model the cell behavior on the biosensor as well as show more results. My personal progress to date includes my training in the techniques used and obtaining a number of the data points needed. Upon the completion of this testing, the possibility of using this biosensor in the early detection of breast cancer will be explored. There are various agents from breast cells including growth factors VGEF, IGF-I, BFGF; binding proteins to growth factors, IGFBP-3, cytokines, and TNF that may be detected. Although this was to be the original nature of my research project, there was not enough histamine data to continue with this new testing. For the summer, my goal is to complete the data needed for this portion of the project so that the breast cancer research may continue.

## The Intersection of Female Voice and ARETE: An investigation into the creation of the Amazonian Other

**Abstract By Hope Catherine Meisinger**

### Classics and English

"The nudity of the virgins was not shameful, for modesty was present and intemperance was absent, but it implanted plain habits and an eager rivalry for high good health in them, and it imbued them with a noble frame of mind as having a share in arete and in pride." Plutarch, *Lykourgos* 14.2-15.1

"In ancient times were the Amazons, daughters of Ares, dwelling beside the river Thermodon; they alone of the people round about were armed with iron, and they were the first of all to mount horses..." Lysias, *Speeches*, Speech 2 section 4 (2.16)

As I stepped off of the Pullman bus at the entrance to the Metropolitan Museum of Art I, could smell the comforting aroma of American hot dogs and hear the venders crying out to the tourists. I marched up the marble stairs with a walk of solemn decorum. I took the first left into the Greek and Roman Galleries and walked down the main corridor. I passed colossal kraters with the labors of Herakles and amphoras of weaving wives. Suddenly I stopped, like a frog on a pond about to be impaled on a miniature trident. She stood proudly, her right arm draped over her head while she leaned heavily upon the pillar beneath her left elbow. Her pain was undeniable, and her fierce independence was unshakable. I looked closer and read the description plate: Amazon, Berlin/Lansdowne/Sciarra type, a Roman copy of the Greek original, New York 32.II.4.H.2.04. I was transfixed by this woman warrior and I rummaged through my tattered research bag for a notepad and pencil.

My first encounter with these female warriors was intense and the inspiring Amazon statue compelled me to travel to Athens, Rome, London, and Egypt to discover the meaning of their existence to the ancients and explain why the Amazonian 'Other' is such a persistent motif in Western literature. Whether or not this matriarchal tribe of fighting nomads actually existed has no affect on their literary and artistic analysis. Herodotus, Lysias and Diodorus certainly believed them to be a historical reality. Homer includes the Amazons, peers of men, in his epic of Achilles' rage (*The Iliad*). They were represented with overwhelming insistence in the sculptural programs of the Periclean Parthenon, the Mausoleum of Halikarnassos, the Hephastion, and the Temple of Artemis at Ephesos. Such central positioning in the most sacred and renown sites of the Ancient World certainly demands a close investigation into the cultural subtext that Amazonian mythology implies.



Throughout the course of Western literature, writers have returned to the literary creations of the Greeks. The archetypal Amazon is present in William Shakespeare's *A Midsummer Night's Dream*, and the forgotten epics of Renaissance poet George Baker. Baker's poetry chronicles the coming of the Amazons to Troy to aid the utterly depressed and disenfranchised King Priam. When the people of Troy see the glorious mounted warriors riding into their down-trodden town, hope wells up in their hearts and they begin to believe that they may be able to escape their imminent demise. Queen Hippolyta graces them with her stately diplomacy and shatters their preconceived notions of a static, home-based, wifely femininity. Her bravery inspires the Trojans to bear arms and fight once more, and the battle-ready masses were in utter awe of her heavy labrys, far-shooting arrows, and sheer power.

Amazon is also included in the Pulp Fiction of 1950s America. She appears here as an oversexed dominatrix. Here she is one who will destroy any man who is attracted to her swiftly and skillfully like Uma Thurman in the recently released film of Quentin Tarantino: *Kill Bill*. Her fiercely independent nature is always present, bubbling just beneath the surface, and the Amazon is always prepared for a fight to the death. Steven Pressfield has just written a book entitled *The Last of the Amazons* that centers around a domesticated Amazon named Selene who must be reclaimed by her owner/master after she flees her place of employment and security to save her ailing lover Eluthera. The novel is a bestseller and it seems that this literary figure is consistently intriguing even to casual readers of Western literature and amateur audiences of Art History.

Volumes of interpretation have been published on this tribe of women. One needs only to walk into the Blegen Library of the American School of Classical Studies in Athens, Greece to have a close encounter of the Amazonian kind. Yet the Amazon remains an enigmatic figure and more research must be conducted and more archeological digs must be funded before many of these questions can be sufficiently addressed. Until then, the irrepressible Femme warriors will live through their epithets as the first Feminists: living without men, man subduing, man-destroying, man-killing, man-slaying, murderous, hurtful to men, bearers of pain to men, striving against men, man-murdering, flesh-devouring, dauntless and forever fearless.

## History: What a Novel Idea

Abstract By Kevin Moser

### Classics and English

The focus of my project is an examination of historical novels as a genre and as an informational instrument that is rapidly emerging as a new form of scholarship that purveys intellectual contributions with the added benefit of being highly accessible to all historians, amateur, professional, or anywhere between. Due to my field of interest and knowledge, this project will focus on historical novels that deal with antiquity — with Greece and Rome at their heights. The historical novels written in modern times about this period are present in great number, and several of them have achieved a great deal of respect among the faculty members I will be working with. A short list of authors to be read will include Mary Renault, Robert Graves, Steven Saylor, Colleen McCullough, Steven Press Field, and Robert Harris, among others. Several contemporary sources exist among ancient writers, and will help tremendously in determining the accuracy of these novels. Thus, I will also include works of ancients such as Suetonius, Caesar, Cicero, Seneca, Plutarch, Thucydides, Xenophon, and some Plato on my reading list. Traditional historical works, such as the texts of Chester Starr and Edward Gibbons will also find a place in my reading. Finally, I have recently begun to assemble a bibliography of scholarly works dealing specifically with historical novels, allowing my project to explore not only content, but the form and the ideal of the novel.

