The Burgos Tapestry: Medieval Theatre and Visual Experience |
Attitudes towards Immigration Reform in the United States: The Importance of Neighborhoods |
The Spontaneous Formation of Selenium Nanoparticles on Gallic Acid Assemblies and their Antioxidant Properties |
“A Power Beyond the Reach of Any Magic”: Mythology in *Harry Potter* |
A Canyon Apart: Immigration Politics and Hispanic Mobilization in Arizona
The Fordham Undergraduate Research Journal will soon be accepting submissions for our second issue.

FURJ welcomes original research articles, short research communications, book reviews, and review essays for consideration for publication.

Visit www.fordham.edu/fcrh/furj for information and submission guidelines. Please send questions to tfurj@fordham.edu.

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To the Fordham Community,

It is our pleasure to present to you the inaugural issue of FURJ – the Fordham Undergraduate Research Journal. This journal marks a momentous stride for undergraduate research at Fordham; for the first time, a diverse array of high caliber undergraduate research from the sciences, humanities, and social sciences appears in a unified publication. The articles included in this issue range from an art history analysis of a medieval tapestry to material science research on the formation of selenium nanoparticles on gallic acid assemblies. The breadth of research on the proceeding pages only attests to the wide yet focused interests of Fordham undergraduates.

While FURJ strives to provide undergraduates with an outlet to display their research, we also hope to inspire our readers. What makes research so great is its promotion of a genuine interest in the pursuit of knowledge and understanding. As Father McShane said on the PBS program A Walk Through The Bronx, “We have a great desire to introduce excellence … we believe that students have to be invited to wrestle with the great ethical issues of their time. We want them to be bothered by the realization that they don’t know everything and bothered by injustice.” We believe a zest for research captures this anxiety, the notion that we don’t know everything yet we strive to do so. So peruse the following pages and discover what questions students are grappling with, but then we invite you to put this journal down and go out into the world and formulate your own questions – these questions are the foundations of research.

Lastly, we would like to thank everyone who has made FURJ a reality. One year ago, the idea of an undergraduate research journal was just a crazy idea we brought up in conversation, and now you hold a printed copy in your hands. This journal would be nowhere without the hard work of our dedicated staff who have worked tirelessly under extremely tight deadlines to produce this issue. Furthermore, we would like to thank all of our peer and faculty reviewers who, for the sake of the double-blind peer review process, shall remain anonymous. We would also like to thank the faculty advisory board for lending their time and expertise to us, for their input served as the foundation upon which the journal was built. Similarly, we owe enormous thanks to Dr. Michelle Bata, Assistant Dean and Director of Undergraduate Research, who serves as the head of the faculty advisory board and primary advisor to FURJ. Without Dean Bata there would be no journal. Lastly we would like to thank Dr. Michael Latham, Dean of Fordham College at Rose Hill, for his unbridled support and genuine interest in our cause.

This issue is a celebration of the collective efforts of Fordham undergraduates who conduct research and their dedication to the pursuit of knowledge, and it is our pleasure to share it with the Fordham community.

Sincerely,

Kevin Jordan
Co-Editor-in-Chief

Alexandria DeCapua-Guarino
Co-Editor-in-Chief

April 27, 2011
Matteo Ricci Seminar Makes Great Strides in Inaugural Year

The 2010-2011 academic term marks the inaugural year of the Matteo Ricci Seminar, the newest addition to Fordham's burgeoning undergraduate research program. Named for the Italian Jesuit who ministered to China in the late 16th century and generously funded by Fordham alumni, the seminar aims to complement the existing academic-research infrastructure at the University specifically by helping to prepare students — starting early in their undergraduate careers — for opportunities to think about, "What are the things that I'm really deeply interested in?" "Is there a particular subject or a set of questions that I really want to commit my life to?" "What are the needs of the world?" "What are the gifts and talents I bring to the table?" and "Where do those two things overlap?"

Having detected this need, Dr. Hornbeck and seminar co-director Mary Beth Combs, Ph.D., associate professor of economics — with the support and direction of former FCRH Dean Brennan O'Donnell, Ph.D., and now of his successor, Dean Latham — worked to create a program that would first identify those undergraduates whose demonstrated intellectual prowess made them promising candidates for eventual research pursuits and prestigious fellowship competitions, and then prepare them for these undertakings through a carefully crafted course of readings, discussions, lectures, and other activities. The co-directors are themselves both accomplished researchers and educators: Dr. Combs has received a Fordham University Award for Distinguished Teaching in the Social Sciences as well as multiple Fordham Faculty Research Grants and Fellowships, while Dr. Hornbeck not only earned a Jack Kent Cooke Foundation scholarship as an undergraduate that supported his graduate studies at Oxford University, but he also gained relevant experience as coordinator of a post-graduate discernment seminar within Fordham's Curran Center for American Catholic Studies. These credentials — along with the balance that the pair offered as representatives of divergent academic disciplines in the social sciences and humanities — made it "very clear," says Dean Latham, "that the two of them would be ideally suited to the job."

In crafting the seminar's inaugural class over the summer of 2010, Drs. Combs and Hornbeck first solicited nominations from their faculty colleagues of those first- and second-year undergraduates whose classroom performance and intellectual curiosity had gained their notice in the previous year. To the list of about fifty students whose GPAs already begun to excel academically to really think about what they’re going to do after college, ’…” says Dr. Hornbeck, "we wanted to create a space for students who’d already begun to excel academically to really think about, 'What are the things that I’m really deeply interested in? Is there a particular subject or a set of questions that I really want to commit my life to?' … ‘What are the needs of the world?’ ‘What are the gifts and talents I bring to the table?’ and ‘Where do those two things overlap?’

They found 16 students among the fifty first- and second-year undergraduates whose classroom performance and intellectual curiosity had gained their notice in the previous year. The co-directors added another fifty students whose GPAs exceeded a particular level — a practice designed to compensate for their compressed first-year timeframe, although one that the co-directors intend to discontinue in the admission of future classes due to their cognizance that, perhaps owing to an initial course load that does not...
Students will have a much better sense of who they are, where they’re going, and what really matters in their lives.

- Dr. Patrick Hornbeck, Theology

The seminar class has not only tackled a heavy reading load of extracts from news media and academic texts as well as other longer works, but has also engaged with a number of guest lecturers who have shared their expertise. Fordham graduate John P. Cahill, a former chief of staff to ex-New York Governor George Pataki, reflected on his experiences in government, while another alumnus, onetime J.P. Morgan Chase banker Chris Lowney, discussed a book he authored — and which the seminar students read — that examines the Jesuits as models of best practices in the business world. Several faculty members also have shared their own research with the group, examining topics ranging from the roots of the present conflicts in the Middle East (John Entelis, Ph.D., professor of political science and Middle East Studies) to American approaches to international development (Dean Latham), and from an argument for Jesuit education as a catalyst of justice promotion (Jeannine Hill-Fletcher, Th.D., associate professor of theology) to a multidisciplinary view of environmental sustainability (Elizabeth Johnson, CSJ, Ph.D., distinguished professor of theology, and John Wehr, professor of biology).

Though the nascent program has yet to return quantitative results on some of its concrete goals — the most “instrumental” of which, says Dean Latham, is to give Fordham students a competitive edge in the application process for prestigious scholarships — early feedback has been solidly positive. The faculty guest speakers all noted the attentiveness of the student audience, as well as the liveliness — and fearlessness — of their debates. The program’s co-directors and sponsors have also expressed pleasure with its progress, and while they place great stock in the Matteo Ricci scholars’ potential for competitive successes, they also extend to the seminar’s enduring value beyond any awards and accolades.

“Certainly one of our hopes is that students who are in this program will have a better chance of succeeding in competitions like the Rhodes or the Marshall or the Fulbright,” says Dr. Hornbeck. “But of course if they don’t win, that’s not the end of the world — we think that one of the things that hopefully will come out of this, no matter what happens, is that students will have a much better sense of who they are, where they’re going, and what really matters in their lives.”

Dean Latham agrees: “Applying for these sorts of fellowships and scholarships…helps you learn an enormous amount about who you are, what you’re good at, and what you care about, and why it should matter to you and to other people. Getting that sense of direction, that understanding of the abilities you possess and what you’re actually able to do with them—that can be life-changing in a most profound way. So my hope is that obviously we win more awards, and that we have more people applying for awards, but much more broadly, I hope that these other benefits really do come about.”
The Bronx African American History Project is a co-lossal research project dedicated to recording the Bronx’s African American and immigrant history from the last half century, with the intention of archiving primary and secondary source material for scholarly and historical research. Dr. Mark D. Naison, professor of American history at Fordham University, is the head of the BAAHP, which has been running out of his department for the last nine years. Almost immediately after its establishment, the BAAHP received an overwhelming response from members of the community who wanted to participate. To meet the public demand, Naison recruited a team of Fordham undergraduate students to work with him. Now he annually hires ten undergraduates to facilitate the various aspects of this multifaceted project including interviewing, transcribing, event planning, and more.

Naison explained that the project originated because people in the community, particularly those in schools and local cultural organizations, were concerned because there were a lot of people who wanted to know about African American history in the Bronx, but there was no real database. “Those who had written about African American history in the United States … and in fact they were virtually invisible to historians, journalists, and university based scholars.”

The original goal of the BAAHP was thus to work towards remediating this void of important historical information and to begin creating an archival database. Naison describes the origins of the BAAHP as “an oral history project, interviewing people of African descent who lived in the Bronx … mostly people who were my age or older.” They began interviewing people about their life stories and personal histories and asked them to recollect their memories of living in the Bronx through the Bronx’s historic time period. People who previously had been ignored by historians were now given the opportunity to have their lives immortalized in historical record. Shortly after the project began, word of their endeavors spread rapidly. The project was well-received, and once people heard about it they “contacted me [Naison] in droves, and I realized I couldn’t handle this myself.”

Soon after the BAAHP began, Naison became overwhelmed by the response of the masses desiring to participate: “I went to the dean of the College at that time … and said I need help, could you hire some Fordham undergraduates to help me with this?” The Fordham administration appropriated money to Naison to hire four Fordham undergraduates as research assistants. He describes the diverse roles of the original four undergraduate research assistants: “Two people were transcribing interviews; one person was a videographer; the other was an archival assistant who would help place the interviews in the Bronx County Historical Society.”

The project continued to escalate. “The summer after we started it, there was a New York Times article about my research,” said Dr. Naison describing how, in preparation for the article, a New York Times reporter and two of his undergraduate assistants, Mark Smith and Colleen Decatherkey, accompanied him to one of the housing projects where he conducted some of his interviews. The Times article, which made the front page of the Metro section, resulted in even more people contacting the BAAHP to tell their stories. “I went to the dean and said four students are not enough.” Naison said.

Soon after the Times article, Naison’s team grew to encompass “two faculty positions and ten Fordham undergrads” who did “everything from transcribing to video editing, to archival work, to working in Bronx schools.” The BAAHP now hires ten Fordham undergraduates each year to work on the many facets of the project.

Over the last nine years, the BAAHP has continued to grow larger, amassing volumes of historical information. “This oral interview “now [it] is considered the largest and best community based oral history project in the United States. We have done over three hundred oral history interviews, transcribed 283, and the average transcript is 80 pages. People from all over the world come to work with us.” Dr. Naison made a point of the pivotal role his undergraduate researchers play in the continuity of the project as it has grown. “We’ve been written up in scholarly journals, we are producing several books, so it has just taken off … but [not] without Fordham undergraduates … those students remain the backbone of the project.” He went on to explain that without their dedicated work, what the project has already accomplished would not have been possible. “In order for history your interviews won’t really get around unless it is transcribed. Listening to a three and a half hour interview is a very arduous process. All of our transcriptions are done by Fordham College students. They are the ones who have done the grunt work that has made this project accessible to people.”

Naison described some of the undergraduate research projects that have developed based directly upon the work of the BAAHP. “A lot of Fordham students who do research connected to what we are doing are not on payroll. I have had two graduate students write papers for my courses which were published as articles [one was about white flight, the other was about the first-generation residents of Co-op City].” He also described the work of a Fordham College graduate, Michael Partis: “When he was a senior [he] did an ethnographic study of Black and Latino residents of public housing projects in the Bronx, and on the strength of that research he got a five-year fellowship to get a doctorate in cultural anthropology from CUNY.”

