



Undergraduate Research Academy (URA) Application for Student Fellowship

SEND TO CAMPUS BOX 1300 by NOON, Wednesday, March 17, 2004 (Please type)

1. Name Elizabeth Adams-Marks 2. ID# _____

3. Local Address _____

4. Local Telephone _____ 5. e-mail _____

6. Academic Major BS in Art Ed & BFA in Fibers 7. Hours Completed End of Fall 2003 – 72 hrs

8. GPA 4.0 9. Nominated by Laura Strand

10. Reviewed by:

Faculty Mentor Laura Strand Department Chair Ivy Cooper

11. Title of Research Project: Handmade Paper from the Crops of Madison County, IL

Please send the original plus 10 copies of the proposal, including budget justification and cover page.

12. Budget Summary Total: \$ 799.40

Commodities: \$ 709.40 Contractual Services: \$ N/A

Travel: \$ 90.00 Other (specify): \$ N/A

13. Valid nominations must carry all of the following approval signatures with dates:

a. Clearances (as appropriate):

Animal Care N/A Human Subjects N/A Toxic Waste N/A

b. Student _____

c. Faculty Mentor _____

d. Department Chair _____

e. Dean of College/School _____

f. Undergraduate Research Academy Interview _____

SIUE Undergraduate Assessment -&- The Undergraduate Research Academy

Box 1300 voice: 618/650-2640 e-mail: deder@siue.edu FAX: 618/650-3633



SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

Undergraduate Research Academy (URA)

Cover Sheet

**SEND TO CAMPUS BOX 1300
BY NOON, WEDNESDAY, MARCH 17, 2004**
(Please type)

STUDENT Elizabeth Adams-Marks **MENTOR** Laura Strand

PROJECT TITLE Handmade Paper from the Crops of Madison County, IL

ABSTRACT: The abstract is a brief, comprehensive summary of the content of the proposal in about 150 words *in plain language*. Reviewers receive their first impression from this abstract. The information needs to be concise, well organized, self contained, and understandable to persons outside your academic discipline.

My research will focus on the techniques of making an edition of handmade books from my own paper made from plant materials, specifically the crops of Madison County, IL. The process of macerating an assortment of vegetable fibers, floating them in water, lifting them on a screen, and drying the fibers into true paper was invented by the Chinese eunuch Ts'ai Lun in 105 AD. Even though handmade paper came to the United States in 1690 (as far as I have researched), no one has compiled an edition of books containing samplings of papers, with their recipes, made from the crops of Madison County, IL.

One book from this edition will be presented in June of 2005 to Dr. Jo Readman, Director of the Educational Department of the Eden Project, the newest and largest botanical biosphere complex in the world, located in Cornwall, England.

Upon submitting this proposal, I verify that this writing is my own and pledge to fulfill all of the expectations of the Undergraduate Research Academy to the best of my abilities. I understand that failure to do so may result in return of fellowship money to the University and forfeiture of academic credit and honors recognition.

Signature of the Student

I am able, willing, and committed to providing the necessary facilities and to take the time to mentor this student during this project. I verify that this student is capable of undertaking this proposed project.

Signature of the Faculty Mentor

Elizabeth Adams Marks Undergraduate Research Academy (URA)

This project is within the mission and scope of this department, and the department fully supports the faculty mentor and student during this venture.

Signature of the Department Chairperson

I testify that all necessary research protocols (human, animal, toxic waste) have been fulfilled, and I support this proposed faculty-student scholarly activity as within the mission of the College/School.

Signature of the Dean of the College/School



SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

**Undergraduate Research Academy
Application for Student Fellowship**

2004 - 2005

Handmade Paper from the Crops of Madison County

Elizabeth Adams-Marks

Research Proposal

Introduction & Significance

The making of handmade paper from plants is an ancient art form that is gaining international acknowledgment as a significant medium in its own right, and artists around the world currently combine 21st century technology with historical handmade paper techniques in a variety of ways. National museums and galleries now devote entire shows to handmade paper arts.

