

2013 RICHTER SCHOLAR PROGRAM FACULTY PROPOSALS

Project descriptions are arranged alphabetically by faculty last name within each Richter Option.

Richters do not have to work on projects linked to their future intended major. Richters should choose projects that most interest them irrespective of future major.

RSCH 181: Independent Research Experience I (up to 25 students)

(This is Option I and it is a three-week Session)

Prof. Shubhik DebBurman (Biology/Neuroscience)
Prof. Les Dlabay (Economics/Business) **TWO PROJECTS**
Prof. Daw-Nay Evans (Philosophy)
Prof. Chloe Johnston (Theater)
Prof. Matt Kelley (Psychology/Neuroscience)
Prof. Doug Light (Biology/Neuroscience)
Prof. Susan long (Psychology)
Prof. Don Meyer (Music)
Prof. Desmond Odugu (Education)
Prof. Davis Schneiderman (English)
Prof. Naomi Wentworth (Psychology/Neuroscience)
Prof. Dawn Wisner (Chemistry)

RSCH 182: Independent Research Experience I (up to 15 students)

(This is Option II and it is a ten-week Session)

Prof. Glen Adelson (Economics/Business) **TWO PROJECTS**
Prof. Carla Arnell (English)
Prof. Ananya Das (Computer Science)
Prof. Shubhik DebBurman (Biology/Neuroscience)
Prof. Les Dlabay (Economics/Business) **TWO PROJECTS**
Prof. Robert Glassman (Psychology/Neuroscience)
Prof. Anne Houde (Biology/Neuroscience)
Prof. Karen Kirk (Biology)
Prof. Robert Lemke (Economics/Business)
Prof. James Marquardt (Politics/International Relations)
Prof. Chad McCracken (Philosophy)
Prof. Sean Menke (Biology)
Prof. Art Miller (Library & Informational Technology- Archives)
Prof. Richard Pettengill (Theater)
Prof. Scott Schappe (Physics)
Prof. Davis Schneiderman (English)
Prof. Holly Swyers (Sociology & Anthropology)

RSCH 181 (OPTION I, THREE-WEEK)

PROJECT 1

Professor Shubhik DebBurman (Biology & Neuroscience)

Johnson Science Building A 201

Ext. 6040; email: debburman@lakeforest.edu

TITLE: Discovering amino acids in alpha-synuclein that regulate its toxicity in Parkinson's Disease
(3-4 students)

During summer 2013, the DebBurman lab seeks highly motivated hardworking undergraduates to form a collaborative team with a diverse group of three other upperclass peers that study how certain human disease-linked proteins misfold and if such folding errors can be suppressed or reversed. Proteins are the most diverse class of macromolecules in our cells and their unique functions hold the secret to life. To fold correctly, most proteins require chaperones, which are proteins that help other proteins fold into their proper shapes and maintain their shape. If proteins still misfold, they are targeted for destruction by well-known degradation systems. But some misfolded proteins that such escape quality control, build-up in tissues and cause tragic incurable diseases. With the aid of national grants, we have focused on the protein folding mysteries underlying one such illness, Parkinson Disease (PD), which is caused by the misfolding of the protein, alpha-synuclein. This misfolding somehow selectively kills certain nerve cells that control our voluntary movement, which then lead to PD symptoms. Student researchers in my lab are currently testing several hypotheses that test what regulates the misfolding of alpha-synuclein in PD.

For RSCH 181 (Independent Research Experience I), 3-4 students would identify key amino acids to mutate in alpha-synuclein that are newly implicated in PD pathology but are not well evaluated yet. Each student would work on a different amino acid. You would learn to make these mutations on the gene and confirm the mutation by DNA sequencing. Next, you would learn to express these mutant genes in yeast models for PD developed in our lab, so that their protein properties can be test in the future.

In addition to carrying out their research project, Richter students will learn to discuss and present the latest published discoveries through scientific journal clubs, and discuss data at weekly lab meetings. Many past Richters have continued working additional years in these projects, with some expanding them into senior theses, which they often present at national conferences. Over twenty students, including six Richters, have become co-authors in published articles or manuscripts currently in submission and preparation. All lab graduates have gone on to pursue PhD, MD, or other scientific or health professions degrees. Pre-requisite: BIOL120, CHEM115, and CHEM116.

PROJECT 2

Professor Les Dlabay (Economics & Business)

Young Hall 304

Ext. 5145; email: dlabay@lakeforest.edu

TITLE: Alternative Financial Services in Africa, Asia, and Latin America" (1 or 2 students)

Project Overview: Hundreds of millions of households at the base of the pyramid (BoP), people living on \$2 or less a day, lack access to formal banking services. To address this situation, a variety of informal financial services have evolved to facilitate business activities and personal expenditures. In over 70 countries, rotating savings and credit associations (RoSCAs) serve the saving and borrowing needs of

people. More recently, village savings and loan associations (VSLAs) have developed to provide a wider range of financial services. Savings can involve the use of a *susu* collector or a family member serving as a *moneyguard*.

Student Research Activities/Outcomes: (1) review previous research related to alternative financial services; (2) conduct library and web research to obtain additional information regarding alternative financial services in Africa, Asia, and Latin America; (3) conduct in-person and e-mail interviews with people familiar with the culture, political situation, and financial activities in Africa, Asia, and Latin America; (4) create a summary document (table and report) comparing alternative financial services in Africa, Asia, and Latin America; (5) develop a brief PowerPoint presentation providing a comparison of alternative financial services in varied geographic regions.

Key References

- *Portfolios of the Poor: How the World's Poor Live on \$2 a Day* by Daryl Collins, Jonathan Morduch, Stuart Rutherford, and Orlanda Ruthven.
- *Informal Finance in Low-Income Countries*, D. W. Adams and D.E. Fitchett, eds.
- "Alternative Financial Services: An Essential Tool for Informal Entrepreneurs" in *Entrepreneurship in the Informal Economy: Models, Approaches and Prospects for Economic Development* (Routledge, 2013).

Mentoring/Monitoring: Students will be provided with readings related to both the topic of investigation and research techniques. A series of research questions will be developed to create structure for research activities. Research meetings (and field research visits) will take place two or three times a week. Daily email updates will be required from students to monitor progress and to provide feedback.

PROJECT 3

Professor Les Dlabay (Economics & Business)

Young Hall 304

Ext. 5145; email: dlabay@lakeforest.edu

TITLE: Mobile Phone Banking in Africa, Asia, and Latin America (1 or 2 students)

Project Overview: Mobile phone banking services permit low-income and rural consumers to receive funds, make payments, and transfer money to others. Remote regions without banks, cash machines, and credit cards are being served by cell phone banking services that are low cost and are easily used by those with limited technology skills. In India, many African countries, and elsewhere, cell phones are changing the economic lives of people. These services are especially needed in rural areas, where banks are rare and agricultural entrepreneurs need to buy and pay for farm equipment and seeds for crops. Organizations such as the Grameen Bank and Opportunity International have created mobile payment systems that allow a person to manage a checking account and obtain a microloan. Microloan funds are often used to start a small business as well as pay for household expenses. In areas of Bangladesh, the Grameen Bank leases phones to help people start businesses such as a grocery shop, village kiosk, or café. This allows people to earn a small income and improve their lives. As these small businesses succeed, families and communities have funds available for improved food, water, health care, and education.

Student Research Activities/Outcomes: (1) review previous research related to mobile phone banking services; (2) conduct library and web research to obtain additional information regarding mobile phone banking services in Africa, Asia, and Latin America; (3) conduct in-person and e-mail interviews with people familiar with mobile phone banking; (4) create a summary report of cell phone banking activities

in Africa, Asia, and Latin America; (5) develop a brief PowerPoint presentation providing an overview of procedures and benefits of mobile phone financial services in unbanked regions of the world.

Key References

- Unserved by banks, poor Kenyans now just use a cellphone (www.csmonitor.com/2007/1012/p01s03-woaf.html)
- Mobile marvels: A special report on telecoms in emerging markets, *The Economist*, September 26th 2009
- The Role of Mobile Operators in Expanding Access to Finance (www.cgap.org/publications/role-mobile-operators-expanding-access-finance)
- www.mobilemoneyexpo.com

Mentoring/Monitoring: Students will be provided with readings related to both the topic of investigation and research techniques. A series of research questions will be developed to create structure for research activities. Research meetings (and field research visits) will take place two or three times a week. Daily email updates will be required from students to monitor progress and to provide feedback.