One of the most interesting aspects of the BAAHP is that it goes beyond the realm of research and into community outreach through public events and music. In Dr. Naison’s words: “We are not just scholars. We are very connected to the community. We have festivals, parades, concerts, film viewings, and lecture series. Students are involved in virtually everything we are doing, and a lot of it is research, but some of it is organization of public events, and research always comes out of public activities.”

When asked how undergraduates could get involved with the project, Dr. Naison replied, “Because Fordham undergraduates were central to this from the beginning, I am always looking for people to get involved. Every year I open ten undergraduates, and next year there are going to be six positions opening up. I can actually help students get stipends for the other research they are doing related to their courses, and plus, I get to hire a graduate assistant. Now, I will tell you if I hire you and you screw up, you will get fired really fast. You represent us with the community. Don’t send me any turkeys as undergraduates; this is not for the meek. You have to show up on time, you have to do what you say you will do, and that’s how we’ve gotten the respect of the community. We get a very special group of Fordham students and they’ve represented this project and the University unbelievably well in the Bronx. … We try to pick our undergraduates well? Any undergraduates that find Dr. Naison and the BAAHP’s work interesting and wish to become involved should contact him immediately to secure a position for the 2011-2012 school year.”
Honors Program Fosters Community of Research at Rose Hill

by Margaret Palazzolo, FCRH ’13

For some Fordham students, pursuing academic research projects during their undergraduate years comes as an extracurricular activity. For every member of the FCRH Honors Program, such scholarly work — in the form of a formal senior thesis — is a requirement.

A fundamental component of the Honors curriculum since the program’s inception in 1950 — indeed, the only such aspect that has survived various revisions to the Honors course load over the past 61 years — the senior thesis represents the culmination of the Honors student’s four-year tenure in Alpha House; “[its]

they will get tired of it long before they complete the thesis,” says Dr. Nasuti. What’s more, many students find the independent nature of the process to be a particular challenge: “Even though I had greater ownership of my work, it was hard to keep myself on track sometimes,” says Kristie Beaudoin, FCRH ’11, who recently defended her thesis entitled “From Kyoto to Copenhagen: The Role of (Non-Governmental Organizations) in Climate Change Politics,” examining the impact of environmental NGOs in the multilateral negotiation process at climate change conferences. “Since you really work at your own pace … it’s possible to procrastinate to the point that the project becomes unmanageable.” Developing the self-discipline to complete this kind of project, says Dr. Nasuti, is “one of the most crucial, but also most difficult, demands of being a scholar” — one which, he acknowledges, “is especially difficult during senior year when so many other things are going on in one’s life.”

Amidst these trials, Honors seniors still manage to reach the end of the process relatively unscathed. Ariana Jones, FCRH ’11 (who received the Leahey Award, an internal grant that funded her research abroad for her recently-defended thesis entitled “Transforming Finances and Lives: An Analysis of the Microfinance Sector in Kenya”), found solace in the implicit support of her peers: “[the thesis] was incredibly stressful of course, but it is for everyone. I think knowing that everyone else in Honors has to do it too makes it a bit easier.” Dr. Nasuti points out also the recourse that students have in their faculty mentors, especially as aides in maintaining discipline and deadlines, “since they not only guide their students through the different stages of research and writing but also provide important moral support.”

Above all, the Honors senior thesis requirement is one that intends to challenge students as they reach the end of their undergraduate careers to seize and build upon the academic foundations of the Honors core and their major courses of study, parlaying this assemblage of knowledge into scholarship that is entirely their own. “Having the independence to pick a topic and write about whatever I wanted was rewarding,” says Kristie Beaudoin. “At the end, I felt like it was truly my work rather than something I just whipped up for class — I was really proud of it.”

This, says Dr. Nasuti, is what sets the honors thesis apart from other types of academic requirements students encounter on the way to earning a diploma: “[It] should not be just another hoop to jump through before graduation. It is rather a golden opportunity to find one’s own voice as a scholar” — and indeed, many students’ theses have been published in academic journals, or presented at academic conferences. Dr. Nasuti has found also that, “while the researching and writing of a thesis is obviously demanding, most honors students not only complete the thesis with distinction but also look back on it as one of the highlights of their undergraduate careers.

“What stands out to me most is the enthusiasm with which most honors students talk about their research … each year I see how the individuals whom I greeted at the beginning of their freshman year have blossomed into true scholars with important things to say. It is a wonderful thing to see.”
Print, Publics, and Culture: The Fall 2010 American Studies Thesis Presentations

by Daniela Hess, FCRH ’11

Each year, the American studies department selects 15-20 students to become American studies majors. Accepted students have a 3.5 grade point average or higher and successfully complete an application process that includes a faculty recommendation and a writing sample. Professor Cahill notes that students accepted to the American studies program are a “pretty talented and ambitious group of students. They get to know each other pretty well over the course of three years, and that culminates in the senior seminar where they write a senior thesis.”

The American studies program leads up to the senior research seminar, a class where students develop their theses with the guidance of professors and peers. In the fall of 2010, Professor Cahill of the English department and Professor Amy Aronson, Ph.D., of the communication and media studies department taught the seminar. Professor Cahill explains, “We both bring our research experience into the classroom. The seminar, titled “Print, Publics, and Culture,” focuses on “print culture and the kinds of publics that it constructs largely from within our own kind of research areas but early on in the semester students begin to shape their own projects,” explains Cahill. In their junior year, students formulate a research proposal in a seminar taught by professors and peers. In the fall of 2010, Professor Cahill notes that students accepted to the American studies program are a “pretty talented and ambitious group of students. They get to know each other pretty well over the course of three years, and that culminates in the senior seminar where they write a senior thesis.”

The topics presented at the 2010 American studies theses presentations were divided into five broad areas of interest: contemporary social problems; religion, gender, and politics in the nineteenth century; local communities and social change; gender, performance, and the feminized body in the twentieth century; and transformations in music and dance.

Throughout the research process, students are guided by the faculty and input from fellow students. Cahill explains, “Students will ask provocative questions that will make you see the holes in your project, but in that same way, students learn to help each other and to work with each other and collaborate … you learn a lot of very specific intellectual skills: how to do research, how to write a sophisticated research paper, but you also learn how to think and talk about ideas with people. Students get a lot of training in asking the right questions, taking constructive criticism, and making arguments and defending them.”

The final result is a 25-page thesis and a 15-to-20 minute presentation in front of faculty and fellow students. Presentations are followed by question and answer sessions, in which students are invited to defend and expand upon their presentations.

Kate McGee, a senior American studies major, was one of the presenters. “At first, I was nervous about presenting in front of the faculty, but I was confident in my work. I knew I would be presenting something I put my best effort into,” McGee said.

When asked how students would benefit from working on a senior thesis, Professor Cahill explained, “I think there’s something really special about becoming master or mistress at a topic, of really knowing it better than anyone else in the room, knowing it better than your professors do, and that’s what you do when you take on a thesis like that … you really develop expertise. Now, it’s fairly narrow expertise, but the ability to do that is great training for all sorts of things. It gives you a lot of confidence and teaches
The reviews section seeks to showcase pieces which engage the scholarly work of others in any field of study. Critical engagement with the scholarship of others is an essential part of the development of new ideas within a particular field. Book reviews typically focus primarily on a single source, while review essays may engage multiple sources yet focus on a topical aspect of a field rather than present a comprehensive survey of a field.

A research article reports original research and assesses its contribution to a particular body of knowledge in a field of study. All research articles must contain the student’s own conclusion. For the purpose of FURJ, a research article must be performed at least in part by the student and should demonstrate the student’s own ideas.

Research From Around the World

France: In October 2010, Le Monde Diplomatique reported that a team of French and African scientists discovered that Malarial pathogens exist in some wild animals. Scientists cannot access these pathogens, meaning that they may never be able to completely eradicate malaria.

United Kingdom: On December 22, 2010 The Guardian printed an article describing the research of a group of 8 - 10 year old students from England. The students from Blackawton Primary School published a paper in Royal Society's scientific journal Biology Letters. The study proved that bumble bees judge which flower they are going to draw pollen from based on the flower’s color and shape. In addition to their findings, the students wrote in the journal that “science is cool and fun because you get to do stuff that no one has ever done before.”

United States: In February of 2011, New York Magazine covered the controversy surrounding a paper published in the APA’s Journal of Personality and Social Psychology. The paper’s author, Cornell University professor emeritus Daryl Bem, argued that Extrasensory perception (ESP) exists. The report drew criticism from the scientific community for its alleged lack of credibility. Bem employed undergrads as research assistants in his ESP studies, but avoided using graduate students for fear of sabotaging their future academic careers due to the stigma associated with studying ESP.

United Kingdom: In 1998, Andrew Wakefield published a paper in the British journal The Lancet linking the the development of autism with the MMR (measles, mumps, rubella) vaccine. As a result of the paper, global vaccination rates for MMR plummeted, and the connection between vaccines and autism has been researched and debated ever since. In February 2004, however, the Sunday Times (London) ran an article by Brian Deer which uncovered glaring inconsistencies in Wakefield’s study. By March of the same year, 10 out of 13 of the co-authors had withdrawn their support of the article. In 2010, The Lancet finally retracted the article and the UK General Medical Council stripped Wakefield of his medical license.

Research

A research article reports original research and assesses its contribution to a particular body of knowledge in a field of study. All research articles must contain the student’s own conclusion. For the purpose of FURJ, a research article must be performed at least in part by the student and should demonstrate the student’s own ideas.
“I felt that we Mussolini were a family at the mercy of the winds in a wretched Italy overwhelmed by war.”

Written by the son of 20th-century dictator Benito Mussolini, this story is of a son’s unreserved, blind love for his father—even if his father had been a fascist monster responsible for the slaughter of millions—makes for a complicated and conflicted memoir, which quickly became a bestseller in Italy. *My Father, Il Duce* begins with an introductory essay by Alexander Stille, which can be considered a bold move on the part of the publisher. This essay encourages both readers and historians to research beyond the scope of the memoir in question. As the title would suggest, Romano is more effective in the context of his familial relations does Romano, instead of being an apologist for fascism and for his father, Mussolini, this story is of a son’s unreserved, blind love for his father, Romano Mussolini makes the conscious decision to avoid depicting one man’s father at work and at play: the playful ed sheep of Mussolini’s flock. In addition to the biased and self-sacrificing patriarch, it is precisely the view of Mussolini’s feelings about the mother and child that the rest of his account was inaccurate. 

The images that the text offers as textual support present an absurd, inconsistent image of Mussolini, yet one that is not entirely unlike a family album. The images depict one man’s father at work and at play: the playful but firm father carrying his young son on his shoulders on one page and, on the next, Benito delivering a speech in his fascist splendor at a family picnic in the countryside. He is also depicted in photographs with Adolf Hitler, Galeazzo Ciano, and Neville Chamberlain; with his brothers from the Gran Sasso; and as Mussolini surrounded by other dead bodies before being hung in the Piazzale Loreto Milan. In choosing these specific photographs, Romano combines both family history and Italian and world history, which leads the reader to believe that he understands and knows factual history equally well as his family’s past. Through these photographs, Romano implies that his mere proximity to the important players of World War II is enough to make him a guarantor of authenticity, which is exactly the strategy he uses in the narration throughout his memoir. Though his account is flawed in terms of his ceaseless support and blind love for his father, Romano Mussolini is most dangerously misleading when he condescendingly interprets events in the Gran Sasso; and as Mussolini—living testament to the power and strength of Mussolini’s cult of personality over the Italians of his day.