During June of 2003, international fibers artists descended upon the St. Louis area for *Innovations in Textiles 5: A Symposium and Exhibition*, hosted by the Craft Alliance in University City. Artists used every imaginable fiber, including handmade paper at *Needle, Loom, Brush: A Patchwork of Fibers* in June and *Under Cover: Book Arts*, in September, hosted by the St. Louis Artists' Guild. Works by the best Illinois and Missouri university textile faculty were compiled into a show, *Viewpoints*, at Southwestern Illinois College. Curated by SIUE's Associate Professor of Textiles, Laura Strand, the show included sculptural and book-art works by Jo Stealey, Associate Professor of Fibers at the University of Missouri at Columbia. Stealey combined over-beaten flax, mixed with tree limbs, to create gigantic pods that looked like canoes, as well as towering cabinets that unfolded into books, cascading from drawers. Other artists utilized multiple layers of handmade paper, cut into strips, torn into sections, and stitched or woven into large three dimensional art forms. Stealey's work inspired me to focus on handmade paper as a medium and language for the remainder of my studies in Fibers.

As an artist, I want to weave my love of handmade paper, textiles, printmaking, and gardening, as well as my background in publishing, into one art form. Making handmade books from my own handmade paper is that culmination. Through classes and personal research, I generally knew the steps required to get from a sheet of cotton linter, to the mixer, to the vat, to the deckled screen, to the drying screen or press, and finally into a sheet of paper constructed into a variety of book forms; but I wanted that process to be intrinsic to this area.

As a child, I lived with my grandparents on the last street on the northwest end of Granite City next to Bischoff's Field. I could tell the seasons according to Farmer Bischoff's crop planting and harvesting. Wheat, corn, soy beans, and the rich smell of Illinois soil left an indelible mark on my childhood senses. My grandpa's vegetable garden filled our supper table and planted me as a lifetime gardener. That is why the focus of my research in fibers will be on making handmade paper from the farm crops of Madison County.

SIUE had just opened its new ethanol research facility using the kernels of corn as fuel. I decided my research will also include corn, not the kernels, but the remaining waste products – leaves, stalks, and husks. Another crop that will be used will be horseradish, as Madison County is the horseradish capital of the world. Local farmers I have met with are curious to know if the leaf and stem waste of horseradish can be used for paper because it is the only crop refuse that farm animals, even pigs, are unwilling to eat.

In addition to testing whether or not each plant can be used alone to make a sheet of paper without

adding cotton, sun hemp, or knaf for stability, each batch of pulp will be divided for a series of dye tests including natural dyes such as Madison County clay. Careful records of each step in the process will be compiled into recipes for each crop as well as formulas for the dyes. Once the papermaking is complete, an edition of five books, compiled from the paper samples and recipes, will be printed on an ink jet printer and bound by hand. The remainder of the paper will be used in my work for my BFA show in 2006.

During my initial research, I gathered as many of the books and videos that SIUE's library had on the subject of handmade paper and joined handmade paper forums through Yahoo, such as PaperMaking, UK Papers, Handmade Books, Hollander Beater, and Friends of Dard Hunter. I wanted to know what other artists thought about using handmade paper in their work as opposed to manufactured paper. "Making handmade paper allows a tactile relationship between the artist and the paper. (It) allows the artist to get under it, rather than assume that you have to accept the surface and put something on it," said Kenneth Noland in a panel discussion at the World Print Council in 1978. After speaking to Jo Stealey and other fiber artists during *Innovations in Textiles 5*, I was convinced that pursuing this research project on handmade paper from the crops of Madison County was right in line with the development of handmade paper and book-arts from handmade paper in the art world today.

