Final Report – Faculty Research Grant, 2012-2013

Name: Elyssa Ford, Asst. Prof of History, Department of Humanities & Social Sciences
Project Title: Women and Education in Cambodia

Abstract (300 words)
From June 10-July 10, 2013, I was in Cambodia conducting a series of interviews and other research related to women and education in that country. Most of my time was spent in Phnom Penh as most of my interviewees were currently living in that city or visited at some point while I was there, though I did make a few short visits to couple other cities and villages. This helped to reduce the overall cost of my research project and means that I have around $100 remaining in my grant; that amount can be returned to the Faculty Research pool.

In all, I was able to speak with more than 25 people, which included almost everyone on my list to interview. I also was able to meet with several academics in Cambodia and visit organizations like the Documentation Center of Cambodia to talk with researchers and study their materials. While this is part of a long, on-going project of mine, one that will last for many years and will include a large set of interviews like this every 4-5 years, part of my goal in this trip was to expand my research in preparation for a prestigious academic conference (the Berkshire's, which will be held in Toronto, Canada, in May 2014). Thanks to this grant, I now will be able to complete that paper, and after the conference, I plan to submit the paper to a scholarly journal for publication.

This grant provided invaluable support for my research. I absolutely could not have completed these interviews without this support. In addition to the interviews, the ability to go to Cambodia has been incredibly important. The country and the people have gone through so many changes from my last visit and set of interviews in 2009, and without actually spending the month in Cambodia, I would not be able to get a real sense of these changes, something that will be almost equally important to my work as the interviews themselves. This visit also has been vital in helping me to reconnect with my interviewees and to maintain ties with them. That connection is key because only through those close relationships will I be able to continue these interviews for the next 15-20 years.

Itemized Expenses
My expenses were submitted in July 2013, and I received the reimbursement that same month. Those forms, plus the itemized expenses are on file in the Graduate Office. Any remaining money from my grant can be returned to the Faculty Research pool.

Abstract

"CARBON-BASED NANOSCALE COMPOSITE PARTICLES FOR IMAGING APPLICATIONS

PI: Mohammed J. Meziani

During the first year, we made significant progress towards our goal by first developing efficient and simple strategies for the fabrication of carbon dots (C-dots) on a large scale and with better

control of their dimensions, surface chemistry, and tunable emission profiles. We have developed a simple one step hydrothermal and carbonization methods for the synthesis of highly fluorescent self passivated C-dots by combining various carbon sources of carboxylic acids and amine molecules. These methods are convenient, environment friendly, inexpensive and efficient for large-scale production. The structural and optical properties of these C-dots were characterized using various techniques like Ultraviolet-Visible, Fluorescence, Fourier Transform Infra-Red, nuclear magnetic resonance and scanning electron microscope. The as-prepared carbon dots exhibited excellent water solubility, good photostability, and a high quantum yield. The hydrothermal and carbonization procedures were then extended to the preparation of carbon-encapsulated magnetic Fe_3O_4 and FePt nanostructures, which was successfully achieved through the combination of carbon sources and the use of Fe^{2+} and Fe^{3+} ions and Fe^{3+} and Pt^{4+} as precursors, respectively. The carbon prepared under these conditions was mostly amorphous according to the XRD results and then the nanostructures were subjected to thermal treatment at 800 ºC for graphitization. These magnetic core–shell nanocomposites exhibited excellent magnetic properties, as evidenced by their attraction to a magnet (a commercially available apparatus designed for immunomagnetic separation). The XRD profile of the as-synthesized nanoparticles obtained from these processes showed broad peaks indicating their smaller sizes. The average particle diameter was calculated to be less than 12 nm according to the Scherrer equation. In the second year, we will complete the studies already in progress on the synthesis and characterization of carbon-encapsulated magnetic (Fe_3O_4 and FePt) nanostructures. This will involve addressing several important issues, including especially the control in the size and the encapsulation and the evaluation of the encapsulation effects on the optical properties of these materials. We will also systematically examine and analyze all available data to determine the feasibility of further developing the technology in next phases.