As Romano sees *Il Duce* as a kind, sensitive, ambivalent and self-sacrificing patriarch, it is precisely the role of the *paterfamilias* on which many tenets of fascism were built. He writes that his father “seemed to live more for others than for himself”, no one would have appreciated this statement more than the dedicat- ted shepherd of Mussolini’s flock. In addition to the biased nostalgia that influences Romano’s memories, he was raised under the powerful notion of an identità italiana; many followers were blind to Mussolini’s murderous mayhem because they felt that a dream would be realized in him. There was never more hope for a truly unified and redeemed Italy than under the fascist regime of Mussolini. The images that the text offers as textual support present an absurd, inconsistent image of Mussolini, yet one that is not entirely unlike a family album. The images depict one man’s father at work and at play: the playful but firm father carrying his young son on his shoulders on one page and, on the next, Benito delivering a speech in his fascist splendor at a family picnic in the countryside. He is also depicted in photographs with Adolf Hitler, Galeazzo Ciano, and Neville Chamberlain; with his brothers from the Gran Sasso; and as Mussolini surrounded by other dead bodies before being hung in the Piazzale Loreto Milan. In choosing these specific photographs, Romano combines both family history and Italian and world history, which leads the reader to believe that he encounters with Generalissimo Franco. Romano declares that Franco was to save his father at the end of the war and give him refuge in Spain. He then supports this claim by writing, “I say this because in 1963, in Madrid, I learned that my father ‘found himself together in the middle of a war that no one wanted and whose catastrophic developments no one expected’.” The rhetoric that Romano employs suggests that World War II was something that Mussolini played no role in creating—something that no one wanted. His work seems laced with ‘absurdly revisionist accounts of his- torical events and crazy conspiracy theories aimed at absolving Mussolini.’ *My Father, Il Duce*, at the very least, is effective in alleviating his heavy responsibility of supporting a series of wars that accounted for more than 55 million deaths from 1935 to 1945.

Furthermore, Romano’s sporadic interjections of “what actually occurred” weaken his other statements because such wording insinuates that in other accounts he is not stating what actually occurred. ‘This inconsis- tency establishes this book as more of a family legend than a historical account. For instance, when he men- tioned the handling of himself and his family after their arrest, he states, “For the sake of complete historical accuracy, I must say that nothing bad happened to us. The agents assigned to surveillance remained at their posts, and no one threatened or bothered us.” The at- tention to historical accuracy in this example implies that the rest of his account was inaccurate. The most emotional parts of Romano’s memoirs are the discussions of the death of his brother, Bruno, and the struggles of his mother, Donna Rachele. The moti- vation for discussing his brother’s death as a pilot test- ing aircrafts for the regime might be to show a com- passionate and emotional Mussolini. He testifies, “My brother’s loss profoundly affected my father and caused a kind of fracture in his life.” Romano also cites his brother, Vittorio, in stating that there was a Mussolini before the death of Bruno, and another Mussolini after it, creating an image of a very sympathetic and sensi- tive Mussolini. The mention of Rachele is twofold because she is not only the wife of one of the most infamous fascist dicta-
In 2005, an Israeli man named Nick Rosen answered an ad in his local Tel Aviv newspaper searching for someone interested in selling a kidney. Through funding by the broker who placed the ad, Rosen was flown to New York and set up with a dialysis patient from Brooklyn. After Rosen and the dialysis patient passed a simple procedure for the screening of illegal organ sales by saying the two were old friends, the successful transplant surgery was performed at the esteemed Mount Sinai Medical Center in New York. The Brooklyn resident walked away, never again needing to go on dialysis, and Nick Rosen walked away happily with $15,000.1

But was the sale beneficial?

While the National Organ Transplant Act bans the exchange of human organs for any “valuable consideration,” illegal organ sales such as the one depicted above occur all the time—and it is not hard to understand why. There are currently over 100,000 people on the U.S. transplant waiting list, only 20% of whom can be covered yearly by deceased organ donors.2 Depending on where the United Network for Organ Sharing places one on its list, his or her chance of survival are most likely slim, since the majority of dialysis patients die within 5-10 years of starting treatment.3 An untimely death is not the only downfall of prolonged dialysis treatment. In addition, an average program includes four invasive three-hour sessions daily—raking in an expense of over $65,000 per year. In an effort to escape the high cost of dialysis treatments, several patients die within 5-10 years of starting treatment.4

Aside from an increase in the amount of organs available for transplant, regulating organ sales has several other benefits. Erin and Harris note that patients who have received organs from live donors have double the life expectancy than those who have received organs from cadavers. Insurance companies, as a result, would also spend less money on dialysis every year. While there are no health risks commonly associated with donating a kidney or part of a liver, the studies that investigated the risks were all done in nations with adequate health care.5 Since medical care would be given to donors after surgery, they would be able to continue living their lives as they had been before their surgeries.

To answer the question of whether or not organ sales are ethical, Erin and Harris highlight that, in the current system, the only person who is not compensated in some way for a transplant is the donor. They wonder why it is considered more ethical that a transplant surgeon, a hospital, and a patient who can now lead a healthy life all receive payment in some form, yet a donor is left with only a scar. Erin and Harris argue that making organ donating advantageous for the donor would actually increase the ethicality of the process.

While Erin and Harris propose a system that would hopefully increase the current supply of organs without allowing for the outright exploitation of poorer patients, they also highlight that patients who have undergone transplant surgery should be more involved in the decision-making process. Erin and Harris note that patients often do not understand the complications they may face after transplant surgery. They argue that patients should be given the legal right to refuse a transplant, and that the transplant team should be more transparent with patients about the surgery.

In addition, Erin and Harris propose creating a registry of organ donations that would allow patients to choose which organs they donate after they have died. This would allow patients to have control over their own organs and make the decision of organ donation more personal. Erin and Harris argue that this would also increase the ethicality of the organ donation process.

Notes

3. Romano Mussolini, My Father, Il Duce, 94.
6. Romano Mussolini, My Father, Il Duce, 119.
7. Romano Mussolini, My Father, Il Duce, 5.
8. Romano Mussolini, My Father, Il Duce, 121.
11. Romano Mussolini, My Father, Il Duce, 134.
12. Romano Mussolini, My Father, Il Duce, 52.
13. Romano Mussolini, My Father, Il Duce, 53.
citizens, their system fails to address the issue of illegal organ sales. As can be learned from the current system for organ allocation, simply banning the national or international private sale of organs does not prevent them from taking place. More so, unfortunately, not all illegal organ sales run as smoothly as Nick Rosen’s. In 2008, an illegal organ trading ring in India was broken up. The leaders of the ring claimed to have performed over 500 transplants. None of the donors were paid more than $2,500, and some were even forced to give up their organs at gunpoint.7

If people sell their organs to the National Health Service for a government-accepted upon price and those organs are given in accordance with the United Network for Organ Sharing’s list—as proposed by Erin and Harris—there would still be wealthy individuals lower on the list willing to pay larger sums of money to bypass the system. Instead of turning a blind eye to a smaller amount of illegal sales taking place, private, international organ sales—run by a global company, such as the World Health Organization—with limited conditions, should be allowed. In order to donate, organ vendors should have to pass a medical exam, ensuring they are healthy enough for the procedure. They would then be paid appropriately and guaranteed all necessary medical treatments after their surgery. The government could pair individuals willing to spend more money with a WHO-approved donor so the pair could orchestrate a deal privately. However, if there were a case of an organ going to a private sale instead of to someone in critical condition at the top of the list, the patient in critical condition would, of course, be taken care of first.

Because the private sale of organs would be legal, all transplants could take place in credible hospitals. In an effort to be approved for donation, perhaps vendors would take better care of their health beforehand, which would not only benefit the vendor, but also the recipient who would now receive a healthier organ.

The proposed legalized private sale of organs is not a perfect system, and has several drawbacks. Allowing people to spend more money to obtain organs faster will, in fact, create a capitalist market, which could unfairly benefit the wealthy. Critics of organ sales also argue that the system will undermine the altruism commonly associated with donating an organ.8

While having a global network for donating and receiving organs will have a net flow from the poor to the wealthy, what current market does not? In response to Erin and Harris’s precaution about creating a market for organ sales, Janet Radcliffe Richards writes, “Of course there is something undesirable about a one way international traffic from poor to rich; but that is not enough to settle the all-things-considered question of whether or not it should be allowed. . . . It is much better, for them, to improve the conditions of trade than to prevent it altogether”.9 In the case of organ sales, poorer nations will still benefit, even if the majority of organ flow is out of the country, since vendors will be paid. At least this system for organ sales would “improve the conditions of trade” to the greatest possible extent.

As for the risk of private organ sales undermining altruism, altruism should not be the main concern of a system aimed at helping the sick. Regardless of whether or not donors are paid, they are still making a sacrifice for the betterment of someone else’s life. Is not the gift of a healthy life altruistic enough?

The major downfall of continuing to prohibit the sale of organs is that the phenomenon will likely still exist. Banning the international trade of organs does not put up a wall for the black market, but acts more as an obstacle, an obstacle many corrupt brokers are willing to circumvent for a large enough paycheck. By tightly regulating private organ sales, the government could effectively channel greedy, high-risk behavior into a productive free market. In an age where there are so many patients waiting on transplant lists, alternative methods of obtaining organs need to be seriously considered. Allowing for tightly regulated government and private organ sales would dramatically increase the current organ supply, while insuring the health and safety of all parties involved.

References


Writing Women’s Mythology: The Poetry of Eavan Boland and Louise Erdrich

Colleen Taylor, FCHR ’12

Eavan Boland and Louise Erdrich are authors who write from very different cultures. Boland’s poetry explores Irish history while Erdrich’s traverses Native American culture and the Catholic religion. This polarity, however, is not so crucial when compared to the two poets’ striking similarities in voice and in subject. As women writers aligned with feminism, both Boland and Erdrich seek to express the female perspective and reverse centuries of women’s silence, and even more strikingly, they use the same medium to do so. Mythology is their instrument of choice, with Boland exploring Celtic folklore and Erdrich Native American legend. But these poets do more than explore; they reinterpret and rewrite. Challenging androcentric myths, Boland and Erdrich give the legends of their respective cultures a female voice, thereby creating a new, female mythology. Furthermore, the similarities in their mythological poems speak to the idea of a shared female consciousness. Nevertheless, while the themes, tone, and images parallel one another, their mythological poems do not always end similarly. Erdrich seems to accomplish the liberation of women within her final stanzas, but Boland ends her poetry without freeing her woman-speaker from despair.

Like Erdrich, Boland is particularly in touch with her legacy. Her poetry is rooted in Irish history and often invokes an Irish woman’s experience to comment on the country’s tragic past and national identity. Recently (in 2005) she published a complete collection of her poetry, New Collected Poems. In that collection are her more recent sets of poems, including the “In A Time of Violence” (1994) poems and the “Coke” (2001) poems, both of which engage Irish mythological stories to discuss women’s issues. These recent collections of Boland’s parallel Erdrich’s Baptism of Desire, and it is my conviction that, together, these two sets of poems send a very powerful message.

Native American myth is steeped in the tradition of androcentrism. Although Native American religions and legends often recognize the importance of mother figures, equality for women is virtually absent in the storytelling tradition. Female figures appear in myths, but they are often described as “other” and are resigned to the domestic sphere. In contrast, to Mythology, Mart Weigle notes that in Native American traditions, music, religion, and especially myths and legends are “controlled by men.” Of course, societal structure and beliefs differ from tribe to tribe, but, for the most part, Native American women are not storytellers. In many Native American mythologies, the trickster takes a central role. The trickster exists, as his name suggests, to create confusion and to upset the progression of a story. He is a clever, important character and is almost always male. The trickster can bend his gender but, as Weigle notes, he is “first of all a man . . . because women are simply not accorded [that] variety of expression.” In Native American mythology, women rarely “express” themselves, and they hardly ever tell the story.

Louise Erdrich challenges the sexist mythological tradition in several of her poems, and this is most clear in “Fooling God.” Erdrich, in the opening poem of her collection, Baptism of Desire, challenges Native American convention by creating a female trickster. The poem is a series of propositions of possible ways the speaker can hide and escape God, such as “I must become very small and hide where he cannot reach” or “I must be slender.” Like a true Native American trickster, the speaker of the poem attempts to fool God into believing she is not there. More importantly, however, the poem continually asserts women’s creativity in relation with these attempts at deceiving God. The speaker says, “I must turn down the covers and guide him in. / I must fashion his child / out of playground, blue, pink, green. / I must pull them from between my legs.” Erdrich is invoking the two standard, stereotypical female roles: that of sexual partners or mother. She puts the trickster in the domestic sphere so as to assert her sex. While this domesticity may appear to comply with the sexist beliefs of Native American traditions, Erdrich combats the stereotype by putting the female trickster into action. For instance, the woman in the poem guides the male god to bed, not the other way around. More importantly, the trickster is by no means a passive object in the birthing process. Rather, she initiates the process and “pulls [the babies] from between [her] legs.” Such exertions by the female trickster resist the belief that Native American women have no active part in legend. Moreover, the rhythmic repetition of “I—a T” which begins the poem—“I asserts women into the storytelling tradition. After all, the female trickster narrates the story of this poem. “Fooling God” transforms Native American myth into an expression of the female experience.