Literature Review

To make paper, one must start with some type of plant fiber that, when cooked, beaten into tiny fibers, and added to a vat full of water, will lock together in a solid, yet random pattern whenever it is formed into a sheet. For example an iris stem and an iris leaf are both stiff and fibrous. The iris flower is beautiful, but becomes slimy goo when it withers because it has no fiber content. Thus the part of the plant selected for paper must decompose into cellulosic fibers to be processed into paper pulp (Hiebert 31). Some plants, like corn leaves, must be broken down before they can be cooked or the cooking may take days. The leaves can be submerged in a bucket of water, with a little milk or beer to increase fermentation, covered with a lid, and left in the hot sun for a few weeks, or left standing in the field during the winter. This process, called retting, breaks down the hard fibers in the stiff leaves. With some plants like grass, no retting is needed. Once retted, the clumps of fibers are washed with water and cooked further with caustic soda or lye until the fibers can be easily beaten. Finally, the cellulose fibers are laid on a slab of stone and beaten with wooded paddles or put into a Hollander beater until the fibers break down into tiny hair-like particles in a process called macerating (Karr 7).

The type of plant material used to get to this stage in the process is very important. Each plant makes a different textured paper, like the difference between a polished cotton shirt and a linen jacket. Cattail plants will make a rough almost burlap paper. The length of retting and beating times also change the feel. Bleaching the pulp, dyeing the pulp, or aging the pulp all alter the outcome of the paper's color, tooth, and flexibility. "Although there are recipes and formulas available for some of the plants, trial and error will be the only way to discover the look of *this* paper, *this* year, in *this* batch" (Petty, Bookbinding 11/11/02).

At this point, the final choices are made based on the type of project the artist is creating. “The pulp can be formed, collaged, woven, dyed, painted, embedded, poured and molded” (Studley 78-105). If the artist is starting with a flat sheet of paper, he will use a metal or fiber screen to make his paper sheets by dipping the screen, usually mounted to a mould and deckle, into a vat of the beaten fibers suspended in water. Pulp can also be poured into a mould and deckle. The wet sheets are couched onto felts, or sheets of cloth, from the screens. The wet sheets can be dried: pressed into posts or stacks in a press; hung on a clothesline; brushed onto flat surfaces; formed into shapes; formed over rocks or bowls; pressed into molds; or wet/dry vacuumed onto silk screen frames. The shape of a book’s pages as well as its cover can be altered as the paper is made with the shape of the deckle. Jody Alexander’s artist’s books that she calls JALEX BOOKS have covers that look like ancient manuscripts, gnarled driftwood, and stitched birch bark, all made of paper.

The process of macerating an assortment of vegetable fibers, floating them in water, lifting them on a screen, and drying the fibers into true paper was invented by the Chinese eunuch Ts’ai Lun in 105 AD (Hunter 4). By 1455, Johann Gutenberg invented moveable type for the printing press in Germany, and books on handmade paper altered history forever. Dard Hunter wrote that the “progress of man may be divided into three dominant fundamental stages of development ... These stepping-stones in growth of man may be categorically classified under these broad headings: *Speaking – Drawing – Printing*” (Hunter 1). Hunter was the foremost historian of handmade paper in the 20th century. His collection of papermaking equipment is the largest in the world and his books include the smallest details about handmade paper from its origin in China through its expansion to Korea, Japan, Europe, and finally to America. His collection, now administered by Georgia Tech, renamed the Robert C. Williams American Museum of Papermaking, can be toured “virtually” at their Web site.

Even though handmade paper came to the United States in 1690 (Toale 4), and the 1773 ledger of the Liberty Paper Mill “read like a who’s who of the American Revolution” (Hopkins), it wasn’t until 1946 that paper was first seen in the United States as an art form. The artist, Douglass Howell, was relentless in his exploration of flax fiber for handmade sheets and paper art objects. This began a new phase of papermaking – handmade paper as an art object. Handmade paper in the United States in the 1950’s and 60’s was revived by Harrison Elliot, John Mason, and Henry Morris at the Dupont Company (Toale 5).