PROJECT 4

Professor Daw-Nay Evans (Philosophy Department)
Durand Art Institute 102
Ext. 5185; email: daevans@lakeforest.edu

TITLE: W. E. B. Du Bois's *The Souls of Black Folk*: Historical Influences and Contemporary Africana Philosophy (1-2 students)

W. E. B. Du Bois's *The Souls of Black Folk* is one of the most important works on the social, political, and psychological consequences of racial inequality in American history. It was published in 1903 to critical acclaim by numerous media outlets and received high praise from well-known African-American writers such as Langston Hughes and international luminaries such as Max Weber. Du Bois's *Souls* gives voice to the complexity of the African-American experience, while simultaneously highlighting the seemingly intractable nature of American antiblack racism.

Our goal will be to do an intensive reading of *Souls* with the Richter Scholar helping me lay the groundwork for a newly contracted Broadview edition of Du Bois's masterpiece entitled *The Souls of Black Folk and Other Writings*. To this end, the Richter Scholar will 1) do research on *Souls* as well as subfields within philosophy and other relevant disciplines, 2) write literature reviews on this research material, 3) write exegetical essays on *Souls*, 4) watch films on the African-American experience, and 5) write, if they so choose, an argumentative essay on a particular theme in *Souls* or a particular topic in African-American philosophy. By proceeding in this manner, we will analyze the musical devices, literary tropes, and philosophical ideas at work in *Souls* as well as explore their further elaboration in African-American philosophy and various articulations of the African-American experience more broadly. Throughout this process, the Richter Scholar will help gather primary and secondary literature in the following three areas:

1. **History of Philosophy:** A Richter scholar interested in the American and European influences on Du Bois's thought can focus on the impact, if any, that figures such as Plato, Hegel, William James, Josiah Royce, and George Santayana had on *Souls*. Key questions include: Which philosophers played a major role in shaping Du Bois's thought in *Souls*? How might we distinguish between the footprints of his intellectual predecessors and Du Bois's own thinking about the African-American experience?

2. **African-American Studies/Contemporary Africana Philosophy:** A Richter Scholar interested in social and political philosophy as it relates to the African-American experience will have an opportunity to explore secondary materials that highlight those themes as they appear in *Souls*. Since Cornel West and Robert Gooding-Williams are two of the most important contemporary philosophical interpreters of Du Bois's thought, their work will help us steer a clear path toward understanding the purpose of *Souls*. Key questions include: How exactly should we understand Du Bois's philosophical legacy? What are the similarities and differences between West's and Gooding-Williams's interpretations of Du Bois's *Souls*?

3. **Aesthetics:** A Richter Scholar interested in the philosophy of music and the philosophy of literature will be able to examine Du Bois's use of music and poetry in *Souls* as well as the secondary sources that explore that angle. Key questions include: What is the significance of the musical and poetic epigrams at the beginning of each chapter of *Souls*? Do they serve a cathartic function or are they some kind of emotional contagion?

A Richter Scholar with interests in African-American studies, intellectual history, and philosophy will find this project worthwhile. If feasible, I will accompany the Richter Scholar on field trips to the DuSable Museum of African American History and the Black Ensemble Theatre to enrich and deepen their understanding of and appreciation for the African-American experience. This student will need to have strong reading, writing, and research skills.

PROJECT 5

Professor Chloe Johnston (Theatre Department)

Buchanan Hall 212

Ext. 5140; email: johnsoton@lakeforest.edu

TITLE: Walking and Pilgrimage in Performance Art (1 student)

I'm interested in working with a Richter scholar this summer who will help me research religious pilgrimages—specifically how such practices influenced the work of late 20th century performance artists. I am in the process of drafting a proposal to develop my graduate dissertation into a book and am working on a new chapter that will focus on this topic. Possible areas of research include:

-Walking meditation in Zen Buddhism (specifically in relation to American composer and performer John Cage and performances of Serbian artist Marina Abramovic.)

-Religious pilgrimage (The Way of St. James in Europe and others.)

-The work of contemporary artists Francis Alÿs (<http://www.francisalys.com/>), William Pope L. (http://www.foundationforcontemporaryarts.org/grant_recipients/popel.html) and Richard Long (<http://www.richardlong.org/>).

For some of these areas of research, the archive is quite extensive (specifically for Cage) and I'd expect my student researcher to help me create an annotated bibliography. In addition to library research, my student scholar will help me develop interview questions and identify other possible artist subjects. My plan is to have my student research read examples of scholarship that I hope to model my project after and help me articulate the style and structure for this chapter. Finally, this research coincides with some possible performance projects I'm considering, so my student researcher would also be expected to help develop some initial performances that could be implemented on campus (and possibly off campus) in the 2013-2014 school year.

PROJECT 6

Professor Matt Kelley (Psychology and Neuroscience)

Hotchkiss Hall 3

Ext. 5262; email: kelley@lakeforest.edu

TITLE: The Dynamics of Human Memory Retrieval (2-3 students)

Much of my recent research has explored two counterintuitive memory phenomena (i.e., part-set cuing inhibition and collaborative inhibition) that, despite their outward differences, might arise from the same causal mechanism. Part-set cuing inhibition refers to the finding that hints often *impair* memory, whereas collaborative inhibition refers to the finding that people remember less information when recalling as a collaborative group as compared to a nominal group (two individuals who recall separately, but then have their non-redundant performance combined).

Researchers have suggested that both phenomena arise, at least in part, because of *retrieval strategy disruption (RSD)*. In brief, RSD presumes that people have their own idiosyncratic strategy for encoding and retrieving information, so when they are given cues (either from the experimenter, in part-set cuing, or from their partner, in collaborative inhibition), these cues interfere with their desired strategy and impair memory performance.

I've published four recent articles and have a few active lines of continuing research on these topics. During the 3-week program, I intend to introduce students to the general issues and methods in memory research. Then, we will work together to read and synthesize the recent literature on the aforementioned topics. I'll teach them how to analyze memory data, using data from recent experiments in my lab. Finally, we will design and prepare (and possibly pilot) 2-3 studies that will be run in the fall when the Psyc 110 participant pool returns to campus.

With luck, the students will continue to be interested in this research and will join me in my lab in the fall as proper data collection commences.

PROJECT 7

Professor Doug Light (Biology and Neuroscience)

Johnson Science Building D 230

Ext. 6039; email: light@lakeforest.edu

TITLE: Regulation of Cell Volume in Red Blood cells (2 students)

I study problems associated with animal physiology and homeostasis, mainly focusing on membrane transport mechanisms and signaling processes at the cellular level. Currently, I am looking for students interested in investigating the physiological basis of cell volume regulation. The ability to control size is a fundamental property of cells and is one of the oldest regulatory mechanisms. In fact, many of the mechanisms involved with cell volume regulation also are associated with important biological phenomena, such as activation of white blood cells, regulation of the cell cycle, and programmed cell death. Nonetheless, the underlying mechanisms used to regulate cell volume are ill defined. Students conducting research in my laboratory will perform novel experiments using two complementary approaches: hemolysis experiments to examine osmotic fragility and electronic sizing to determine cell volume. Both of these approaches can be learned quickly enough to provide interesting and doable projects in a three-week time frame. However, given the nature of these studies, a minimum of Biology 120 and Chemistry 115 is required, and having a full year of both Biology and Chemistry is strongly recommended.

PROJECT 8

Professor Susan Long (Psychology)
Hotchkiss Hall 13
Ext. 5247; email: long@lakeforest.edu

TITLE: Community Partners Ending Violence Against Women (2 students)

Violence against women is a major problem in America. Current rates of sexual assault show that 10% of women experience attempted sexual assault in their lifetimes, and 22% of women experience domestic violence. National, state, and local governments and social service agencies engage in a number of activities to serve domestic violence and/or sexual assault survivors, and to prevent violence from happening in the first place. Researchers often partner with these organizations to help understand policy and programming effects on violence reduction and awareness. Working with data from the City of Chicago and a local social service agency, I plan to pursue two different lines of research: 1) What is the state of housing for abused women in Chicago? What are their needs? How are agencies serving those needs? To answer these questions, I hope to analyze data from the Mayor's Office on Domestic Violence. 2) What violence prevention programming do social service agencies employ, and what are the outcomes of those programs? Working with a social service agency, I hope to run an evaluation of one of their programs to help the agency build on its strengths and improve weaknesses.