Irish, Celtic mythology, like Native American myth, is androcentric. There are far more heroes and male characters in Celtic mythology than there are heroines. But a select number of stories can boast of characters with feminist potential, such as Deirdre of the Sorrows. In her book, Women, Myth, and the Feminine Principal, Bettina L. Knapp argues that Deirdre is one of Ireland’s national heroes, and that her “inner fortitude and strength” distinguishes her from other female characters in Celtic myth. Although Deirdre’s determination is associated with being with a man, Knapp maintains that she nonetheless represents “a woman’s will for independence.” Knapp also points out that Gráinne of “The Pursuit of Diarmuid and Gráinne” echoes Deirdre’s independence. Fated to marry old, powerful kings, both Deirdre and Gráinne act on their desires and flee from these kings, escaping with their lovers. Like Deirdre, Gráinne reflects autonomy of choice and of action in her elopement with Diarmuid. It is important to note that ancient Celtic society was a patriarchy where women were socially independent. They were not on wholly equal footing with men but were able to choose their professions and control their own wealth. Husbands and wives had very similar rights, unlike in Ancient Greek and Roman societies in which the husband was in control. Although Deirdre and Gráinne are not free from sexism, they represent a tendency toward equality for women.

In repeatedly invoking the Celts and their folklore, Boland’s poetry expresses her desire for a time when women had less prejudices to battle. Boland seems especially interested in the myth of Gráinne and Diarmuid. Her poem “Story” mentions two lovers hiding in the woods, a clear allusion to Gráinne and Diarmuid on the run from the old king Fionn Mac Cumhaill. “Story,” like “Fooling God,” highlights the woman of the legend. While tradition usually centers on the rivalry between Fionn and Diarmuid or Diarmuid’s tragic death, Boland focuses her poem on Gráinne. Early in the poem, the speaker states, “And let the woman be slender” or “The woman be slender.” She asserts the woman in the story, putting an emphasis on the word “woman,” which later recurs with the line “That this woman is growing older.” Never does the poem address “the man.” The poet, entwined with the Irish word “féidir” meaning knowing Gráinne and Diarmuid’s fate together, is entwined. But not long after, the poem imaginatively separates Gráinne from Diarmuid, and the speaker says, “I am writing a woman out of legend.” Boland singles out Gráinne, writing her out of the traditional interpretation of the myth and transporting her into a woman’s interpretation. Like Erdrich, Boland rewrites the myth and challenges convention by accented the woman, rather than the man.

There is a common tone that runs throughout both Erdrich’s and Boland’s poetry, a tonal quality that reflects a position of double oppression. Erdrich and Boland choose to write from oppressed cultures: those of Native Americans destroyed by New World immigrants and the Irish, and suffering from centuries of English oppression, respectively. And, as women, they write from an even greater oppression. Their poetry laments the cruelty brought on by invasion and by sexism. In an article entitled “History, Postmodernism, and Louise Erdrich’s Tracks,” Nancy Peterson explains Erdrich’s subjugated position: “For writers such as Erdrich, a part-Chippewa woman, the history of America has often been exclusionary—a monologic narrative of male Anglo-Saxon conquest which constructs others as people without history.” This experience of exclusion can be heard in “Fooling God” with the relentless repetition of “I must.” Virtually every line in the poem...
ERDRICH is the author of the novel “The Watercolor.” In her novel, the character Josette is a woman who is trying to find her place in society. Josette is a young woman who is just beginning to age. She is still fresh and poignant. Moreover, it is “new” in that it Gráinne’s dangers are modern fears; a woman losing her husband has no interest in the story.

In an essay entitled “Beautiful Labors: Lyricism and Feminist Evasion in Eavan Boland’s Poetry,” Christy Burns argues that Boland’s poetry depicts the position of the woman as a symbol of beauty: “Boland grew suspicious of beauty and its romantic imagery as she began to search for her place as a woman writer.” As a result, Burns says, Boland’s poetry replaces beauty with “the reality of everyday women’s domestic lives.” This refusal of beauty is certainly apparent in “Embers.” The poem centers on the precariousness of woman’s youthful beauty with both the old woman of the Fianna and the speaker herself, who fears her husband no longer finds her attractive. The speaker hopefully says “Tell me you feel the warmth still.” She futilely asks him to feel desire for her. Erdrich’s myth about Potchikoo is written in prose-like narrative, rather than in verse like Boland’s “Embers,” but it is nevertheless a powerful story of an abused wife. In the section “Potchikoo Greets Josette,” Potchikoo returns to his wife merely to quench his sexual desire. He continues to have sex with her, even though she falls asleep: “Finally Josette fell asleep, and let him go on and on.” In this moment, Josette is a completely passive, inanimate object, and like Boland’s speaker in “Embers,” her voice is unheard by her husband. She merely exists for Potchikoo’s pleasure. What’s more, different versions of the myth exist, and in them there are parallels between the character Josette and the Irish woman of the Fianna, the speaker gives us her own fate in the last word of the poem: “ashes.” She is made into ashes, torn apart by her husband’s refusal to hear her voice.

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The character of the abused wife runs throughout the mythological poems of both Boland and Erdrich. In Boland’s poem “Embers” (in the Code collection), the speaker expresses a mythological woman entrapped by the imprisonment of Irish women in history. When she contemplates the history of the country, she imagines the poor Irish girls and women who never had a voice. She is greatly affected by the women of these “defeated” cultures. Boland overtly addresses this twofold oppression in her essay, “The Woman The Place The Poet.” She explains how she has chosen to express the tragic Irish past, saying, “We yield to our present, but we choose our past. In a defeated country like Ireland we choose it over and over again, relentlessly, obsessively.” Boland does more than choose Ireland; she chooses Irish women specifically. When she contemplates the history of the country, she imagines the poor Irish girls and women who never had a voice. She is greatly affected by the women of these “defeated” cultures. She often doubles the voice of sorrow by challenging the idealistic image of woman as beauty with the reality of aging. By taking all the commercialization rather than nature: “I must fashion his monument / with stones torn from my knees / and set them before his knees / and pull them from between my legs / and set them before / his knees.”

The acts of giving birth are mechanized within the myth. It resonates with the speaker in her own time as well: “I am thinking how new it is—this world as it is, this life as it is, this world as it is now after the famine and the eviction and the war.”

“Potchikoo’s Life After Death,” saying to it, “In the name of the Holy Mother of God! Depart!” The twin obey her, which suggests that Josette wields a di- vine-like power. Moreover, Josette traps the mean twin by putting “blue plaster that had fallen off the Blessed Virgin’s breast” on a “roasted head—a pathetic gesture.” Something miraculous is contained within the bird just as sacred strength is contained within Josette herself. In “Embers,” when the speaker reads about the old woman of the Fianna, the audience gets the sense that the story is sacred to her. The old woman in the story is certainly magical, as she is transformed from old and haggard to young and beautiful in one night, but she is also brought “back to her family.” In “Story” the speaker engages with a mythical woman entrapped by the women of these “defeated” cultures. She often doubles the voice of sorrow by challenging the idealistic image of woman as beauty with the reality of aging. By taking all the commercialization rather than nature: “I must fashion his monument / with stones torn from my knees / and set them before his knees / and pull them from between my legs / and set them before / his knees.”

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Potchikoo’s fate. Her readers do not learn what happens to Potchikoo after his death. However, by the last chapter of the tale, “How Josette Takes Care of It,” Potchikoo is virtually erased from the storyline and replaced by Josette. In a trickster-like move, Erdrich asserts Josette as the heroine of the tale. She launches a surprise attack against the evil spirit that is causing trouble in the town, and Josette’s strength, independence, and consciousness are revealed to truly reveal Josette’s strength, independence, and heroism of her women characters. Although Boland does not accomplish this level of triumph, her poetry is by no means inferior or less progressive than Erdrich’s. Erdrich, however, begins in anguish and ends in triumph. She makes heroes out of her speakers and liberates the female voice from despair. Furthermore, as a part of this liberation, “Potchikoo’s Life After Death” enacts the Native American tradition of the trickster. The myth focuses on a male character, Potchikoo, and his journey after his death. However, by the last chapter of the tale, “How Josette Takes Care of It,” Potchikoo is virtually erased from the storyline and replaced by Josette. In a trickster-like move, Erdrich asserts Josette as the heroine of the tale. She launches a surprise attack against the evil spirit that is causing trouble in the town, and Josette’s strength, independence, and consciousness are revealed to truly reveal Josette’s strength, independence, and heroism of her women characters who have been marginalized. Eavan Boland and Louise Erdrich have lit the fire for a new mythology of women and their views of mythological characters who have been marginalized. Eavan Boland and Louise Erdrich have lit the fire for a new mythology of women and their views of mythological characters who have been marginalized.

Erdrich’s poetry rightly concludes with a trickster’s act, an essential part of any Native American myth. Nevertheless, while this difference is important, the two poets’ similarities are what is really remarkable about this comparison. That they write from such different backgrounds and styles and yet produce such analogous poetry attests to the idea of a common female consciousness. The female voices they create are harmonious. Though the actual myths may be different, Erdrich and Boland write from the same consciousness and therefore create a universal female voice that all mythologies and all women can recognize. Finally, I would argue that Boland and Erdrich encourage their audiences to find heroines in other culture’s mythologies and to create a voice for those mythical characters which have been marginalized.

Notes

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3 Ibid.
7 Ibid.
8 Wight, “Southwest Native American Mythology,” 352.
10 Erdrich, “Fooling God,” 5.
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14 Ibid.
15 Knapp, Women, 181.
16 Knapp, Women, 182.
18 Boland, “Story,” 283.
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30 Erdrich, “Potchikoo,” 54.
31 Erdrich, “Potchikoo,” 55.
32 Erdrich, “Potchikoo,” 57.
33 Ibid.
37 Boland, “Story,” 283.
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43 Erdrich, “Potchikoo,” 57.
The Burgos Tapestry: Medieval Theatre and Visual Experience

Nathalie Rochel, FCRH ’11

In the field of art history, the medium of tapestry has only recently begun to gain attention as its own significant art form. This paper examines the possible relationship between the Burgos Tapestry, recently on view at The Cloisters after a thirty-year conservation, and medieval theatre. The compositional and stylistic forms of the tapestry may have been influenced by productions of medieval mystery plays, which through analysis can help provide a greater understanding of the medieval cultural mindset, the possible artistic decisions behind maintaining medieval pictorial traditions into the early sixteenth century, and the medieval viewer’s experience when looking at a tapestry demonstrating those traditions. Looking at the tapestry in consideration of other aspects of medieval culture helps to re-examine the dismissal of medieval pictorial tradition as simply a precursor to Renaissance naturalism.

One of the great surviving figurative tapestry sets from the Late Gothic period of tapestry is The Redemption of Man series, believed to consist of ten compositions. Many duplicates have been made of the tapestries in the series, but the tapestry at The Cloisters, known as The Nativity or Christ is Born as Man’s Redeemer, is distinctive in that it is the only existing composition from the group to have no duplicates (Fig. 1). The tapestry is twenty-seven feet long by thirteen feet high, its approximate date is between 1500 and 1520, and it is identified as South Netherlandish. Any artists associated with the tapestry, as well as the reasons for its manufacture and how it got into the possession of Bishop Juan Rodriguez de Fonseca of the Burgos Cathedral in Spain, are currently unknown. This lack of information contributes to the appeal and mystery of the tapestry, which is enhanced by its complex subject matter. Direct all correspondence to Nathalie Rochel at rochel@fordham.edu.