In today’s art world, handmade paper has finally become a medium in its own right and artists around the world currently combine 21st century creativity with historical handmade paper techniques in a variety of ways. National museums and galleries devote entire shows to handmade paper arts. Lillian Bell published the first recipe book on handmade paper from plants in 1995. Helen Hiebert’s and Alisa Golden’s books on handmade paper using plant materials are both used as textbooks in SIUE’s fibers program. Artists like Jody Alexander, Meg Black, Gin Petty, and Jo Stealey are using paper to make handmade books, room-size woven dividers, paintings, sculptures, baskets, jewelry, vessels, ritual objects, and wall art. Gin Petty maintains a running journal on her Web site about her daily experiences, frustrations, and surprises as a handmade paper

artist. Gin's handmade books have no words inside. Her art form is the binding designs, stitching, and papers selected to create her books. The tactile quality, not what is put on it, is the significance of handmade paper.

Goals & Objectives

My intent is to harvest the main crops of Madison County as listed by the Illinois Farm Bureau and the Illinois Department of Natural Resources, i.e., feed corn, horseradish, wheat, soybeans, and hay, as well as many of the specialty crops, such as strawberry, okra, peppers, tomatoes, sunflowers, dill, carrots, pumpkins, herbs, sweet corn, and eggplant. While some plants can be used alone to make a sheet of paper, some plants need a small percentage (10-20%) of another crop added for strength. In the fall Laura Strand, SIUE's Associate Professor of Textiles, and I will be traveling to the University of Missouri at Columbia to help Jo Stealey, their Associate Professor of Fibers, harvest sun hemp and kenaf to add to some of my paper. These two plants are being tested as future paper crops that can be grown in the Midwest to replace the wood bast materials currently harvested from trees.

The crops I gather will be shredded, weighed, cooked down with lye or soda ash from 2 – 4 hours per batch, beaten in a Hollander beater for 2 – 4 hours per batch into pulp, rinsed, and drained. The cooked and beaten pulp from each plant will be divided into sections. Each section will be treated differently: no formation aid; only formation aid added; formation aid and sizing added; formation aid and Kaolin added; and finally formation aid, kaolin, and sizing added.

While part of the pulp will be used for paper with its natural color, other sections of pulp will be used to test dyes using native materials such as walnut, onion, and clay, as well as pigments formulated for paper. From each vat of pulp, paper will be pulled, one sheet at a time, until all the fiber has been used. The wet sheets will be couched onto large screens to dry. When all the sheets are completed, they will be organized and cataloged. Their ingredient recipes and the process information will be typed up and printed onto paper vellum for each handmade sheet selected. Finally, I will make an edition of hand-bound books which will include each type of handmade paper along with their recipes, the process information, and the formulas for the dyes. The bookbinding techniques I am currently learning at SIUE in Erin Dimik's Research in Fibers class in Bookbinding will be applied to the design, creation, and finishing of this new edition.

One book from this edition will be presented in June of 2005 to Dr. Jo Readman, Director of the Educational Department of the Eden Project, the newest and largest botanical biosphere complex in the world, located in Cornwall, England. The gardens include a one kilometer-long greenhouse up to sixty meters high with four linked "biomes" which contain 4000 plant specimens from around the world, art from more than seventy artists at a time, inter-active educational displays, music, food and a theater. The complex nestles within a giant 50-meter-deep crater abandoned by the Bodelva mining company who mined china clay used to whiten many things, including paper. The biomes contain habitats from around the world employed for research, conservation, and hands-on education. My research project will tie into Eden's Warm Temperate Biome which

demonstrates the growth, harvest, and process of another plant fiber – cotton. I have also been invited to lead a workshop on handmade paper at the Eden Project when I present my research.

At graduation in 2006, I will have a B.F.A. with a Certification in Art Education to Teach K-12. I will be applying to the B.F.A. program at SIUE in April 2004 with a major in Fibers. The knowledge I gain from this project will be applied to the remainder of my undergraduate studies, as well as in the classroom with my K-12 students who I currently teach part-time at two private schools in Madison County. Upon graduation, I will continue my research in handmade paper as I pursue my graduate studies in Fibers here at SIUE.