A Richter Scholar would help with a variety of tasks for both projects. A student might learn to process surveys and enter data, run basic analyses, and build tables. She or he will also help with the process of writing up results for publication. The student would conduct literary searches and begin processing those articles. Finally, he or she might accompany me to meetings at an agency. An ideal Richter Scholar would have completed Introduction to Psychology and one course in the Women's & Gender Studies or Social Justice Minors, but all students passionate about this topic are encouraged to apply.

PROJECT 9

Professor Don Meyer (Music)
Reid Hall 106
Ext. 5171; email: meyer@lakeforest.edu

TITLE: The Western Film Scores of Elmer Bernstein (1-4 students)

Elmer Bernstein (1922–2004) was a Hollywood composer of great versatility. Among his credits include one of the most well-loved Biblical epics (*The Ten Commandments*, 1956), one of the first true jazz scores (*The Man With The Golden Arm*, 1955), a string of comedies in the late 1970s and early 1980s (*Animal House*, 1978; *Ghostbusters*, 1984), and a number of independent films with a wide-ranging musical language (*To Kill a Mockingbird*, 1962, *The Age of Innocence*, 1993).

Arguably, however, his greatest contribution to the history of film music comes in the genre of the Western. He wrote more Western scores than any other kind, and, starting with *The Magnificent Seven* (1960), arguably melded together the ingredients of a musical language that we now consider to be the standard sound of the genre. As we come to understand the characteristics of this musical language, we can understand more fully the meaning of the Western—and by extension, what this tells us about our self-identification as Americans.

I am planning to write a book about Bernstein's contributions to the Western. I have already drafted the first of six proposed chapters, and am hoping to write two more this summer. Students working with me

on this project will jump right in, reading secondary material on the Western and on film scores, compiling annotated bibliographies, and watching the movies with an eye toward listing the important musical moments. No prior experience with music is necessary, but a good ear is a plus, as well as an interest in film music.

PROJECT 10

Professor Desmond Odugu (Education)
Buchanan Hall 222
Ext. 5177; email: odugu@lakeforest.edu

TITLE: Re-conceptualizing Language Planning in Multilingual Societies (at least 3 students)

Controversies over policies on the language of education in multilingual societies have led to several paradigm shifts – (a) from prescribing monolingualism (one language per individual/society) to multilingualism (multiple languages), (b) views of multilingualism as a resource, not a problem, and (c) approach to language planning as ideologically driven and not purely technical and objective. The resulting approaches or orientations, which view language as a *resource* and a *right* (instead of a *problem*), contain inherent contradictions make them inadequate for guiding language policy and practice. Yet, advocates of multilingualism, especially those committed to mother-language based multilingual education (MLB-MLE) continue to rely on them. The result is that recommendations for education policymakers and educators to support MLB-MLE are often resisted, and linguistic discrimination persists in most multilingual societies. My recent research uses ethnographic data to challenge the fundamental assumptions underlying these new orientations as well as the earlier one they replace. Previous studies approach language policy as a finished product contained only in official government policy documents. They focus mainly on government institutions (such as ministries of education) as the sole proprietor of education language policy. By overemphasizing official government actions and relying on inherently contradictory theoretical orientations, language-planning scholars fail to provide a defensible platform for challenging linguistic discrimination both in industrialized nations with large immigrant populations and in less-industrialize ex-colonies with rich ethnolinguistic diversity.

As a departure from this condition, I have proposed a framework that views language policy and practice as a *process* – an ongoing dynamic process of negotiation among politically and ideologically interested actors with unequal bargaining power. In this framework, governments and scholars are only few of the many groups involved in language issues. Others include grassroots language groups of various kinds, mass media, social activists, international organizations (and their agencies), I/NGOs, religious organizations, and so forth. As a result, government language policies are only tentative tools in a broader *process* of negotiation. The negotiations often highlight the frequently non-linguistic nature of linguistic discrimination (that is, the fact that language issues are not often about language but about the speakers and the ascribed sociopolitical, cultural, and economic status of their corresponding communities).

During my last fieldworks in India, Nigeria, and France, I collected an enormous amount of ethnographic data from research participants representing the various groups listed above. These data provides a good source for (a) exploring the descriptive rationale and theoretical implications of a *process* approach to language planning that involves broader social issues and actors, (b) highlighting the sharp disconnect between current dominant theoretical orientations and actual language planning realities faced by multilingual societies, and therefore (c) exposing the contradictions inherent in these orientations. I seek three (3) Richter scholars interested in how social theories and public policy emerge from empirical data and academic scholarship. They will also see how academic research is shaped by public policies. To be effective in this project, the Richter scholars will receive training on qualitative data analysis. So, they do not need to already have skills in qualitative data analysis. The Richter scholars will primarily codify

already transcribed interview and observational data, and categorize themes that emerge from those data to make them usable in theory building. Each Richter Scholar will work on data from a particular site: India, Nigeria or France. (This will be ideal for students interested in multilingual societies and/or international organizations, such as UNESCO. Comparisons will be drawn to the U.S. context to help students understand the field of study). More importantly, since current failures in addressing language issues in multilingual societies arise from prevailing contradictions in theories, these Richter Scholars will be engaged in work that potentially alleviates real-life linguistic discrimination around the world. Data coding will focus on identifying (a) the nature and scope of language choices at various levels by different individuals/groups, (b) the ideologies that guide those language choices, (c) the networks among language actors, (d) the range of non-linguistic issues that inform language policy and planning across various levels and among different actors, and (e) agency (that is, who has the power to make decisions that affect which individuals/groups) among the various actors and their influence on language choices. Each student will also be able to explore new themes that emerge from their coding, and work with peers to discuss patterns across the regions under study. During the first week of the program, the Richter Scholars will also review literature in language policy and planning in multilingual societies to enrich their understanding of research in the field. Having three (3) scholars will significantly reduce the amount of literature to be reviewed, since scholars will discuss the materials they reviewed. Finally, while the Richter Scholars will work independently on their area of concentration (India, Nigeria, or France [UNESCO]), they will collaborate with their peers throughout the data coding and analyses process through ongoing discussions and virtual data management.

PROJECT 11

Professor Davis Schneiderman
Carnegie Hall 202
Ext. 5282; email: dschneid@lakeforest.edu

TITLE: Book publicity for DEAD/BOOKS (up to 3-4 students)

Uncreative writing is a practice of conceptual art that works against notions of traditional creativity, genius, and authorship. Examples of conceptual works in the more-well known sphere of visual art might include Marcel Duchamp's readymades, Andy Warhol's silkscreens, and—more recently—works of Damien Hirst (including his famous shark suspended in a tank of formaldehyde).

In literature, this practice of uncreative writing has roots that extend back to the work of Dada and Surrealist authors, the cut-up experiments of William S. Burroughs and Brion Gysin, and the texts collected by Kenneth Goldsmith and Craig Dworkin in their landmark anthology *Against Expression: An Anthology of Conceptual Writing*.

My recent novel, *BLANK: a novel*—a largely blank novel with collaborative elements, including audio by Dj Spooky—is the first act of a conceptual DEAD/BOOKS trilogy that explores issues of copyright, corporate publishing, electronic literature, and book culture/history. The next two books, *[SIC]* and *INK.*, will be released in 2013 and 2014, respectively.

The Richter scholar/s will have the opportunity to further these initiatives by focusing on the packaging of these works and their (social) media presence. What separates these from that of traditional book publishing is that with conceptual works, the publicity materials are *part* of the product. The book does not begin and end with the printed text because the text is simply a jumping off point for a larger cultural conversation—here expressed in sampled music from artists such as Girl Talk and Steinski; a biological

pathogen; the possibility of blood mixed with printer's ink; and a library which will be destroyed when readers purchase a text.

The ideal students will have an interest in contemporary literature and experimentation, and enthusiasm for a fast-paced environment of artistic exploration. Not required but welcomed is interest or experience in viral marketing, social media, and Search Engine Optimization (SEO). This is a chance to make contemporary art and learn about the independent publishing scene, while connecting more broadly with the wider literary world.