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The medium of tapestry has suffered from its location outside of the three main art forms most commonly praised and studied in art history, namely painting, sculpture, and architecture. Scholars such as Thomas Campbell and Laura Weigert have noted common problems of various approaches in the field. Tapestry study is limited by poor documentation on the complex contributions of the makers of a tapestry and a lack of surviving works in excellent condition. The Nativity is one such case where suggested approaches like patronage study or an analysis of the specifics of the tapestry’s production and use cannot be pursued due to a lack of information. Instead, an analysis of the tapestry would benefit from a discussion related to its compositional style, another subject of issue within tapestry study. In general, tapestries are often organized into a linear progression of style that advances from the flatness of medieval tapestries to the Renaissance creations of naturalistic space in later examples. The Nativity is one of the types of tapestries that defies this narrative; it is an example that is labeled medieval by the Metropolitan Museum of Art but that dates very late in the period, to the early sixteenth century, when some tapestries are considered to belong to the Renaissance. It is evident that there must be more to the elements of style seen in The Nativity, since they have persisted from the early Middle Ages and may indicate a conscious decision on the part of the artist to continue using the style when other artists were beginning to use naturalistic depictions of space. Michael Baxandall, in his chapter “The Period Eye,” introduces the concept of visuality, which defines viewing and comprehension as varying from culture to culture. Relating this notion to the pictorial organization of the tapestry can be understood both through an attempt to understand the medieval experience of viewing as well as looking at how the experiences of the culture may have informed the artwork. In the case of The Redemption of

The narrative begins in the upper left corner of The Nativity but does not read from left to right, as it is arranged in a complex composition. While the tapestry is divided into two main registers composed of compact scenes, the story could continue in either the scene below or the scene to the right. This first scene shows reconciliation in a field between Christ and the personifications of the Virtues: Justice, Peace, Mercy, and Truth, along with Humility and Charity. Most of the important figures, like the Virtues, are labeled and identifiable by an attribute, such as a sword for Justice. Continuing to the right, a group of figures is assembled beneath a canopy on a grassy hill. Mercy and an enthroned God prepare the angel Gabriel for the Annunciation as Humility and Justice look on, and Truth holds a small image of Mary and the Christ Child. In a small scene taking place further in the background and to the right, Joseph and Mary pay taxes in Jerusalem, which is depicted as a medieval city with battlements. Directly in front of this is a large octagonal temple; the marriage of Mary and Joseph is shown on
organization of the narrative and its representation of space. In order to understand the significance of its composition, it is necessary to consider the norm from which it deviates. Art historians have traditionally ex- talled front of the scene one-point perspective was considered a manifestation of Renaissance ideals. The Nativity, in contrast to the rational and naturalistic depictions of space in typical Renaissance artworks, has a non-naturalistic depiction of space. The tapestry combines nine separate scenes into a single composition. Space within the tapestry is flat; the only sense of spatial recession and volume comes from the use of smaller figures to indicate the background and the overlapping of the figures and scenes to create depth. Even the methods of composition are non-systematic because figures presented as if in the same foreground are sometimes different sizes. This approach results in a landscape that is difficult to read as coherent and unified. There is also no pattern to reading the tapestry; while the story starts in the upper left-hand corner, the narrative does not follow a strict left-to-right or even diagonal pattern. For instance, if the story is read straight across the top, the Annunciation comes before the marriage of Mary and Joseph. In addition, the tapestry also uses a simultaneous narrative, a type of narrative in which the artist creates a concurrent depiction of successive moments from a story in a single scene. This lack of narrative direction within the scenes as a whole creates the sense of all the scenes happening at the same time. There is also no clear central focus to the tapestry, which adds to this effect. While the marriage of Mary and Joseph appears to be in the center, it is located slightly off-center, to the right. Each one of the three diagonal scenes is shown as if it is the central image, resulting in the effect of having multiple viewpoints instead of having all the scenes taking place from a single perspective. In addition to having no central focal point, the scenes are all presented in different sizes. The largest scene with the biggest figures is the one in the bottom left with the shackled Man, which unbalances the composition. The rectangular pavilion with the Annunciation also creates a sense of imbalance because its large size is only tempered with three smaller scenes on the other side. Even the slight off-centered position of the marriage disrupts the composition. As a result of this lack of balance, the viewer’s eye travels around the tapestry. The composition avoids becoming too chaotic with the use of strict divisions between each scene, all of which are either enclosed within a structure or located outside, defined by a natural barrier.

Many of these visual characteristics can be located within a style typical of the Brussels school of tapestry weaving around the late fifteenth and early sixteenth centuries. While the style is most indicative of its date and origin, it should be noted that there is no conclusive proof that the tapestry was created in Brussels. Designs typical of the Brussels school often emphasized “ornament, line, and pattern over perspectival effects.” This emphasis on pattern suggests the later medieval viewer’s desire for an engaging design instead of one that imitated reality. In The Nativity there is a large amount of detail—for instance, in the eye-catching folds in the costumes as well as other decorative elements, like the intricate structures and pattern-like flora. The Nativity also represents some staples of tapestry composition that were prominent in the fifteenth century and continued into the sixteenth, such as an “avoidance of blank space,” the use of framing devices to link narrative episodes, and the use of magnificent costumes, and an “overall emphasis on narrative and anecdotal detail at the expense of coherent visual structure.” These characteristics cannot simply be explained by the limitations of the medium. While it is difficult to recreate the illusionistic effects seen in paintings with tapestries, some theologies as early as 1476, predate our tapestry, attempted to imitate panel paintings. This indicates that the stylistic formula seen in The Nativity continued to be used despite advances in weaving techniques and some weavers’ desires to imitate paintings. In order to gain a better understanding of this stylistic issue and the visual composition of the tapestry, it is imperative to analyze The Nativity with an understanding of the problems in the art-historical field regarding tapestries as outlined at the beginning of this article. Keeping in mind the concept of visuality, the continued use of the medieval style of pictorial organization seen in The Nativity may be the result of influences from a completely different medium, that of medieval theatre and its mystery plays. The name “mystery play” comes from the Latin minis- terium, meaning “service,” because the plays originated as part of church services particularly around Easter and Christmas. They were based on stories from the Bible, with the most popular dealing with the birth and resurrection of Christ. The plays were staged in their own special setting within the church known as a “mansion”; it is not known exactly how the mansions were arranged inside churches, but supposedly the interiors resembled outdoor markets. Eventually the clergy stopped acting in the plays and guilds took over, taking the plays outside into the churchyard, streets, or fields and lawns. According to Alexander Franklin, the plays were either stationary, with small stages known as “pageants,” or performed in a procession, where the pageants were put on wagons and the medieval viewer would wait at a specific station to watch the play go by. Each pageant represented a single scene and allowed different settings to be seen side-by-side. The construction of these miniature stages varied, from having drapery for walls to being open on all sides; most productions favored elaborate sets and costumes with labels to help identify characters. The plays were in vogue in the fifteenth and sixteenth centuries but soon afterwards lessened in popularity. A new type of medieval drama, the morality play, became the new fashion. Morality plays developed from the mystery plays but differed in that they moved away from the biblical stories, focusing instead on conflicts of hu- mankind.

In most of the scholarship on The Nativity and its related tapestries, scholars suggest that the narrative of the story may have originally been based on a mystery or morality play. Many elements of the story in The Redemption of Man can be found in countless different dramas, but no single source on which the tape-
some productions.36 Even the use of the elaborate costumes the figures, which derives from a common practice in medieval society. It is possible that in the course of designing the tapestry an artist used an actual play as a text, but it is also just as likely that a scholar simply created a new text from concept to form. It is more important than identifying an elusive, unknown play as the source of the figures is almost more than life-size, mimicking the closeness between the audience of a play and the stage. A common element described in many of the plays is their role in creating an interactive experience on the part of the audience.37 The Nativity participates in the line of the ground in the section of production. This also indicates the need to look at tapestry not as an art form produced in a vacuum, but to acknowledge the "ways in which tapestry overlaps with other media," such as theatre.39 Modern viewers must strive to avoid applying contemporary standards for art, like painting, to tapestries such as The Nativity, and work instead towards understanding the values of the artform in terms of the medieval cultural context. The tapestry of The Nativity (and The Redemption of Man series as a whole) and its connection to the influences of medieval theatre is only one of many examples that demonstrates the relationship between culture, experience, and artwork. Considering the fact that The Nativity is typical of many late medieval tapestries, it is possible that these pictorial conventions of the time, which encourage viewer interaction and present a lively space, are a result of the general outlook of people in regards to theatricality. Weigert has noted that the increase in quantity and popularity of mystery plays from the fourteenth to sixteenth century corresponds to the expansion of the tapestry industry.38 The compositional forms that persisted until the early sixteenth century may have continued due to the medieval viewers' preferences for a similar theatrical experience with tapestries. There are very rare but noted occasions that strengthen the argument for a cultural influence by medieval drama; plays were staged based on tapestries and at least one pageant designer was commissioned to design tapestries.39

This small hint at the exchanges between the world of medieval theatre and tapestry production suggests an encompassing cultural attitude that on some level equated both artistic and theatrical production as well as the importance of viewer activation of a work.

For the modern person with preconceived Albertian notions about art and tapestries, it may be impossible to fully appreciate and comprehend the experience of the medieval viewer when looking at a tapestry like The Nativity. Still, the connection between The Redemption of Man series and mystery plays suggests one new method of understanding medieval tapestries, not as a lesser art form but as a sophisticated medium meant as more than just decoration. The Nativity, in its similarities to mystery play productions, moves towards becoming a performative art with the interaction of a viewer. What might be interpreted as a precursor to the more realistic depictions of space is in reality an engaging composition at a high point of tapestry production. This also indicates the need to look at the Nativity not as an art form produced in a vacuum, but to acknowledge the “ways in which tapestry overlaps with other media,” such as theatre.40 Modern viewers must strive to avoid applying contemporary standards for art, like painting, to tapestries such as The Nativity, and work instead towards understanding the values of the artform in terms of the medieval cultural context.
Attitudes towards Immigration Reform in the United States: The Importance of Neighborhoods

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Americans are greatly divided over immigration reform. Public opinion literature provides multiple explanations for these attitudinal differences. One contention in the literature is that the amount of ethnic diversity in one’s neighborhood affects mass attitudes towards immigration reform. Within this literature, some scholars argue that ethnic diversity triggers more negative attitudes towards immigration. Others posit that ethnic diversity is associated with positive attitudes towards immigration. In this paper, I seek to contribute to this debate by exploring the role of ethnic diversity in one’s neighborhood in shaping public attitudes toward immigration reform. This study is based upon semi-structured interviews with thirteen human subjects conducted in November 2010. The results reveal that individuals residing in ethnically homogenous towns are more likely to support a more liberal immigration reform. These results advance our understanding of how exposure to ethnic diversity influences attitudes towards immigration. These findings provide policymakers with some insights into how to build public support for immigration reform in various neighborhoods.

Introduction

In 2010, Americans ranked immigration fourth among the most important problems facing the United States (Morales, 2010). Immigrants from around the world choose to settle down in the United States in pursuit of something that their home country could not offer. However, not all US-born Americans appreciate the influx of immigrants. Consequently, there is a constant debate in the policymaking community about the extent to which the United States should “open its doors” to foreigners. On one hand, some analysts fear that excessive immigration may have detrimental effects on the economy. According to the Center of Immigration Studies, the fiscal cost of unskilled immigrants is estimated to be anywhere from 11 to 22 billion dollars a year, which offsets any economic gains from access to immigrant labor (Camarota, 2003). On the other hand, others claim that the American work force cannot function without immigrants. The American Immigration Law Foundation (2002), for example, concluded that Mexican immigration is integral to economic growth. Public opinion plays a prominent role in this debate over immigration reform. Most US-born Americans are able to relate their family history to immigration. Yet, many of them are unwilling to embrace the idea of continuous immigration.

Why are some individuals more likely to favor a less restrictive immigration reform than others? This paper seeks to answer this question by exploring the significance of neighborhod in shaping attitudes toward immigration reform. The findings suggest that individuals residing in ethnically homogenous towns, compared to those in ethnically diverse towns, are more likely to support the implementation of an immigration policy aimed at increasing the number of legal immigrants. The data from semi-structured interviews indicate that individuals residing in ethnically diverse towns developed a sense of frustration with immigrants, while those without much firsthand contact with immigrants held more accepting views towards immigrants. This study seeks to contribute to existing literature by illuminating citizens’ reasoning behind their attitudes toward immigration reform.