The funds from the Applied Research grant allowed us to buy High Pressure stainless steel vessel microreactors, Replacement PTFE 23mL sample cup with cover for one of the reactor, Spectra/Por CE dialysis tubings (500-1000 MWCO and 2K MWCO) and their closures, and some chemicals. These equipments are currently part of the nanochemistry lab and will be used in the nanochemistry course and in other research projects. We are planning to present our work at a number of meetings including the American chemical society conference this spring.

Mühsam, Armin, Professor, Department of Fine and Performing Arts

"Anthroposcenes"

Faculty Research Grant 11/01/12 $1,828.24 10/06/13

Findings and recommendations
My proposed research was to produce new work for a solo show at the Yeiser Art Center in Paducah, KY. My part of the exhibit (I was paired with another artist, Laurie Larusso) consisted

mainly of diptychs. In the course of my research (i.e. painting in the studio/lab) I realized that my initial plan (to quote from my proposal: "Thematically, I will focus on several compositions of "technological" interiors, coupled with depictions of exterior scenes that mirror the goings-on within the interiors") could be taken so literally that the exterior and interior scenes could exist within the same picture-plane, albeit separately. As the name implies, the diptych was the perfect format for this method of visual communication, and it proved to be quite successful.

Recommendations, as usual, are not really an issue for a studio artist. Of necessity, the activity of producing art is a solitary one, to the point where the individual is encouraged to guard his/her "secrets," given the premium our culture puts on the originality (and the ways and means this originality is achieved) of the creative act.

The actual costs incurred run as follows:

a) Shipping:	Domestic	$1,354.95
b) Supplies:	Frames & Hardware	$ 338.31
	Canvas	$ 140.19
Total		$ 1,838.31

Final Report for Theoretical Research Grant

Researcher: Gretchen L. G. Thornsberry
Title: Assistant Professor of Biology
Department: Natural Sciences

Project Title: Identification of Bacterial Species Isolated from the 102 River: Strain Variation or New Species?

Type of grant: Theoretical Research
Date granted: October 2012
Amount approved: $688.11
Date completed: October 1, 2013

Findings and Recommendations

During the summer of 2012, water samples were taken from the 102 River for analysis by Dr. Philip Lucido and his Upward Bound Math and Science students. After growing the species on agar plates, it was observed that some of the bacteria were capable of inhibiting the growth of other bacteria on the plates. This occurrence is typically found when one species produces an antibiotic to which the other bacteria are sensitive. Antibiotic production is quite common in environmentally isolated bacteria, but throughout many years of collecting samples, this phenomenon had not been seen in samples collected from the water in the county. Two cultures were isolated for characterization. Initial biochemical testing using media left over from the summer 2012 General Microbiology courses indicated that the strains do not match any

previously characterized bacteria. In the current project, the two strains were subjected to approximately fifty biochemical tests. Each of the two strains was tested in triplicate. While both strains are of the genus *Bacillus*, oxidase positive, catalase positive and may grow in a wide range of temperatures, salinity and pH, they differ in what amino acids and carbohydrates they can hydrolyze. Data analysis indicates that the two strains are indeed different from one another, and neither has been characterized previously. It is tentatively suggested that the strains represent two new species. To definitively show that these strains are new and unique, DNA isolation and sequencing must be completed, and the sequences deposited into a sequence database. Future studies should also include determination of how the bacteria inhibit the growth of other bacteria with the hopes of isolating a new antibiotic.