PROJECT 12

Professor Naomi Wentworth (Psychology & Neuroscience)

Hotchkiss Hall 10

Ext. 5256; email: wentwort@lakeforest.edu

TITLE: What do eye movements tell us about the mind? (2 students)

Humans gain much of their knowledge about the world by looking at objects in the environment. Thus, if we want to know what people are thinking about, it might prove useful to examine what they are looking at and how they accomplish their visual inspections. In this research project, we will first learn some of the techniques that cognitive neuroscientists have developed to measure visual fixations and eye movements. In particular, we will learn how to use EOG (electro-oculography) and infrared videography to record in a precise way eye position and eye movements. These techniques give us the ability to see what a person is looking at while the person looks at it.

After students master the basic techniques of collecting and analyzing eye movement data, they will begin to apply these techniques to design empirical studies to test hypotheses about the factors that control how we inspect different types of scenes. For example, a student might design two different "textbook" pages and then examine which style of information presentation is related to more effective reading strategies. Another project might be to design an interactive video game and use it to study people's ability to learn where they should look and when they should look there to maximize their game performance.

There are three goals of the project:

1. To learn first-hand about how cognitive neuroscientists go about studying the relationship between brain, body, and behavior
2. To learn how to measure eye position and eye movements and why you might want to do this if you care about how the mind works
3. To design and test a hypothesis about how the human uses visual information to accomplish a goal

How will students be mentored in the project:

In the beginning of the session (first 1.5 weeks), I will spend an hour or so each day in a tutorial session doing things such as demonstrating equipment, describing the oculomotor system, describing some studies that have examined topics in neuroscience that have used eye movement measures, and so forth. For the rest of the day, students will read assigned textbook (basic) readings and some of the scholarly empirical literature on this topic. They will also spend time thinking about and discussing questions they might like to explore that are based on the reading and/or the content of what we talk about in the hour tutorial sessions. I can envision a morning tutorial session that I lead and an afternoon discussion session that the students lead.

In the latter part of the session (second 1.5 weeks), I will spend an hour or so each day helping with computer programming, research design, pilot testing and generally helping the students collect and analyze data from at least one or two participants (maybe even each other). The goal of this phase would be for the students to have project ideas and lab skills so that they could continue doing research projects in our lab classes (either psychology or neuroscience projects) or during summer research either later in this summer (if I have the budget to support them) or in subsequent years.

PROJECT 13

Professor Dawn Wiser (Chemistry)

Johnson Science Building A 301

Ext. 5092; email: wiser@lakeforest.edu

TITLE: Integrating computer aided data acquisition into the general chemistry laboratory: re-working experiments using Microlab (2 students)

This project will involve re-working a number of general chemistry laboratory experiments to use a new piece of multi-use instrumentation called Microlab. We will adapt the current procedures to make use of the Microlab computer interface. Experiments under consideration for modification are: gas law determination of atomic weight, acid/base titrations, electrochemistry, and conductivity of ionic solutions. The project will require the student(s)

- 1) to learn how to operate the instrument by selecting sensors and entering options necessary to control the computer interface, and
- 2) to modify current general chemistry experiments (which they will have completed in Chem 115/116) to use the new instrument.

Ultimately, we hope to incorporate these newly modified experiments into the curriculum. In addition to the experimental work, the student(s) will help draft laboratory instructions. The project will be suitable for students who have completed Chemistry 115 and Chemistry 116. An interest in drag and drop computer “programming” will also be necessary.

RSCH 182 (OPTION II, TEN-WEEK)

PROJECT 1

Professor Glenn Adelson (Environmental Studies)

Ravine Lodge

Ext. 6281; email: gadelson@lakeforest.edu

TITLE: History, Biology, and Economics of Cotton (1 student)

I am preparing a book chapter that looks at the history of cotton from the perspective of the plant. Cotton is interesting for several reasons. First, cultivated cotton is a collection of several species with similar properties that have a history of world dispersal prior to the rise of *Homo sapiens*. Second, cotton's impact on world politics and economics has been disproportionate to our received view of cotton as the ordinary fabric of life. The U. S. Civil War, Great Britain's imperial interests in Egypt and India, and the commodification of African agriculture all had strong connections to the commercial value of cotton. Third, cotton today, more than any other plant or animal, is bound up in the lives of humans. One session each semester I ask my students to come to class not wearing anything made of cotton. Few can accomplish this mission (they forget about shoe-laces and the lining of pockets, among other things). I am looking for a Summer II Richter Fellow who would be interested in any of the following research products related to cotton:

1. Studying the biology of the cotton genus (*Gossypium*), tracing its natural dispersal and hybridization prior to human appropriation.
2. Studying the human biological manipulation and hybridization of cotton, by indigenous people, early planters, and modern industry.
3. Studying key moments in the history of cotton, as it replaced wool, linen, and animal skins as the modal form of human raiment.
4. Studying particular inventions that made cotton growing, harvesting, and processing into fabric more efficient, such as the cotton gin, the spinning jenny, and the cotton harvester.
5. Studying the effect of cotton as a commodity on cultures that have grown it, particularly the U. S. South, Egypt, India, and Sub-Saharan Africa.

A Richter Scholar who chooses one or more of these topics would conduct scholarly research by investigating the literature on the topic, interviewing experts in the field, setting up a research data base, and writing one or two ten-page papers that provide an analytical framework for future investigation of the topic or topics. The ideal student will be one who, though focusing on a specialized topic, is interested in the interdisciplinary context that defines the relationship between cotton and humans.

PROJECT 2

Professor Glenn Adelson (Environmental Studies)

Ravine Lodge

Ext. 6281; email: gadelson@lakeforest.edu

TITLE: Comparing Endangered Languages to Endangered Species (1 student)

I am interesting in having a Summer II Richter Scholar work with me on a series of papers I'm preparing that compare languages and species. This proposal lays out a number of questions that warrant further research on this comparison. Any one of the questions presented here can form the basis for a Richter

Fellow's summer project. There are obvious similarities between the languages and species: each can be construed as individuals that are born (have an origin), evolve, and die (go extinct). Linguists have piggy-backed endangered languages as a parallel to endangered species and have made similar arguments about the importance of conserving languages as conservation biologists have made about conserving species. This raises several questions, any one of which could be investigated by a Richter Scholar. What is lost when a language or a species is lost? What do we lose when we lose a language? Does it matter whether that language is isolated from other languages or a close variant of several other languages? Does it depend on the number of insights that the language can provide to its speakers and to others that wish to study it? Does it depend on the likelihood that efforts to revitalize the language will actually succeed? And most important, does it depend on whether there are people who *want* to speak it?

How are species and languages similar? How are they different? We need to analyze these similarities and differences in order to make judicious decisions about which languages and which species to save. We need a multi-layered analysis. How different is this language from others? How likely is it that we can keep it alive? How valuable is it to the people who speak it? How much money and time will it take to keep the language alive? Are those who continue to speak it likely to be politically or economically disenfranchised?

I foresee a Richter Scholar surveying the literature on endangered languages in an attempt to find instances of endangered languages that vary on the levels detailed above. In other words, find and investigate a set of languages that are linguistic isolates and compare them to a set of languages that are closely related to other languages. As part of the analysis, the Richter Scholar will analyze the age structure of the remaining speakers, the degree to which the grammar and vocabulary have been recorded by linguists, and the political viability of the language if attempts are made to conserve it. Because my field is endangered species, I will not need a Richter to do much work on the endangered species aspect of these questions, but I would be happy to provide particular endangered species for the Richter Scholar to analyze in a similar way in order to get a better sense about how endangered languages and endangered species are similar and different. The ideal student will be one who, though focusing on a specialized topic, is interested in the interdisciplinary context that encompasses the comparison between languages and species.

PROJECT 3

Professor Carla Arnell (English)
Carnegie Hall 109
Ext. 5272; email: arnell@lakeforest.edu

TITLE: Teaching Dickens: Research for the Classroom (2 students)

As part of my proposed project, students would conduct research that would ultimately contribute to the development of an extensive pedagogical website to support the new FIYS course I envisage teaching in the fall of 2013. The FIYS course is to be called "The Novels of Charles Dickens," and it will be a survey Dickens' major novels, an introduction to his life, an investigation of the socio-cultural context of his work, and a sampling of major critical approaches to Dickens' work. The goal of my work with Richter students will be to develop an FIYS-course website modeled upon the well-crafted website Dartmouth College faculty and students developed for teaching Dostoevsky's *Brothers Karamazov* as a freshman seminar. Here is a link to that website, if you are interested in seeing my model:
http://www.dartmouth.edu/~karamazov/resources/?page_id=473

In preparing to teach my new FIYS-course, I have searched for a similar pedagogically-oriented website on Dickens' work and have found nothing near the caliber of Dartmouth's Dostoevsky website, a site that has been enormously useful to me in teaching Dostoevsky this term. That's why I'd like to enlist

student help with the ambitious project of gathering material and developing online resources to support my Dickens course.