In this paper, the key terms are defined in the following manner. The term immigration is used to describe legal immigration as opposed to illegal immigration. In addition, the term liberal immigration reform refers to an overall increase in the amount of immigrants who are allowed to enter the country legally and are granted citizenship. The word native describes anyone who was born in the United States. Finally, the phrase ethnically homogenous town refers to towns that are mainly composed of Caucasians and towns that have a small percentage of recent immigrants.

This paper proceeds as follows: The first section discusses current debates in the literature on attitudes towards immigration reform. The second section describes the research methodology and socio-demographic background of the respondents. The third section presents the empirical findings. The paper concludes by specifying policymaking implications of these findings and pointing out limitations of this research.

Theoretical Background

Over the past four decades, scholars have analyzed the role of economic, political, and cultural factors in explaining support for immigration reform (Espenshade & Hampstead, 1995; Fenelley & Federico, 2007; Wilkes et al., 2008). Numerous attempts have been made to test the effects of education, income, ideology, party affiliation, and culture on attitudes toward immigration. In recent years, the impact of contact with minorities has attracted academic attention. Yet, this research has produced mixed results.

In the 1970s and the 1980s, researchers devoted considerable attention to the impact of economic factors on support for immigration reform (e.g., LeVine & Campbell, 1972). Neorestrictionism emerged in the United States during that period because of concerns with the state of the economy. Proponents of the neorestrictionist view argued that the biggest problem caused by immigrants was economic in nature. A major concern was that immigrants would take jobs away from natives, contributing to a greater level of unemployment. In support of this view, Mayda (2006), for example, finds that the state of a country’s national economy and immigrant-to-native skill ratio influenced attitudes toward immigration. A related argument in the literature is that income and education are positively related to tolerant attitudes toward immigration. According to the labor market competition hypothesis, most complaints about the influx of immigrants are made by individuals at the bottom of the socioeconomic ladder, because low-skill and low-wage native workers have occupational characteristics similar to those of today’s new immigrants (Abowd & Freeman, 1991; Borjas & Freeman, 1992; Espenshade & Hampstead; 1995 Simon, 1987). This threat may exist only for certain subgroups, which, as a result, makes it harder to capture empirically (Ayers et al., 2009).

By the same token, previous research suggests racial undertones in attitudes toward immigration policy (Ayers et al., 2009; Dustmann & Preston, 2004). According to the ideological model, attitudes about immigration are driven by racism (Wilkes et al., 2008). Ayers et al. (2009) argues that immigration policy preferences are strongly influenced by racial resentment toward the racial groups of incoming immigrants. Similarly, Lovemann and Hofstetter (1972) conclude that certain ethnicities, such as Latinos, are perceived as undesirable in comparison to European immigrants.

In addition, the role of cultural factors has recently attracted academic attention. The cultural affinity hypothesis states that individuals who have close cultural ties as well as ethnic ties to their home country would be more likely to favor liberal immigration policies (Espenshade & Hampstead, 1995). In addition, those who have close relatives in other countries, especially relatives who would like to come to the United States, are more likely to support a more lenient immigration policy. For instance, Espenshade and Hampstead (1995) find that Hispanic, African Americans, and Asian Americans are more likely to be pro-immigration than non-Hispanic whites.

In contrast, the contextual interaction hypothesis focuses on proximity to minorities. Past studies have assumed that contact with minorities mitigates prejudice because prejudices are based on easily falsified beliefs (Allport, 1954; Ayers et al., 2009). According to Allport (1954), when groups are of equal status and when contact receives support from authority figures and the greater society, inter-group hostility is lessened. In addition, the greater heterogeneity of certain geographic areas is often associated with greater tolerance of diversity (Fennelly & Federico, 2007). It is assumed that contact with minority groups in neighborhoods facilitates social bonds and may introduce common goals between members of different ethnic groups.

Social bonds are critical to explaining immigration attitudes. Researchers find that individual contact with minorities reduces the approval of the deportation of
immigrants (Ayers et al., 2009; McLaren, 2003). In addition, empirical evidence indicates that living in areas with concentrations of Latinos and Asians is associated with more liberal stances on immigration among native residents (Fieldood & Morris, 1997). Some studies that employ direct measures of contact with immigrants show that individuals with low contact are more likely to support restrictive immigration policies (Fennelly & Federico, 2007). This adds to the idea that individuals living in ethnically diverse areas who encounter immigrants frequently are likely to support a more liberal immigration reform. However, recent empirical evidence challenges the validity of the contextual interaction argument. A study conducted by Ayers et al. (2009) concludes that living in neighborhoods with larger Latino concentrations decreased support of immigration. In addition, those living close to the Mexican border, such as in Texas or California, are more likely to support more restrictive immigration policies than Americans living in other parts of the country (Fennelly & Federico, 2007). Some researchers advance a realistic group conflict theory to explain why contact to immigrants might cause more negative attitudes towards immigrants. It is assumed that increased proximity may amplify ideological and material competition, which can accentuate divisions (Ayers et al., 2009; LeVine & Campbell, 1972). In other words, individuals may be more prone to reject a liberal immigration reform to protect their own beliefs and status. Negative sentiments regarding immigration can be understood as a defensive reaction to competition (Espenshade & Hemphosted, 1995).

This study seeks to engage in this debate by examining how ethnic diversity in one’s neighborhood shapes individual attitudes towards immigration. Although some research has been conducted on this topic, it is still debatable in the literature. This article aims to contribute to the literature by providing evidence that ethnic diversity in one’s neighborhood is an important factor in determining attitudes towards immigration reform.

Methodology

In order to understand how ethnic diversity in one’s neighborhood impacts attitudes toward immigration, I conducted semi-structured interviews with human subjects. According to Wengraf (2001), “semi-structured interviews are designed to have a number of interview questions prepared in advance but such prepared questions are designed to be sufficiently open that the subsequent questions of the interviewer cannot be planned in advance but must be improvised in a careful and theorized way.” The advantage of this research method is that it allows the interviewer to be developed throughout the interview. Written questionnaires, consisting mainly of close-ended questions, place constraints on the quality of data that could be collected for they prevent the use of follow-up questions. Quite often, however, respondents are hesitant to answer certain questions in this study, especially true for the questions pertaining to the potential job losses as a result of immigration. Therefore, in these instances, it was necessary to use follow-up questions to collect additional data, which is not typically allowed in written questionnaires. Because semi-structured interviews allow for a more “open” interview process, they are best suited to answer my research question.

The convenience sample was drawn. Thirteen individuals were interviewed in November 2010. The first five interviewees referred me to the remaining eight participants in the study. All of the participants were, at least, first generation immigrants and had basic knowledge about their ethnic background. They were between the ages of 18 and 22. Five of them were female. Six of the interviewees identified themselves with the Republican Party, the other six with the Democratic Party, and one respondent was not affiliated with any particular party. They were full-time students enrolled at Fordham University, New York University, Montclair State University, and Rutgers University. Many of the participants attended school in New York City and therefore were familiar with the locale. Most of the participants permanently resided on the East Coast, and one individual resided on the West Coast.

The sample included seven individuals who resided in ethnically diverse towns as Fort Lee, NJ; La Habra, CA; Miami, FL; and New York City. According to the census data, Fort Lee, New Jersey has the following ethnic composition: 62.8% Whites (7.3% - Hispanic), 31.4% Asian Americans, 1.7% African Americans (United States Census, 2010). The census data also confirm the racial and ethnic diversity of the other cities. The ethnic composition of La Habra is 63.0% Whites, 5.9% Asian-Americans, and 49% of La Habra’s population reported that they were of Hispanic descent. In contrast, Miami, Florida, 65.8% population reported that they were of Hispanic descent. Finally, the population of New York City, which was listed as a city by residence by one participant, consists of 44.7% Whites, 26.6% African Americans, and 9.8% Asian Americans. Of all New Yorkers, 27.0% are of Hispanic descent.

The remaining six individuals claimed that they lived in an ethnically homogenous, predominantly Caucasian town. One respondent, for example, resided in Newton, New Hampshire where the majority of the population, 96.2%, was white. Only 1.7% of the city’s population consisted of Asian Americans, and 2.2% were of Hispanic descent (United States Census, 2010).

In sum, the interview process consisted of approximately twenty open-ended questions (for a list of questions, see the Appendix). The interviews lasted from twenty to thirty minutes.

Findings

Based on the data from semi-structured interviews, this study challenged the assumption that individuals living in ethnically diverse towns are more likely to support a more liberal immigration reform than individuals living in ethnically homogenous, predominantly Caucasian towns. A close analysis of the participants’ responses revealed why such a trend was observed in the sample.

The results indicated that the respondents had some common understanding of the key terms. When the interviewees were asked to define the term immigrant, the common response was “somebody who moves to another country from his or her homeland.” Such initial responses, however, lacked any indication of how the respondents felt about immigrants.

Upon further probing, the findings revealed variations in attitudes toward immigration. When presented with the question “Do you support immigration?” all the respondents residing in ethnically homogenous towns answered in the positive, without any qualifications. In contrast, the respondents who resided in ethnically diverse towns expressed more skepticism about the influx of immigrants. One respondent from La Habra, California, an ethnically diverse area with a high percentage of Mexican, as well as other Latino, immigrants stated, “I think everyone deserves a chance; however, I support immigration to a limited extent” (Subject 6). This individual lived in La Habra for his whole life. In addition, he considered a second-generation American, being that his father is a Canadian immigrant.1 Yet, his place of residence and family background failed to produce the strong endorsement of liberal immigration policies. Another respondent from Fort Lee, an ethnically diverse town in New Jersey, reported lukewarm support for immigration: “I kind of both of them [immigrants] because the immigrants in my town hate everyone but themselves” (Subject 8). This participant also noted that she is a third-generation American with the majority of her family emigrating from Europe. The findings suggested that neighborhoods have a more pronounced effect on support for a less restrictive immigration policy than a recent record of immigration in the family histories of these participants.

Furthermore, this study found that the respondents living in ethnically diverse towns were likely to support a more selective process in allowing immigrants to enter the country. One respondent living in an ethnically diverse town consisting of many recent immigrants stated, “I support a less restrictive immigration reform. However, those who legally enter the country should be allowed to do so based on how qualified they are to live here” (Subject 4). Another respondent residing in an ethnically diverse town stated:

It depends. I do support [a more liberal] immigration reform but other reforms need to come with it. If a greater amount of individuals were to enter the country, I wouldn’t mind but the fact is, we need to maintain our ‘American’ identity. By this, I mean that in areas concentrated with different ethnic groups, it is important to respect their cultures while maintaining certain standards, such as English language precedence over other languages. Too frequently our national language is superseded by different languages” (Subject 8).

These findings challenged the contextual interaction hypothesis. If contact with minorities and greater heterogeneity in one’s neighborhood is supposed to account for a greater tolerance of diversity, then individuals living in ethnically diverse towns would be more prone to support immigration without qualifications, for immigration increases ethnic diversity. Yet, this assumption did not hold. Instead, the findings supported the hypothesis that increased proximity to minorities is associated with more restrictive attitudes towards immigration. One explanation for this trend is provided by realistic group conflict theory, stating that increased proximity to minorities may increase material and ideological competition.

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1 Second-generation American refers to “the children of contemporary immigrants” (Zhou, 1997, p. 64).

The survey data lend support to the realistic group conflict theory. The respondent (Subject 8), who resides in a very ethnically diverse neighborhood with a large number of recent immigrants and first-generation Americans, pointed out that he was bothered by the amount of recent immigrants in her neighborhood. According to Subject 8, the recent immigrants in her residence “hate anybody who is not them.” In addition, this respondent expressed the belief that the “American” identity was suppressed due to immigration. On numerous occasions, he mentioned the unwillingness of immigrants to assimilate as a reason for her lack of support for immigration thus supporting the theoretical argument about the significance of ideological competition. Additional support for realistic group conflict theory is provided by data from the interview with the respondent from La Habra. He specifically stated that he “did not want too many people to come in” and expressed a concern with overpopulation. Excessive crowding in one area could cause material competition amongst individuals for certain resources, such land and public housing, thus creating conflict between groups. Therefore, this respondent’s concern with overpopulation parallels with the idea set forth by realistic group conflict theory.