The final result of my research will be in one of two forms. The first will be to assemble a chronology of a certain period, such as the Late Roman Republic, entirely by using historical novels. After the chronology is established, it will then be my intent to scrutinize it from an academic perspective to see how it stands up as historiography of the period, and whether or not it retains sufficient historicity to be considered as an alternative to a traditional textbook. The second possibility will be for me to construct a biography of a historical figure using ancient, modern, and historically fictional sources. This possibility will allow for me to explore and express my encounter with a historical entity in a complete way that examines both the individual and the historical actor, with a result that might loosely be called "Finding Julius Caesar," or something similar.

Progress on this project has begun in earnest, but is still in the early stages. Currently, I am reading ancient sources, Suetonius, Plutarch, and Caesar, in order to both refresh my knowledge and gain a bit of solid historical ground on which to base further research. After these works, I plan on reading several of Mary Renault's novels on Ancient Greece, and then going ahead to Rome with Colleen McCullough's cycle about the Late Republic. After this, I will be headed to Europe to do my research into German language historical sources, several of which are works of theory about historical novels. In addition, I plan on bringing several English language works with me to continue my research. The result of this is that I hope to have a solid footing in the autumn on which to begin some preliminary writing on my project.

## Reassigning Values: The Evolution the Rock Fence in Kentucky's Cultural Landscape

Abstract By Jason Richards

### Architecture

The built environment of Central Kentucky is comprised of many elements that together define and give form to the cultural landscape of the Bluegrass. One of the most enduring (yet rapidly disappearing) symbols of this region is the rock fence, particularly the dry stone masonry fences of the horse farms of Kentucky. Though it is estimated that fewer than 5 percent of those fences in existence at the turn of the 20th century still stand today, the stone walls of the Bluegrass have found a new home in retail centers, public parks, and institutions of learning across the Bluegrass. These post facto stone walls of the Bluegrass are always mortared or "wet" walls, and vary in form from the "dry-laid look" of Thoroughbred Park's 400 foot wall to the ashlar blocks of the new Courthouse Plaza in Lexington.

Though Thoroughbred Park and the Courthouse Plaza may provide the most recent examples of post facto mortared stone wall construction, their beginnings lie at the turn of the 20th century. Around that time, just as the fences of the previous century were being pulled down to clear land for bigger farms, several large Bluegrass estates began to revive rock fence construction. Estates such as Coldstream Farm and Elmendorf Farm incorporated elegant formal entrances of cut and mortared stone. Yet, perhaps most significant, was John Keene's construction of the ashlar stone walls and barn that became Keeneland Racetrack. His stone walls, built from 1914-36 not only reinforced the relationship between horse racing and stone walls celebrated in the recent construction of Thoroughbred Park, but for one of the first times set the stone wall in a public context, providing a precedent for the construction of stone walls in public places from civic parks to commercial districts.

The legacy of the rock fence at the University of Kentucky has taken a slightly different path, and has only recently recalled the formal elegance of turn-of-the-century Bluegrass horse farms. From its beginnings in 1865 as the Agricultural and Mechanical College of Kentucky, the University has been long associated with horse farms surrounding Lexington. An article from the 1934 *Kentucky Kernel* describes the then State College campus of 1905 as having "a white post-rail fence that extends around the front part of the campus. . . [and resembles] a fence around a race horse farm." If such a fence reflected the rural austerity of the campus 100 years ago, then, perhaps, the stone campus gateways built in the 1990s indicate the growth of the campus financially and physically in the last century.

What research has been completed thus far has revealed much of the changing values (particularly regarding the University of Kentucky) that can be read from the cultural landscape through stone walls. The remainder of my research will focus on the analysis of contemporary stone wall construction in its public and civic context. Further emphasis will be placed on the evolution of stone wall form from the horse farm to current dominant methods of construction. The ultimate goal of my research is to shed light upon the dichotomy inherent in the cultural landscape of the Bluegrass; in other words, to discover why public support for the construction of contemporary stone walls is not matched by an equally zealous attempt to preserve what historic examples are left in the Kentucky Bluegrass.

## Catholic Reactions to Evangelism in a Highland Maya Town

By Andrew Schuhmann

### Anthropology

Following the Spanish colonization of Central America, Roman Catholicism has converted and maintained strong influence among the rural indigenous populations of Guatemala through fervent and numerous missionary efforts into the area. Within the past thirty years however, this dominance has been, and continues to be challenged by the emergence of Protestant churches propagating a very different message and way of life to the native people, which is profoundly affecting these rural communities both positively and negatively. An opening history of the ways in which the Guatemalan Maya community of Santiago Atitlan assimilated their traditional Maya beliefs with the conquering Catholic doctrines will open up discussion for how these cultural assimilations are now being challenged by the Protestant evangelization occurring in Santiago today. A new wave of religious syncretism is emerging in Santiago, this time between the Catholic Church and the growing number of Evangelical churches sprouting up practically on its front doorstep, and I will attempt to show that the flexibility maintained by both the Catholic Church and the Mayan people in the blending of their two religious traditions during the Conquest period is again being played out today in response to the new and divergent religious values of the Evangelical churches.