The students who work with me this summer would need to be 1) strong as writers 2) interested in literary research, and 3) adept at website development (potentially my website could be developed using WordPress). Under my direction, student work would include the following:

- 1) Students would need to read the primary texts around which the website will be built. That will entail reading those Dickens novels they are unfamiliar with from my projected syllabus so that they understand how the FIYS web resources should be tailored to the course's primary-text material.
- 2) Students would be responsible for conducting literary research in several ways: locating major biographical studies of Dickens' life, tracking down relevant resources about Dickens' London and the Victorian era, and identifying pertinent literary criticism about Dickens' novels according to my syllabus's suggested topics. This research will enable students to become familiar with searching major databases in the humanities (Project Muse, for instance).
- 3) Once students identify literary criticism relevant to my course's emphases, students will prepare an annotated bibliography of secondary literature as a resource for the research projects I envisage my FIYS students undertaking in the second half of my course.
- 4) Drawing upon their research, students will be involved in writing text for links about biographical background, intellectual context, socio-cultural milieu and the like.
- 5) Given that students will be reading the Dickens novels on my projected syllabus, my Richters will also have an opportunity to generate pedagogical materials such as reading questions and writing prompts for the website.

To direct this work, I will actively be engaged with students on a weekly basis, introducing them to research strategies, instructing them in the preparation of a professional annotated bibliography, collaborating with them in writing text for the website, and, not least, discussing Dickens' novels as a way of together generating reading questions and writing assignments.

All in all, this experience will accomplish several goals. It will enable students to see how research informs the teaching and development of a new course. It will enable them to develop "expert knowledge" in the area of Dickens studies. It will give them the chance to hone key scholarly skills—from researching and writing to preparing an annotated bibliography. Above all, though, it should give them a very tangible sense of accomplishment, for their research and writing will directly benefit incoming students. And just as the Dartmouth website has enormously enriched my teaching of Dostoevsky, so I hope the Dickens website my students and I co-create will be a lasting public resource to other faculty and students interested in studying Dickens' work in a "freshman seminar" context.

PROJECT 4

*Professor Ananya Das (Computer Science)
Young Hall 218
Ext. 5156; email: das@lakeforest.edu*

TITLE: Finding the Quickest Route in Web Networks (1 student)

Finding the quickest route from one location to another is a widely studied problem in Computer Science. In the classical version of the problem, we are given a set of locations and fixed travel times between certain pairs of locations. An interesting and practical variation to this problem is the setting where the travel time between two locations can change, for example due to traffic congestion. For example, if there is traffic congestion at Lake Forest, then the travel time from Lake Forest to Chicago may increase from the typical 35 minutes to 90 minutes. Furthermore, since there is traffic congestion at Lake Forest, it is likely that when we reach Chicago, we will encounter congestion there as well. Therefore, in this setting,

road travel times depend on the congestion levels of nearby locations and the congestion at one location depends on the congestion at nearby locations.

This problem can be easily modeled using computer networks and probabilities. An interesting project would be to apply this problem to communication networks (rather than transportation networks). In particular, how does congestion in various network locations affect the speed/efficiency of the internet? Using the model, we may be able to develop efficient algorithms to find optimal paths for routing internet traffic. We can then run various experiments on real internet traffic data to test the performance of our algorithms. Our results can help us find new ways to improve speed and efficiency for various web servers such as Firefox and Internet Explorer.

For this project I am looking for a student who can help to model the problem, develop efficient algorithms, and run simulations. The student should have an interest in Computer Science, a strong mathematical background, and knowledge in some programming language (preferably Java). This project requires the student to be fully engaged in various stages of problem solving: modeling the problem, developing algorithms to solve it, and testing the algorithms.

PROJECT 5

Professor Shubhik DebBurman (Biology and Neuroscience)
Johnson Science Building A 201
Ext. 6040; email: debburman@lakeforest.edu

Discovering Molecules & Mechanisms to Combat Parkinson's Disease (2 students)

During summer 2013, the DebBurman lab seeks up to two highly motivated hardworking undergraduates to form a collaborative team with a diverse group of three other upperclass peers that study how certain human disease-linked proteins misfold and if such folding errors can be suppressed or reversed. Proteins are the most diverse class of macromolecules in our cells and their unique functions hold the secret to life. To fold correctly, most proteins require chaperones, which are proteins that help other proteins fold into their proper shapes and maintain their shape. If proteins still misfold, they are targeted for destruction by well-known degradation systems. But some misfolded proteins that such escape quality control, build-up in tissues and cause tragic incurable diseases. With the aid of national grants, we have focused on the protein folding mysteries underlying one such illness, Parkinson Disease (PD), which is caused by the misfolding of the protein, alpha-synuclein. This misfolding somehow selectively kills certain nerve cells that control our voluntary movement, which then lead to PD symptoms.

For RSCH 182 (Independent Research Experience II), Richters will join current student researchers in my lab are who are testing several hypotheses that test what regulates the misfolding of alpha-synuclein in PD. Some students are focused on evaluating specific protein families that include (1) remodeling factors, (2) enzymes of the ubiquitin-proteasome pathway, (3) the lysosomal degradation pathway, (4) the oxidative damage pathway, and (5) the nitrative stress pathway. Other students are creating mutants of alpha-synuclein to evaluate whether specific portions/amino acids within the protein intrinsically control its misfolding and toxicity. To test each hypothesis, students work with two types of yeasts as model systems and they utilize multiple complementary techniques that span molecular genetics, cell biology, and biochemistry.

The Richter students can choose to work with any of the above hypothesis-driven projects, or propose new ones, and will enjoy significant control over experimental aims and design. In addition to carrying out their research project, Richter students will attend a prestigious scientific summer conference in

Chicago in mid-June, learn to discuss and present the latest published discoveries through scientific journal clubs, and discuss data at weekly lab meetings. Many past Richters have continued working additional years in these projects, with some expanding them into senior theses, which they often present at national conferences. Over twenty students, including six Richters, have become co-authors in published articles or manuscripts currently in submission and preparation. All lab graduates have gone on to pursue PhD, MD, or other scientific or health professions degrees. Pre-requisite: BIOL120 and CHEM115, and CHEM116.

PROJECT 6

Professor Les Dlabay (Economics & Business)
Young Hall 304
Ext. 5145; email: dlabay@lakeforest.edu

TITLE: Culturally-Based Models for Financial Inclusion (1 or 2 students)

Project Overview: The World Bank reports that three quarters of the world's poor do not have a bank account. This situation is not only because of poverty, but also due to costs, travel distance, and paper work. Women make up a disproportionately large share of this extensive "unbanked" population. *Financial inclusion* is the process of ensuring access to appropriate financial products and services, needed by vulnerable groups, at an affordable cost in a fair and transparent manner. Strong evidence exists that people's lives are improved by increasing their access to basic financial services such as insurance, savings accounts, loans, and remittances. Financial inclusion results in their ability to smooth their consumption over time, avoid potentially exploitative shadow market financial services, and pursue entrepreneurial pursuits resulting in reduced poverty and improved quality of life. Two trends of financial inclusion are the creation of savings groups and expansion of mobile phone banking services.

Student Research Activities/Outcomes: (1) review previous research related to inclusive financial services; (2) conduct library and web research to obtain additional information regarding inclusive and innovative financial services in Africa, Asia, and Latin America; (3) create a conceptual framework to identify the key elements of effective financial inclusion; (4) conduct in-person and e-mail interviews with people familiar with the culture, political situation, and financial activities in Africa, Asia, and Latin America; (4) prepare a summary report comparing varied models for financial inclusion in varied cultural settings; (5) develop a PowerPoint presentation or video providing an overview of varied cultural models for financial inclusion.

Key References

- Measuring Financial Inclusion: The Global Findex Database (World Bank, April 2012)
- Financial Inclusion in the People's Republic of China (www.microfinanceforum.org/wp-content/uploads/2012/09/WMFG-China-Overview_v7-electronic_hr.pdf)
- Access to Financial Services in Nepal-World Bank (<http://siteresources.worldbank.org/NEPALEXTN/Resources/publications/415830-1174327112210/complete.pdf>)
- Centers for Financial Inclusion (www.centerforfinancialinclusion.org)
- CGAP—the Consultative Group to Assist (www.cgap.org)
- Slide show (www.worldbank.org/wb/slideshows/global-findex/)

Mentoring/Monitoring: Students will be provided with readings related to both the topic of investigation and research techniques. A series of research questions will be developed to create structure for research

activities. Research meetings (and field research visits) will take place two or three times a week. Daily email updates will be required from students to monitor progress and to provide feedback.