Next, the findings indicated that those who resided in an ethnically homogeneous town were more likely to support a less restrictive immigration reform. One respondent, from Newton, New Hampshire, stated that he was in favor of immigration because his “ancestors were all immigrants” (Subject 1). When this individual was further questioned about his ethnic background, he had difficulty tracking his origins to any specific ethnic group. Instead, he proudly stated that he was American. As a resident of Newton, he correctly estimated the percentage of immigrants in his town. He also noted that he did not have much interaction with them. Another individual from an ethnically homogenous town stated that he “would like to see less restrictions” on immigration (Subject 3). As a high school student, he went to a private preparatory school where he did not have much interaction with recent immigrants. This respondent expressed the belief that the “American” identity was suppressed due to immigration. On a macroeconomic level, to remedy such intolerance of immigration, the government could allocate more funding to provide education and jobs to recent immigrants. When immigrants are of the same status as natives and are driven to reach common goals, natives are more likely to accept the idea of immigration.

In sum, the empirical evidence derived from semi-structured interviews challenged the argument that ethnic diversity in one’s neighborhood promotes support for more liberal immigration reform. The findings showed that respondents from ethnically homogeneous towns who did not have a lot of contact with recent immigrants were more likely to support liberal immigration policies.

Conclusion
The findings supported the argument that individuals who reside in ethnically homogeneous towns are more likely to support liberal immigration reform than individuals who reside in ethnically heterogeneous towns. The results showed that respondents from ethnically diverse towns were more likely to place restrictions on immigration, indicating their skepticism about the positive effects of increased immigration. The empirical evidence documenting that individuals with the physical proximity to immigrants appeared to be somewhat intolerant of such diversity suggested that the contextual interaction hypothesis did not hold. In contrast, these findings provided empirical evidence in support of the realistic group conflict theory.

Since the main issue underlying realistic group conflict theory is ideological and material competition, policymakers might reduce the magnitude of such competition by fostering dialogue among recent immigrants and US-born Americans. In particular, educators can raise American’s awareness of multiple effects of immigration on their communities and create opportunities for students’ exposure to ethnic and racial diversity in their neighborhoods. At Fordham, for example, courses with a service learning component can bring students closer to the neighborhoods in which they reside. On a macroeconomic level, to remedy such intolerance of immigration, the government could allocate more funding to provide education and jobs to recent immigrants. When immigrants are of the same status as natives and are driven to reach common goals, natives are more likely to accept the idea of immigration.

This study has some limitations. The sample consisted of only college-aged students, which is not representative of the general population. This is especially problematic because older individuals tend to have more conservative views on immigration which could have provided more data on attitudes towards immigration reform. In addition, the convenience sample was quite small. Only 13 individuals were interviewed, which does not allow me to make generalizations about the student population in the United States. Further research is necessary to arrive at stronger conclusions about the effects of ethnic diversity in one’s neighborhood on attitudes toward immigration.

References

Appendix. Question Wording
How old are you?
Political Party Affiliation: Which political party do you identify with?
Residence (City, State): Where do you live?
Could you describe the neighborhood in which you grew up?
What type of setting is it?
Have you lived there your whole life?
How ethnically diverse is it?
Do a lot of recent immigrants or first generation Americans live in that neighborhood?
How do you feel about the number of immigrants in your neighborhood?
Define the word “Immigrant.”
Do you agree with the idea that immigrants take away jobs?
Do you support the idea of immigration?
What is your level of support for immigration reform? Why?
How do you feel about the number of immigrants in NYC?
How do you feel about the Arizona Law?
Hypothetically speaking, if you were elected into political office, what would your political stance be about immigration?
Can you state your ethnic background?
Which generation are you?
The Spontaneous Formation of Selenium Nanoparticles on Gallic Acid Assemblies and their Antioxidant Properties

Gallic acid (GA) is a naturally occurring plant phenol known for its anti-inflammatory and antioxidant properties. In this work, we probed the molecular self-assembly of GA for the development of GA-based nanocomposites for potential device fabrications and enhanced antioxidant applications. We found that the formation of GA nanostructures was pH dependent. Further, we examined the interactions of selenite with GA and subsequently examined the biomimetic formation of selenium (Se) nanoparticles. We found that in the presence of selenite, the yield of nanoparticles was significantly higher, and selenium nanoparticle coated nanofibers were formed. The ability of the nanocomposites to scavenge free radicals was also explored. Thus, we have developed a new family of Se nanoparticle coated GA nanofibers, which could not only be applicable as potent antioxidants at the nanoscale but may also have potential applications in optoelectronics and sensors.

Introduction

Nanomaterials have been gaining popularity in recent times due to their wide range of applications in the development of new materials for storage, optoelectronics, medical diagnostics, sensors, and alternative energy.1 The potential for nanomaterials to be utilized in a plethora of applications often stems from their ability to self-assemble into supramolecular structures, such as nanotubes, nanofibers, nanocrystals, nanorods, nanocapsules, and nanowires.2 These nanosstructures form the basic building blocks of nanodevices by the bottom-up approach. Sufficiently, self-assembly begins at the atomic level, where it relies upon chemical complementarity in order to allow materials on the molecular level to come together and form higher ordered structures. Non-covalent interactions, such as hydrogen bonding and ionic interactions, hydrophobic interactions, Van der Waals forces, and π-π stacking interactions have been known to direct the formation of the aforementioned supramolecular nanostructures.3 Although these forces are individually weak, they work in tandem to direct the formation of the resulting hierarchical structures, and are seen ubiquitously throughout nature in biomolecules such as proteins, nucleic acids, lipids, and phytohormones. In this work, we explored the formation of nanostructures of the plant polyphenol Gallic acid (GA) and examined its potential to direct the formation of selenium nanoparticles. The rationale being that, at the nanoscale, the properties of GA may be significantly altered compared to bulk materials due to size and shape control. Gallic acid (3,4,5 – trihydroxy-benzoic acid) is naturally found in various plants, fruits, and foods such as gallnuts, oak, green tea, grapes, strawberries, pineapples, bananas, lemons, and apple peels.4 In nature, GA exists in two forms: either in its free state or as an ingredient of tannins,5 namely gallotannin.6 Previous studies have indicated a number of biomedic applications for GA due to its antibacterial, anti-viral,7 anti-inflammatory,8 and antioxidant properties.9 In addition, GA has been shown to also portray anti-cancer activity in a multitude of cancer cells such as leukemia, prostate, lung, gastric, colon, breast, cervical, and esophageal.10 A variety of metal nanoparticles such as Ag, Au, Pt, and Pd have been synthesized, and GA specifically has been utilized to form Au and Ag nanoparticles.11,12 However, to our knowledge, no study has been carried out to examine the biomimetic formation of GA – Se nanocomposites. It would be advantageous to develop GA – Se nanocomposites as it might lead to the formation of highly potent antioxidant materials, due to the inherent biological properties of GA and Se individually. The antioxidant abilities of Se are believed to be a result of selenoenzymes such as selenium-dependent glutathione peroxidases, which prevent free radical damage to cells.13 This property is of prime importance to the biomedical field, particularly in the area of cancer prevention.

Other advances in the area of selenium based nanotechnology stem from its high photocconductivity; catalytic activity for hydration and oxidation reactions;14 as well as its high piezoelectric, thermo-electric, and nonlinear optical responses— all of which can be applied to systems such as solar cells and rectifiers. In the past, Se nanoparticles have been synthesized utilizing a variety of methods, including using the redox reaction of selenourea and peroxyxynitrite.15 It has also been reported that the decomposition of sodium selenosulfate using acids in solutions of surfactants (sodium dodecylsulfonate, cetylpyridinium chloride) or certain polymers (sodium polyphosphate, gelatin, polyvinyl alcohol, polyethylene glycol) allow for the formation of colloidal Se nanoparticles.16 This allows for a more uniform size distribution.

While the above methods can be used to synthesize Se nanoparticles in a fairly narrow range of diameters, they require harsh reducing agents or stabilizers.17 The recent surge in the development of environmentally friendly synthetic methods has led to the development of biomimetic methods, which allow nanoparticles to form spontaneously,18 and provide control over the formation of size, structure, orientation, and shape of the resulting nanoparticles. This could lead to numerous possibilities for designing nanoparticles with very specific attributes. It has been reported that the protein bovine serum albumin (BSA) is involved in the formation of Se nanoparticles when selenium precursors were combined with BSA and hydrazine in a 1:1 ratio at 85°C in an aqueous solution, forming selenium nanobars; whereas in a 1:2 ratio, nanospheres were formed.19 Thus, the concentration of the Se precursor, in the presence of the stabilizer, dictated the shape of the nanoparticles formed. Further, it was found that changing the temperature, the shape directing agent, as well as the pH value allowed for control over the formation of the nanoparticles. Herein, we have examined the self-assembly of GA as well as the growth of Se nanoparticles in the presence of GA. We also examined the radical scavenging efficacy of the nanocomposites.

Materials and Methods

Materials

2,2-diphenyl-1-picrylhydrazyl (DPPH), dithiothreitol (DTT), and sodium selenite were all purchased from Sigma Aldrich. Buffer solutions of various pH values were purchased from Fisher Scientific. Gallic acid was purchased from Acros Organic.

Methods

SELF-ASSEMBLY OF GALIC ACID

The growth of GA nanostructures was probed at different concentrations (3 mM – 20 mM). The effect of pH was studied in a range of 2-9. The structures were allowed to self-assemble for a duration of one to four weeks, at which point they were centrifuged and washed thrice with distilled water. Supernatant was removed via micropipette before analysis.

GROWTH OF SE NANOPARTICLES IN THE PRESENCE OF GALIC ACID

GA solution was prepared at different concentrations (3 mM – 20 mM) in pH 5, 7, and in distilled water. Sodium selenite was added to the GA solution in a 1:1 ratio. The reducing agent dithiothreitol was added dropwise (≈10 μL) until a brick red color was observed. The formation of nanoparticles was monitored over a period of twenty-four hours using fluorescence spectroscopy, followed by centrifugation, washing solution twice, and removal of supernatant via micropipette before analysis.

DPPH RADICAL SCAVENGING ASSAYS

Studies were carried out with selenium nanoparticles bound GA nanostructures as well as on GA nanofibers alone. For the assays, the concentrations of GA nanofibers as well as the GA fibers coated with Se nanoparticles was varied from a range of 1.0 mM – 3.0 mM. The concentration of DPPH was kept constant at 0.75 M and the concentration of GA was varied from a range of 1.0 mM – 3.0 mM. The mixture was kept in a sealed vial at room temperature for analysis.

Figure 1: AFM images of self-assembled GA nanostructures grown at a) pH 5; b) pH 7.

The authors thank Dr. Arni Tsvetkov and Dr. Karl Fath at the Queens College (CUNY) Core Facility for Imaging, Cell and Molecular Biology for the use of the transmission electron microscope and the NanoDrop 2000 spectrophotometer. S.B thanks the Fordham College Undergraduate Research Grant for financial support. The authors would like to thank Brian Williams for his assistance with the DPPH assay. Direct all correspondence to Dr. Ipsita Banerjee, Department of Chemistry, Fordham University, Bronx, NY 10458 (Banerjee@fordham.edu).
by addition of buffer solution (pH 7.4). Immediately upon addition of the DPPH stock solution, absorbance spectroscopy readings were carried out for a period of one hour.

Characterization

FTIR Spectroscopy

Analyses of the GA monomer and self-assembled GA were performed using Matteson Infinity IR equipped with DIGILAB, Excalibur HE Series FTS 3100 software. The washed samples were dried, mixed with spectroscopic grade KBr, and pressed into pellets. The measurements for the samples were carried out at 400-4000 cm⁻¹.

UV Vis (Absorbance) Spectroscopy

UV Vis spectroscopy was carried out using a Thermo Scientific NanoDrop 2000 spectrometer. Readings were taken at a wavelength range of 190 nm to 700 nm using a 1-2 μL solution. A buffer solution was utilized as the solvent. All samples were repeated in triplicates.

Atomic Force Microscopy

The samples were centrifuged and washed twice using distilled water. The supernatant was removed using a 1-2 μL solution. A buffer solution was utilized as the solvent. All samples were repeated in triplicates.

Fluorescence Spectroscopy

Analyses of the presence of Se nanoparticles in various GA solutions were carried out using a John Yvon Fluoromax 3 fluorimeter. Samples were excited at 597 nm.