Procedures & Timeline

Summer 2004

- Harvest crops required for project from local farms, tag, and dry
- Make contacts again with Eden Project
- Format recipe journal file and catalog plants

August 2004

- Purchase needed supplies
- Chipper shred all crops and retag individually

September 2004 – December 2004

- Travel to University of Missouri at Columbia and harvest sun hemp & knaf
- Harvest any additional crops & shred
- Begin cooking, pulping, pulling, dyeing, and drying of paper
- Keep a careful journal of all recipes, problems, & concerns of papermaking

January 2005

- Complete cooking, pulping, pulling, dyeing, and drying of paper
- Complete journal of all recipes, problems, & concerns of papermaking
- Begin selecting sheets for final editions
- Select final covers from handmade papers

February 2005

- Type all recipes for books and print on vellum paper
- Begin binding final edition of books

March 2005

- Final binding of books
- Plan & prepare presentation at the Undergraduate Research Academy Symposium

April 2005

- Have slides made of edition

June 2005

- Presentation of research at Eden Project, Cornwall, England

References

Alexander, Jody. JALEX BOOKS. 9 September 2003. <<http://www.jalexbooks.com/ARTISTSBOOKS.html>>.

Bell, Lilian. Plant Fibers for Papermaking. Oregon: Liliaceae Press, 1995.

Black, Meg. The Art of Painting with Handmade Paper. 8 November, 2003. <<http://www.megblack.com>>.

The Friends of Dard Hunter. 2 November 2003. <<http://www.friendsofdardhunter.org>>.

Goerke, M. J. Under Cover: Book Arts. A National Curated Exhibit. Juror's Statement.

The St. Louis Artists Guild. 7 September 2003.

Golden, Alisa. Creating Handmade Books. New York: Sterling Publishing, 1998.

Hand Papermaking. 2 November 2003. <<http://www.handpapermaking.org>>.

Hiebert, Helen. Papermaking with Plants. Vermont: Storey Books, 1998.

Hopkins, Peter. 10 March 2004. Daniel Vose and papermaking .

<<http://groups.yahoo.com/group/Papermaking>>.

Hunter, Dard. PAPERMAKING - The History and Technique of an Ancient Craft.

New York: Alfred A. Knopf, 1943.

Innovations in Textiles 5: A Symposium and Exhibitions. Exhibition. Craft Alliance. St. Louis. 13 June 2003.

Karr, Joanne B. PAPERMAKING AND BOOKBINDING - Coastal Inspirations

East Sussex, England: Guild of Master Craftsman Publication Ltd, 2003.

Needle, Loom, Brush: a Patchwork of Fiber. Exhibition. St. Louis Artists' Guild. 25 May 2003.

Noland, Kenneth et al. Panel Discussion. "Experimental Approaches to Paper in Art."

Paper – Art & Technology. Ed. Paulette Long. World Print Council: San Francisco, 1979. 87-96

"Papermaking Moves to the United States." The Robert C. Williams American Museum of

Papermaking. 2 November 2003. <<http://www.ipst.edu>>.

Petty, Gin. Bookbinding Journal. 1 September 2003. <http://www.ginpetty.com/books/b_200211.htm>.

Reimer-Epp, Heidi and Mary Reimer. The Encyclopedia of Papermaking & Bookbinding.

London: Running Press, 2002.

Saddington, Marianne. Making Your Own Paper – An Introduction to Creative Paper-making.

Vermont: Storey Communications, 1993.

"Searching for the Real Illinois?" Illinois Farm Bureau Publication. Bloomington, IL, 2003.

Stealey, Jo. Personal Interview. 13 June 2003.

Strand, Laura. Incantations: Material Voices. Anheuser-Busch Gallery at the COCA.

Exhibition and Personal Interview. 13 June 2003.