PROJECT 7

Professor Les Dlabay (Economics & Business)
Young Hall 304
Ext. 5145; email: dlabay@lakeforest.edu

TITLE: Facilitating and Financing Value Chain Activities at the Base-of-the Pyramid (BoP)
(1-2 students)

Project Overview: Ongoing efforts exist to create micro-enterprises to alleviate poverty among people in base-of-the-pyramid (BoP) settings (people living on \$2 or less a day). However, the availability of markets for selling goods and services is often lacking. *Value chains* involve the activities needed to move a product or service from innovation to the end-user. *Value chain facilitation for inclusive markets* refers to developing a market system that can improve livelihood opportunities for the poor involved at different levels of the value chain. This process requires linkages among local entrepreneurs, global companies, government, raw material providers, development agencies, and other participants to plan, implement, and finance these complex, dynamic market structures. Several examples in Africa, South Asia, and Latin America provide evidence that a value chain approach offers economic and social benefits to vulnerable populations, including the very poor, women, and youth.

Student Research Activities/Outcomes: (1) review previous research related to value chain facilitation; (2) conduct library and web research to obtain additional information regarding value chain facilitation; (3) create a framework to relate value chain activities and microfinance services; (4) conduct in-person and e-mail interviews with people familiar with culture, political situation, and value chain activities in BoP settings; (5) prepare a summary report of recommended value chain actions in base-of-the-pyramid market settings; (6) develop a PowerPoint presentation or video providing an overview of value chain actions in base-of-the-pyramid market settings.

Key References

- *Value Chain Finance: Beyond Microfinance for Rural Entrepreneurs* (Royal Tropical Institute)
- *Integrating Very Poor Producers Into Value Chains: A Field Guide* (World Vision)
- Value Chain Wikis:
 - http://en.wikipedia.org/wiki/Value_chain
 - <http://microlinks.kdid.org/good-practice-center/value-chain-wiki>

Mentoring/Monitoring: Students will be provided with readings related to both the topic of investigation and research techniques. A series of research questions will be developed to create structure for research activities. Research meetings (and field research visits) will take place two or three times a week. Daily email updates will be required from students to monitor progress and to provide feedback.

PROJECT 8

*Professor Robert Glassman (Psychology and Neuroscience)
Hotchkiss Hall 11
Ext. 5257; email: glassman@lakeforest.edu*

TITLE: Looking “in the Mirror” for Brain Wave Music During Consciousness, Memory, Actions
(2 students)

Waves~~~~ rippling through the brain. Why does your brain make electrical waves while you are thinking, remembering, deciding, acting? Do brain waves “contain” our attention? Do they hold the few items our short-term memory “has in mind” at any moment? Do parts of the brain communicate with each other in brain wave “codes”? Do they “sing” to each other? (BTW “electroencephalography,” or EEG, is the classier technical term for brain waves.)

“In the mirror.” Let’s try to find out. During summer 2013 we will emphasize *looking at our own brain waves* under various conditions of perception, thinking, and alert or relaxed consciousness. This entails undergrad researchers working closely in pairs, helping each other take measurements looking closely at the data thus obtained. You’ll form hypotheses about possible regularities, and then vary the procedure and take more data from yourselves, attempting to home in on interesting neuroelectrical phenomena.

How we do it. Our general procedure is simply to place on the forehead a couple of sticky electrodes; we then record brain waves while a person watches the computer monitor and makes choices, or simply watches pictures, or listens to music, or simply relaxes.

Analysis and Display. Computer programs we have written here at LFC enable us later to look closely at exactly what the brain waves were doing during any particular moments, and to display the results of our analyses in various ways, both in numbers and using various, colored graphic displays to try to make visible any systematic properties, to get the mind to reveal itself in the brain waves

Examples of Psychological Testing Conditions

- **Neuromusicology.** Our computer programs enable us to test the idea that harmonic properties of brain waves help us keep items of information in mind. Help follow through with this research on how brain dynamics underlie consciousness. Do brain waves “play chords”? Looked at in a different way, does anything in brain waves signal our expectations during musical listening, for example with chord progressions?
- **Neuromarketing: Decision Making, Value, Emotion.** Our EEG research at Lake Forest College competes well with “brain imaging” at big research institutions. Do brain waves reveal how we make decisions? How do basic informational judgments compare to judgments about *value*?
- **People and Other Animals: Comparative Studies of Spatial Working Memory and of Numerosity Perception.** Published research from our laboratory has shown that humans and lab rats have the same working memory capacity for remembering positions, and that this capacity is the same as humans’ ability to remember about seven independent words, or random digits, etc. Other studies have shown the people (and animals) can perceive “how many” of small numbers of items are in a display, without counting. Let’s do more.

Computer Programming for Scientific Instrumentation

The LabVIEW programming system uses icons. The circuit diagram you draw is the program! Lake Forest College students have been developing programs to present stimuli (such as pictures), to record people’s brain waves while they responds, and to analyze the data. Help us develop and refine our “virtual instruments” for acquiring data and for analyzing it.

PROJECT 9

Professor Anne Houde (Biology and Neuroscience)
Johnson Science Building D 231
Ext. 6043; email: houde@lakeforest.edu

TITLE: Sex, Mate Choice, and Evolution (1-2 students)

Research in my laboratory focuses on the evolution of sexual behavior and mate choice. Our study organism is the guppy, a common, easy-to-breed tropical fish. Students in my lab have been able to show that the highly polymorphic, bright colors that male guppies exhibit evolve through mate choice by females. Beyond this, there are many questions to be asked, addressed and answered about sex in guppies. A Richter scholar will have the opportunity to observe the sexual antics of guppies, to come up with some fascinating questions, and to try to answer those questions through an original research project that you design. This is your opportunity to experience the full process of scientific research. Your project may yield insights that are new to science and can be published in a professional journal. You will get the chance to develop a real feel for how we do science and you will come away with a deeper insight into what it means to be a scientist.

The Richter Scholar's activities will include behavior observations, working with data, photographing guppies and analyzing their color patterns, reading the primary literature on sexual selection and guppies, and participating in care and maintenance of guppy stocks.

PROJECT 10

Professor Karen Kirk (Biology)
Johnson Science Building D 235A
Ext. 6044; email: kirk@lakeforest.edu

TITLE: Telomeres- Mutating genes that affect the tips of chromosomes (1 student)

Many cancer biologists study telomeres, specialized protein-DNA complexes at the tips of chromosomes, as it has been hypothesized that they are crucial to the tumorigenic process. An enzyme called telomerase makes the DNA in the telomeric complexes, and this enzyme is abundantly expressed in cancer cells. In addition to their role in cancer, telomeres may have a role in stress and aging. These roles stem from the finding that telomeres are shorter in cells with limited replication potential (most normal human cells) and longer in those that can divide for numerous generations or indefinitely (germ, stem, or cancer cells). If a cell is going to replicate a great number of times, as in cancer, it needs longer telomeres than a normal cell with limited replication potential. Shortened telomeres and reduced number of divisions may be a normal part of the aging process in humans, and may lead to decreased lifespan in stressed individuals. Conversely, heightened telomerase activity may be part of the molecular mechanism needed for cells to turn cancerous.

In my lab, undergraduates and I are working under a National Science Foundation award to study telomeres in microbes. We seek to learn more about telomere function by using a genetic model organism, a filamentous fungus that is easy to work with, called *Aspergillus*. Last summer students identified the gene encoding an RNA portion of the enzyme telomerase. No such gene had been identified in any filamentous fungus prior to our work, and we submitted our findings for publication. This upcoming summer ('13) we plan to make mutations in this gene to determine the function of the gene product at the telomeres. We will utilize a test that we call telomere-anchored PCR, a novel approach that was designed by Richter scholars in the past, to address whether a mutation lengthens or

shortens the telomeres or whether it changes the DNA sequence. This will indicate the function of the mutated portion of the gene.