Listing of Supply Expenditures

Transaction Date	Document Type	Document Code	Status Indicator
Mar 07, 2013	Purchase Order	P0014787	Approved
Mar 11, 2013	Receiving Documents	Y0015883	Completed
Mar 14, 2013	Receiving Documents	Y0015905	Completed
Mar 11, 2013	Invoice	I0061066	Paid
Mar 21, 2013	Invoice	I0061470	Paid
Mar 21, 2013	Check Disbursement	10081452	Final Reconciliation
Mar 28, 2013	Check Disbursement	10081695	Final Reconciliation

Item	Commodity	Description	U/M	Qty	Unit Price	Ext Amount
1	49520	Biology Equipment & Supp	CS	1	74.89	74.89
	Petri dish, 08-757-12					
2	49520	Biology Equipment & Supp	EA	1	154.03	154.03
	Phenol Red Broth, 500g, B11506					
3	49520	Biology Equipment & Supp	EA	1	45.99	45.99
	L-(+)-Arabinose, AC104980250					
4	49520	Biology Equipment & Supp	EA	1	27.03	27.03
	D(-)-Salicin, AC132590050					
5	49520	Biology Equipment & Supp	EA	1	32.7	32.70
	Start Soluble, S516-100					
6	49520	Biology Equipment & Supp	EA	1	13.95	13.95
	Xylose Purified 25g, X9-25					
7	49520	Biology Equipment & Supp	EA	1	28.9	28.90
	D-(+)-Mannose 99+, AC150600250					
8	49520	Biology Equipment & Supp	EA	1	62.08	62.08
	Glycogen, S25343					
					Total:	439.57

The remainder of the $688.11 requested was transferred to the General Microbiology lab account, as stated in the proposal. The money paid for consumables (27 types of media) so that individual supplies of each did not need to be purchased.

Abstract

Town, Stephen (Professor of Music in the Department of Fine and Performing Arts). "*The Bridal Day/Epithalamion by Ralph Vaughan Williams*" (A101 25087 2222). Fall 2012 (Approved 11/1/12)/Spring 2013 (Extended 5/6/2013).

My objective for this grant was to conduct archival research on the materials – autograph manuscripts, memoranda/dance notations, and television film – stemming from a musical creation of Ralph Vaughan Williams, *The Bridal Day/Epithalamion* – at the British Library, the Cecil Sharp House, and the BBC during the summer of 2013. Because I received a sabbatical from NWMSU and a Visiting Research Fellowship from Clare Hall, Cambridge University, an extension was granted so that the research could be undertaken and completed during the 2014 Spring Semester, the period of my residency in England.

The Bridal Day, a masque for dancing, was composed in 1938/39; revised in 1952/53 for a BBC televised production; and (renamed *Epithalamion* after the Elizabethan poem by Spenser from which the text for the original work was taken) turned into a cantata in 1957 for chorus and orchestra. The amendments to *The Bridal Day* and *Epithalamion* may be traced in the autograph manuscripts of 1938-39/1952-53 and 1957, respectively, which illustrate the considerable effort Vaughan Williams expended on the tasks; and, due to their complexity, a summary only is provided here. The original full score (1938-39) of *The Bridal Day* – 50421 (2) – is a *very messy* artifact, with many pasted in fragments (*collettes*) of various sizes, written in black ink on twenty-stave manuscript paper – although 12-stave manuscript paper, penned in blue ink and constituting primarily the new (1952-53) movements two and seven, has been inserted at various points – all of which exhibit many corrections, some in blue crayon and red ink but most in pencil. The autographs (1957) of *Epithalamion*, in ten notebooks of 12-stave manuscript paper, have been given the shelf mark of 50479 A-J. These differ from those already cited in that they consist of vocal scores, where the text-cum-music is applied, developed and modified, and full scores, which incorporate the previous work of adaptation as a preliminary to further emendation. My visit to the Cecil Sharp House and the BBC produced disappointing results, for there are no extant dance notations of the original 1938-39 masque and nor is there any existing recorded evidence of the televised revision (1953).

Nevertheless, the result of my studies on this specific work by the composer (1) revealed that it was a very special work to Ursula Wood and Ralph Vaughan Williams, for it provided the background against which they lived their lives for so many years, and (2) yielded an important chapter in the completed draft manuscript of my second book, "The Selected Choral-Orchestral Works of Ralph Vaughan Williams: Autographs, Context, Discourse," which I hope will be published in the near future.

26 June 2014

Dr. Stephen Town

Itemized List of Expenses

Travel (Airfare) = $1,295.80
Lodging = $745.80
TOTAL = $2,041.60