Studley, Vance. The Art & Craft of Handmade Paper. New York: Van Nostrand Reinhold, 1977.

"The Bounty of Illinois." Illinois Farm Bureau Publication. Bloomington, IL, 2003.

Twinrocker Handmade Paper. 2 November 2003. <<http://www.twinrocker.com>>.

Viewpoints - Work by Illinois and Missouri Textile Faculty. Exhibition. Curator, Laura Strand. William & Florence Schmidt Art Center, Southwestern Illinois College. 12 June 2003.

Materials & Cost

Carriage House Paper – 79 Guernsey Street, Brooklyn, NY 11222-3111 ▪ <http://www.carriagehousepaper.com>
Orders: 1-800-669-8781 ▪ Fax: 1-718-599-7857 ▪ E-mail: chpaper@aol.com

Talas – 568 Broadway, NY, NY 10012 ▪ <http://talasonline.com>
Orders: 1-212-219-0770 ▪ Fax 1-212-219-0735 ▪ E-mail: info@talasonline.com

Dick Blick – PO Box 1267 Galesburg, IL 61402-1267 ▪ <http://www.dickblick.com>
Orders: 1-800-723-2787 ▪ Fax: 1-800-621-8293 ▪ E-mail: info@dickblick.com

Carriage House Paper

Simple Mould – 81/2 x 11” white oak mould w/ mahogany deckle	\$143.75
Calcium Carbonate (CaCO ₃) – acid buffer for paper, 5 lbs	17.00
Formation Aid – deflocculant for long-fibered pulps, 1 lb	44.00
Gelatin Sizing – historically used as sizing for early American papers, 5 lbs	38.50
Kaolin / China Clay – makes paper more smooth, historically mined in Cornwall, England, 5 lbs	10.00
Retention Agent – ensures pigment & pulp are completely bonded, 1 gal	51.00
Soda Ash (Na ₂ CO ₃) – dissolves out non-cellulose parts of fiber in cooking, 5 lbs./13.25, 10 lbs	\$ 26.50
Cotton linters, 1st cut – added to other fibers to hold paper together, 1 lb/sheet/2.95 ea, 5 lbs	14.75
Sub-Total	\$453.35
Shipping (15%)	<u>68.00</u>
Total	\$521.35

Talas

Wheat Paste – Bookbinding, 5 lb	\$ 14.25
Jade No. 403, PVA adhesive – Bookbinding, 1 gal	29.80
Bone Folder of PTFE – Bookbinding, doesn't mar paper, small	19.50
Bone Folders – #1: size 6 & 8, and #3	14.60
Sewing Needles – Bookbinding, #12, pkg. of 25	3.15
Linen Thread, French Fil De Lin – Bookbinding, #12, 80 yd, 3 cord, 50 g, ea	10.45
Davey Acid-Free Binders Board – Bookbinding, .098, 6.25 ea, 3 boards	18.75
Linen Tape – Bookbinding, 1/2” width, 70% linen & 30 % cotton, 10 yd	5.95

Sub-Total	\$116.45
Shipping (15%)	<u>17.46</u>
Total	\$133.91
<u>Dick Blick Art Materials</u>	
Micro-Vellum – Recipe & information paper, 9 x 12” 57 lb, #10513-2003, 11.79 ea, 4 pads	\$ 47.16
Sub-Total	\$ 47.16
Shipping (15%)	<u>7.07</u>
Total	\$ 54.14
Carriage House Paper Total	\$521.35
Talas Total	133.91
Dick Blick Total	<u>54.14</u>
COMMODITIES TOTAL	\$709.40
Travel Budget – 250 miles & 36¢ per mile to Columbia, MO with Laura Strand	<u>\$ 90.00</u>
TOTAL for ENTIRE PROJECT	\$799.40

Additional travel to the Eden Project in Cornwall, England to present research in 2005	\$ 400.00
Crops from Madison County from Krukeberg Farms in Moro, IL	Donated