Students such as Richter Scholars and more advanced students work together in my lab to learn about designing and executing experiments. These students utilize state-of-the-art molecular, cell biology, and genomics techniques, and many present their findings at national scientific conferences and in co-authored journal articles. Candidates should have completed at least one semester of biology and one year of introductory chemistry by the start of the Richter summer.

PROJECT 11

Professor Robert Lemke (Economics & Business)

Young Hall 418

Ext. 5143; email: lemke@lakeforest.edu

TITLE: Do Food Labels Help Consumers Make Better Decisions? (1-3 students)

The most important factor in determining or predicting behavior in many situations is information or knowledge. When one side is uninformed, that side may not be able to make good decisions. Alternatively, the side with the information may be able to exploit that position to its advantage. This field of economics is called the Economics of Information. One objective government has in its goal of ensuring competitive markets is to provide information to potential consumers, or, more precisely, to require firms with private information to truthfully reveal that information to consumers in the hope that consumers would then be informed and better able to make decisions.

One way the government mandates information be shared with consumers is by requiring nutrition labels to be included on most food purchases. Nutrition labels are regulated by the Food and Drug Agency (FDA). Presently the FDA requires nutrition labels to include calories, carbohydrates, fat, vitamin A, vitamin C, calcium, and iron. When the current nutrition label was first mandated, the FDA believed that information on these seven features would provide consumers with most of the information needed to make healthy decisions across products. The FDA, however, is currently in the process of rethinking its nutrition label guidelines. To this end, the FDA is administering surveys, conducting experiments, and researching how consumers use nutrition labels.

The proposed Richter project will contribute to this line of research. We will use FDA data to look at how consumers use food label information and how, if at all, the information contained on food labels affects choices and behavior. This research project is joint work with Amy Lando, who works for the FDA in Washington D.C. Amy has a master's degree in public policy. She is a leading researcher on nutrition labels for the FDA. And she has access to the FDA's confidential, private data. One or two juniors will also likely be involved in the project.

Amy is scheduled to give a talk on campus about food labels in April. Richter students (1 to 3) involved on this project will meet with Amy to start the research process. Amy's expertise will help focus the project. As a group in consultation with Amy, we will conduct a literature review, analyze data, write a journal article, and produce a PowerPoint presentation for the Richter symposium.

The ideal student researcher is interested in economic policy, reads well, is computer literate, is organized, works well with a team, stays on task, and manages time well. It would be useful, though not necessary, for the student researchers to have taken Econ 110 and/or Econ 180. We will meet every day to discuss the status of the project and to assign tasks.

PROJECT 12

Professor James Marquardt (Politics and International Relations)
Young Hall 412
Ext. 5126; email: marquard@lakeforest.edu

TITLE: Obama and America's Quest for an Open World (1 student)

This Richter proposal requests one student to assist me in my preliminary research of a new book project, tentatively titled *Obama and America's Quest for an Open World*. The topic of openness and transparency in American foreign policy has directed my research for the entirety of my academic career, serving as the basis of my dissertation, my 2011 book *Transparency and American Primacy in World Politics*, three academic articles, and two book chapters. (The two book chapters, which will appear in 2013, are the result of the collaboration between Prof. Rui Zhu, in Philosophy, and me on military transparency in Sino-American relations. My 2012 Richter intern, Alexis Yusim, is a co-author of the second paper.)

The new book project seeks to position the Obama administration in the larger narrative of American foreign policy, certainly since the time of Woodrow Wilson and, arguably, since the founding of the Republic, about the importance of greater openness and transparency among the countries of the world. By openness I mean the receptivity of countries and their citizens to external affects of great value to the United States, such as free trade, human rights, and democratic governance. Relatedly, transparency is an example of a country "opening" its internal affairs to some form of outside scrutiny, thus making countries "accountable" to one another.

The goals of the 10-week research project are as follows: (1) collect, read, and assess the secondary literature in U.S. foreign policy studies on the topic of openness and transparency in America's foreign relations; and with this information (2) write the first draft of an anchor chapter of the manuscript (about 7,000 words); (3) survey the Obama administration's "open government" initiatives, thinking and policy on openness and transparency and place them in the context of historical precedent for the purpose of identifying similarities and differences between the current administration and past ones (we will do this through tracking webpages, presidential archives, and news/press releases); (4) chart the books empirical chapters on the following topics: diplomacy; military-security; economic policy coordination (i.e. macroeconomic surveillance); democracy and civil society promotion abroad; and emerging issues such as climate change.

PROJECT 13

Professor Chad McCracken
Young Hall 508
Ext. 6091; email: cmccracken@lakeforest.edu

TITLE: Sovereignty versus Authenticity in Federal Indian Law (1 student)

The status of tribal entities in the U.S. legal system is a vexed question. Federally recognized tribes are "domestic dependent sovereigns," to use the somewhat cloudy phrase coined by Chief Justice Marshall in *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 17 (1831). Tribes are thus "distinct, independent political communities, retaining their natural rights' in matters of local self-government," *Santa Clara Pueblo v. Martinez*, 436 U.S. 49, 55 (1978) (quoting *Worcester v. Georgia*, 31 U.S. (6 Pet.) 515, 559 (1832)), at least to the extent that these rights have not been modified or eliminated by the plenary power that Congress enjoys over Indian affairs. See, e.g., *South Dakota v. Yankton Sioux Tribe*, 522 U.S. 329,

343 (1998). This retained tribal sovereignty is of course political in nature: tribes have sovereignty not by virtue of some racial, ethnic, or cultural characteristics possessed by tribal entities or tribal members, but rather tribes retain their sovereignty, however dependent it may be, as a result of their status as “separate people[s] with their own political institutions.” *United States v. Antelope*, 430 U.S. 641, 646 (1977). Even so, courts—and others—sometimes act as if tribal sovereignty is a cultural attribute, a mechanism for protecting valuable and distinctive aspects of tribal culture, for protecting, that is, a threatened tribal authenticity. In many cases, of course, tribal cultural authenticity and tribal political sovereignty do not conflict at all. But such conflicts do sometimes arise, often with results quite detrimental to tribal political authority. To mention but a single stark example, in *Brendale v. Confederated Tribes and Bands of the Yakima Indian Nation*, 492 U.S. 409 (1989), a divided Supreme Court held that the Yakima Nation had zoning authority on reservation lands owned by non-members only to the extent that such reservations lands were used in a traditional fashion; that is, the Yakima Nation had zoning power over reservation lands only to “ensure that this area maintains its unadulterated character,” *id.* at 444, but not to regulate land uses, *e.g.*, pursuant to non-traditional economic development. The *Brendale* decision in effect limits tribal sovereignty—the power to zone—in order to foster tribal cultural authenticity—the right to protect traditional land use.

I am contemplating writing a law review article focusing on conflicts—actual and potential—between political sovereignty and cultural authenticity in federal Indian law. The contemplated article would defend a notion of tribal sovereignty robust enough to trump any sort conflicting tribal authenticity claim. (As noted above, tribal sovereignty and tribal cultural authenticity are often not at odds; indeed, typically they are not.) A Richter Scholar would be of great help to me as I research this article. The project would be a good fit for any Richter Scholar with an interest in federal Indian law, in U.S. Constitutional law, in the nature of political authority, in the relationships between politics and culture, or in Native American issues. Indeed, I should think that any Richter Scholar with an interest in going to law school or with an interest in the U.S. legal system would get a lot out of the project.

PROJECT 14

Professor Sean B. Menke (Biology)
Johnson Science Building A 207
Ext. 6051; menke@lakeforest.edu

TITLE: Explorations of urban wilderness (1 student)

My research this summer will focus on developing our understanding of what ants live in urban environments and what they do in those environments compared to natural areas. Ants are an ideal system to use because they are found everywhere, are easy to sample and identify, they are economically important both as pests and as ecosystem engineers, and they are also important indicators of the health of the environment.

This year, students working in my lab have a chance to work on two broad projects in which they can develop their own independent research questions.

I. Diversity in urban sky islands (green roof tops): Green roof tops are a fast growing part of the conservation and environmental movements. These rooftops attempt to mimic natural prairie and other local environments. I think it would be a fascinating opportunity for a Richter Scholar to ask questions about what species are doing on these sky islands; are they predators, mutualists, or something else. Do the ants have permanent nests on the rooftop or are they walking up the building from the ground? A Richter student working on this project will have the chance to collaborate with Kaya Cuper, a rising Senior working on her thesis, and to develop their own research agenda.

II. Ant diversity in urban forest fragments: Chicago is full of interconnected parks and remnants of natural habitats surrounded by urban environments. Work last year by Richter students in my lab started

looking at patterns of diversity along metra lines traveling north of the city. This year a Richter student would have the opportunity to collaborate with Jeremy Boeing, a rising Junior, on this project and to develop their own research agenda.

Richter scholars conducting research in my lab will learn how to design and perform their own experiments with the goal of presenting and publishing their work at a national meeting or in a scientific publication. Researchers in my lab will spend extensive periods of time outside conducting experiments in the greater Chicagoland area and will gain experience in lab work and data analysis using their collected samples. There is also the potential for collaboration with scientists at UIC, the Botanic Garden, and McHenry County Open Lands. All students in my lab have the opportunity to participate in every project and work with each other to learn about different ongoing projects. Potential participants must have completed a biology or environmental studies course.

PROJECT 15

Professor Arthur Miller (Library Archives)
Donnelley and Lee Library 016
Ext. 5064; email: amiller@lakeforest.edu

TITLE: Planning an Exhibit Around Newly-Discovered “Before” Photographs, 1913-15, of the River Banks of Downtown Chicago

Students will engage in historical research about the history of central Chicago’s Chicago River banks and bridges development, based on a group of 1913-15 photographs by planner and Lake Forest resident Edward H. Bennett (1874-1954). Bennett took these photos of an almost unrecognizable Chicago River before the 1909 *Plan of Chicago’s* projected southern shift of commercial shipping opened the downtown riverfront for Parisian-like redevelopment. The Richter Scholar will compare site-specific images with historic photos and prints. These historic images will offer “before” and “after” views that we may compare also the Seine’s banks in Paris, which were similarly redeveloped in the mid-nineteenth century. The Richter scholar will search the web (Google Earth, etc.), read relevant historical works including Daniel H. Burnham and Bennett’s 1909 *Plan*, and visit the Art Institute (to view additional Bennett papers) and the Chicago History Museum (for historic views of the river). The Richter will also consult with city planners concerning a newly projected development by Mayor Emmanuel, and with scholars conversant on these issues. Further, the Richter will shoot new photos of the river as it appears today, replicating Bennett’s earlier vistas.

PROJECT 16

Professor Richard Pettengill (Theater)
Buchanan Hall 211
Ext. 5148; email: pettengi@lakeforest.edu

TITLE: The Book Process: Promotion and Inception (1 student)

In June of 2013, my co-edited book *Taking it to the Bridge: Music as Performance* will be released from the University of Michigan Press. This groundbreaking collection is the first to focus on the performance behavior of musicians (how they dress, the props they employ, the *personae* they enact); it contains essays from major figures in both theater and musicology on such artists as Michael Jackson, the Grateful Dead, Mozart, Miles Davis, Verdi, U2, John Coltrane, and Parliament/Funkadelic. The

summer will be busy with publicity, interviews (both print and radio), and appearances, some of which have already been scheduled. I will need my Richter scholar to begin with intensive reading within the fields of Performance Studies and Music as Performance (including the book itself) and strategize with me on marketing, especially using social media. My Richter scholar will also interview me for the UM press website; the interview project will involve collaborating with me on a series of questions, and then conducting, recording, transcribing, and editing the interview.

In addition, I will need assistance with researching and writing proposals for my next book projects. My Richter Scholar will work with me to read and assess already published books on the topics I am considering, so that I can be sure to propose books that cover new ground. One possible book is on the teaching of dramaturgy, and the other might be called *Woodstock Performance: An Eye-Witness Account*. My goal is to write and submit at least one if not two new book proposals to publishers by the end of the summer. Because of the amount of work I need to accomplish this summer, I will need a Richter Scholar for the full ten-week period.

PROJECT 17

Professor Scott Schappe (Physics)
Johnson Science Building A 107
Ext. 5166; email: schappe@lakeforest.edu

TITLE: Acoustical Levitation (1-2 students)

Researchers in a variety of fields have used acoustical levitation to suspend small samples (typically a few millimeters in diameter) in midair without contact with a container. Acoustical levitation uses an ultrasonic standing wave to suspend a small object in midair. We will design, construct, and test a levitation device using commercially available function generators, amplifiers, and drivers. Once operational, we will use the device to explore the nature of the standing waves and the underlying physics. Interested students must have taken the equivalent of one year of college physics.

PROJECT 18

Professor Davis Schneiderman
Carnegie Hall 202
Ext. 5282; email: dschneid@lakeforest.edu

TITLE: Marketing and Publicity for Lake Forest College Press/ &NOW Books (1-2 students)

This project looks for a student interested in working to publicize and further a number of interrelated projects: 1) forthcoming Lake Forest College Press / &NOW Books publications, including the fourth book in our Plonsker Prize series, *Galerie de Difformité* (release October 2013) and the second volume of *The &NOW AWARDS: The Best Innovative Writing* (release October 2012) and 2) the general web presence of Lake Forest College Press / &NOW Books.

The interested student/s may intersect with these projects in an almost limitless number of ways, subject to the particular interest of the Richter. This project allows students to become co-inquirers as we investigate the best ways for our College press to interface with contemporary literature and publishing. This project requires students who can think creatively, and those who wish to develop hands-on perspective about an industry that may be quickly slipping toward the obsolescence of its main delivery mechanism: the book. Put another way, no one has really figured out how to publish in a world where the

printed book is breathing its last. Together, let us see if we can figure it out. Lake Forest College Press / &NOW Books are distributed by Northwestern University Press.

PROJECT 19

Professor Holly Swyers
Hotchkiss Hall 200
Ext. 5252; email: swyers@lakeforest.edu

TITLE: The Adulthood Project- Examining Social Change and New Characteristics of Adulthood in the 21st Century United States (2 students)

Project Description: The Adulthood Project is a large-scale, long-term research project to uncover how adulthood is being understood and practiced in the U.S. in the 21st century. The project launched its initial field phase in the summer of 2011, during which time a small research team collected 500 short street interviews and about 25 long form interviews. An online questionnaire also produced a large number of responses. This data collection was designed to tease out how people negotiate the idea of being a "grown up" and integrate social expectations into their self-perception. Preliminary data analysis supports this approach, and in 2012, the Richter project was to help with proposing a grant to the National Science Foundation. The results of that proposal are still pending.

In the summer of 2013, I seek to do three things: 1) continue and expand data collection, including more street interviews and long-form interviews, 2)) develop a media archive (already begun, but requiring catalog protocols), and 3) analyze collected data and media materials pursuant to writing at least one article.

Richter responsibilities: The Richter Scholars will participate in a small team including advanced students in sociology and anthropology. The schedule for the Richter Scholars will be:

T, 5/14 - Su, 5/19: Literature review (key theoretical texts students must be familiar with, heavy reading & writing week, largely independent)

M, 5/20 - Su, 5/26: Continue literature review and media archiving. Transcription work. (training on software and cataloging system, lots of online and other screen time).

M, 5/27 - Su, 6/2: Coding and analysis practice (training on coding, discussion of revealed trends, short analytic essays)** During this week, Richters will isolate a specific issue in the larger project where they wish to focus their energies for the balance of the summer. This focus will govern their scholarly reading and media archiving as part of their weekly team duties.

M, 6/3 - Su, 6/9: Integration with larger team and regular team duties. Will include training on how to do interviews on the street, in person, and on the phone.

M, 6/10 - Su, 7/14: Regular weekly team duties, which include:

- 4-8 hours of street interviews (always in at least pairs, usually supervised)
- 1-2 long form interviews (sometimes in person, sometimes in pairs)
- data entry and transcription
- media archiving
- coding
- reading and synopsising new scholarship (at least 1-2 articles/week)
- participation in whole team meetings (usually 1/week)

M, 7/15 - F, 7/19: Concluding papers/presentations on summer work, wrap up and planning for academic year research team (Richters will be eligible but not obligated to join)

Richter qualifications" Applicants should

- have at least a semester's experience in sociology and anthropology and be familiar with basic approaches and theoretical ideas of the discipline (SOAN 110 should suffice).
- be comfortable talking to strangers.
- have an ability to understand and take notes on potentially accented and/or rapidly spoken English.
- have clear writing skills with an attention to detail, especially in regards to citation of sources.
- be willing to learn new software as needed (Excel, Delicious, EndNote Web, NVivo).

An ability to speak Spanish and translate spoken Spanish into English is not required but will be welcome.