Results and Discussion

Growth of GA nanostructures

The GA moiety contains a phenolic ring system as well as three hydroxyl groups and a single carbonyl group, making it a pH sensitive molecule potentially capable of aromatic stacking interactions under appropriate growth conditions due to its ring system. Self-assembly processes involving a range of aromatic ring systems such as azopyridine side chain polymers, tetra-aryl derivative of bimesityl, and different linear triblock copolymers of poly(tetra-butoxyxystrene)-b-polystyrene-b-poly(vinylpyridine) have been investigated.

For example, in the case of phenolic -OH groups in bimesityl derivatives, various packing motifs were formed via self-assembly, wherein the helical motif was the predominant form observed. In contrast, the carbonyl groups mainly form a dimeric catemeric motif. In the case of triblock copolymers, the addition of pentadecylidylenophenol and/or nanododecylphenol allowed for cylindrical assembly. Thus, aromatic residues play an important role in the self-assembly process due to stacking interactions. Phenolic ring systems have also been reported to play vital roles in the self-assembly of long and hollow peptide nanotubes of Trp-Phe, due to π-stacking interactions. Therefore, GA is primed to be an ideal molecule for the formation of unique nanostructures via self-assembly. In fact, Faggi and coworkers found that the synthesis of fluorous derivatives of GA self-assemble into nanofibers or balls. It was seen that the semi-perfluorinated chains played a vital role in the aggregation.

The growth of GA nanostructures was probed by AFM and TEM. When grown under mildly acidic to neutral conditions (pH 2-7), we observed a high propensity of nanospheres (Figures 1a and 1b). However, when grown at pH 7, nanospheres larger in diameter (>500 nm) were obtained. It was observed that GA showed color changes, which were dependent on the pH in which it was grown. Specifically, at pH 5 a yellow-orange color was observed while at pH 7, it turned dark brown. This demonstrates the potential use of GA as a pH sensor. The pKₐ values of GA are 4.10 and 8.38, indicating that it undergoes step-wise deprotonation as the pH increases. At elevated pH values, there is a higher propensity of negative charges, which is inhibitory to the self-assembly due to repulsion. This is consistent with our results, as the most abundant supramolecular structures were observed at lower pH values. Mechanistically, this confirms that hydrogen bonding plays a pivotal role in the self-assembly process, wherein at lower pH, hydrogen bonding is higher. The proposed self-assembly of GA at low pH is shown in Figure 2.

FTIR spectroscopy was also utilized to further confirm the formation of self-assembled nanostructures. As seen in Figure 3, in the case of the GA monomer, the hydroxyl group peak is observed at 3385 cm⁻¹. However, in the case of the nanostructures, the peak is shifted to 3396 cm⁻¹, most likely due to hydrogen bonding intermolecularly with other -OH groups and with carbonyl groups of GA moieties in the vicinity. In addition, strong peaks are observed at 3054 cm⁻¹ and 2990 cm⁻¹ due to the presence of hydrogen bonded carbon atoms and aromatic C-H stretch of phenolic groups. The C=C ring stretch is shifted from 1655 cm⁻¹ to 1652 cm⁻¹ in the case of the nanostructures. An intense C=O stretching peak at 1691 cm⁻¹ is also observed at 1425 cm⁻¹ in the case of the nanostructures, which are shifted compared to the relatively less intense peak at 1423 cm⁻¹ in the case of the monomer. These results further confirm the formation of nanostructures.

Formation of Se Nanoparticles in the Presence of Gallic Acid

In the presence of Se ions, we observed a remarkable transformation in the growth of the nanostructures, as nanofibers of uniform diameter 50-75 nm were formed upon incubation with Se within one week at pH 7. Depending on the growth period, the nanofibers were an average of 5-10 μm. This is most likely because selenium ions form complexes with GA. Previous studies have shown that a 1:1 reaction of iron (III) and GA forms a binary complex, where the Fe is complexed with GA via the hydroxyl groups. It is likely that similar interactions between GA and Se+ occur, where the Se ion complexes with GA. The proposed structure for formation of the complex is shown in Figure 4.

The formation of GA-Se complexes was also confirmed visually, wherein a brown color was observed upon formation of the complexes. Furthermore, FTIR spectroscopy of the complexes showed that the peak at 570 nm was red shifted by 20 nm, most likely due to coordination with GA. Since Se successfully bound to GA, resulting in the formation of nanofibers, we explored the coating of nanofibers on the GA nanofiber templates. Thus, DTT was added to the GA nanofibers complexed with Se in order to induce the formation of Se nanoparticles. We observed a color change to brick red, thus confirming Se nanoparticle formation. TEM analyses revealed that the quantity and organization of nanofibers is much greater in the presence of Se nanoparticles, (Figure 5) indicating that interactions with Se accelerate the growth of the nanofibers, due to binding interactions between Se
The 2,2-diphenyl-1-picrylhydrazyl (DPPH) Radical Scavenging Assay

The development of antioxidant materials to quench reactive oxygen species (ROS) is essential because of the damage caused by ROS in the body, which plays a role in the development of cancer, cardiovascular disease, 26,27 malaria anemia, 28 and age-associated health problems. 28 The DPPH radical scavenging assay has been effectively utilized to ability of the phenolics to transfer an H atom to a free radical and is thus a means of measuring a system's capacity to serve as an antioxidant in the body. 29 Past studies have utilized the DPPH assay to measure the antioxidant ca-

Conclusions

We have developed a new family of GA based nanomaterials. We found that the growth was dependent where, in general, self-assembly occurred in one or a few steps. Further, the nanoparticles were formed biometrically over time in the presence of GA, leading to the formation of GA-Se nanocomposites. Complexation with Se resulted in a significant alteration in the shape of GA nanoparticles from nanospheres to nanofibers. The results were confirmed by various spectroscopic and microscopic methods. Finally, we examined the antioxidant abilities of the nanocomposites using the DPPH radical scavenging assay, and the results indicated that Se nanoparticle coated GA nanofibers could potentially work as potent antioxidants.

References

“A Power Beyond the Reach of Any Magic”:

Mythology in Harry Potter

Daniella Rizza, FCRH ’11

J.K. Rowling’s Harry Potter novels have over the last decade become a worldwide phenomenon, but why? It is perhaps because of the mythical elements that underlie Harry’s story, particularly the myths of the child and the hero. The Harry Potter novels both incorporate the standard myths of the child and the hero, accounting for the series’ immense ability to grab the reader, and update these myths, making Harry’s quest even more accessible to the modern audience in its rejection of a high-born, kingly hero. Instead, the series exalts a hero that destiny does not create whose quest is more democratic, necessarily involving collaboration with many others.

In his discussion of the myth of the child, Jung claims “the child in mythology represents ... the archetypal child, who symbolizes life’s possibilities.” Jung argues that the goal of childhood, individuation, which is completed “from the synthesis of conscious and unconscious elements in the personality.” The end result of individuation is what Jung calls the Self, “this wholeness that transcends consciousness.” The way this unresolved inner connection with the unconscious that has been lost. “The Killing Curse bounced back upon Voldemort and seemingly killed him. Harry’s ability to survive this attack from the wizard so feared that wizards cannot even utter his name certainly reflects the supreme powers associated with Jung’s ‘child’ and Campbell’s ‘hero’s childhood’.”

At the surface level, Harry seems to match up to the implications that Jung and Campbell make about a special child of some sort of high birth or prodigious inborn skill. The series begins with an infant Harry, who has just inexplicably survived a Killing Curse cast by Lord Voldemort directly after Voldemort kills Harry’s parents, Lily and James Potter, with the same curse. For “eleven years,” Voldemort and the Death Eaters, his followers, continued to terrorize and kill many people in order to establish a world order where wizards would dominate Muggles, the non-magic people from whom the wizarding world has seldom rested content to regard the world’s great powers as mere human beings who broke past the horizons that limited their fellows and returned with such boons as man with equal faith and courage might have found.

Harry became the only known survivor of the Killing Curse, seemingly defeating Lord Voldemort, the most evil wizard of all time, in the process. Harry’s status as a concomitant symptom. “Jung heavily influences Campbell, on the other he possesses powers far exceeding those of ordinary humanity.” Jung heavily influences Campbell, but Campbell at times diverges from Jungian concepts in his book on the Hero with a Thousand Faces. Campbell does not elaborate upon or care much about the hero’s childhood—one such way in which he wanders from the monsters (the unconscious content), “Jung says that the goal of childhood, individuation, which is completed “from the synthesis of conscious and unconscious elements in the personality.” The end result of individuation is what Jung calls the Self, “this wholeness that transcends consciousness.” The way this unresolved inner connection with the unconscious that has been lost. “The Killing Curse bounced back upon Voldemort and seemingly killed him. Harry’s ability to survive this attack from the wizard so feared that wizards cannot even utter his name certainly reflects the supreme powers associated with Jung’s ‘child’ and Campbell’s ‘hero’s childhood’.”

Though Harry appears to have been provided with superior powers at birth, he in fact does not have the inborn skill or royal title which Jung and Campbell attribute to a child hero. As a wizard living in the Wizarding world, Harry is the equivalent of a “mere human being” who is not endowed with any spectacular powers. Compared to the world’s Muggle population, Harry is more than a mere human being, but as Harry’s case a magical shield preventing Voldemort’s spells from harming him. Unlike a king or god, Harry is not born into a position of power, but obtains what little power he has through the choices of others.

The adulthood of the hero’s life is of much greater significance for Campbell and Jung. Jung’s child must fight to establish consciousness, but his hero must then return to his unconscious in order to fulfill his quest. In his outline of “the typical struggle of the hero with the monster (the unconscious content),” Jung says that the hero “cuts off a portion of the viscera, the heart for instance, or some essential organ by virtue of which the monster lives ...” Thus he kills the monster, which then drifts to land, where the hero, new-born through the transcendent function ... steps forth.” Jung likens the hero’s quest to the human’s struggle to reclaim connection with the unconscious that has been lost. Campbell, who dismisses the idea of childhood heroism, provides a much more detailed account of exactly how the hero completes his mission. He breaks the hero’s quest into departure, initiation, and return. The hero, responding to a call to adventure which “signifies that destiny has summoned the hero and transferred his spiritual center of gravity from the pale of his society to a zone unknown,” sets forth from his home to enter a world apart from his own in which the quest takes place, performing some task to cross the threshold of adventure. This ends the first stage, separation. While in this new place, the hero undergoes a series of trials with the archetypes in order to become a hero of great potential. After “the hero wins his victory is won,” he “gains his reward,” usually sacred marriage, atonement with the father, or apotheosis. This ends the second phase, initiation. The hero must

I would first and foremost like to thank Father Martin Chase, S.J. for acting as my mentor, listening to all my ideas and worries, explaining the quixotic abstract mythological theories, and for reading and reviewing my many drafts. Dr. Susan Greenfield and Dr. Jude Jones also offered valuable insights which deepened my analysis even after I presented what I thought was my final draft. Finally, I would like to thank Dr. Mary Elser for encouraging me to write my senior thesis on this magical topic which met with much skepticism. Direct all correspondence to Daniella Rizza at rizza@fordham.edu.
then successfully return to whence he came to deliver the reward he has earned to the rest of his nation.

Harry’s adult hero quest officially begins when he is sixteen years old and in his sixth year at Hogwarts. At the close of his fifth year, Dumbledore tells Harry about the prophecy, which must be fulfilled since Voldemort acted upon it when Harry was a baby, marking Harry as his equal. Harry is now the only one who can defeat Voldemort, and he comes to accept that the prophecy will be fulfilled. Voldemort has likely created six Horcruxes. His quest is to locate and destroy all of Voldemort's Horcruxes before he can fulfill his final task of killing Voldemort; Dumbledore has begun the quest for him by destroying one, a ring which Voldemort’s grandfather, Marvolo Gaunt, owned, and has already begun searching for the next Horcrux. Harry decides to accompany Dumbledore for this trial, but when Dumbledore and Harry return from their mission, Professor Severus Snape kills Dumbledore, leaving Harry alone as the leader of this quest.

Harry’s call is a decision of whether or not to complete the task that Dumbledore began for him. After Dumbledore's funeral, Harry decides to answer that call, to remove himself from the expectation of protection, and to actively fight Voldemort, unlike their previous encounters in which Harry had merely escaped. Following Dumbledore’s example, Harry chooses “to fight, and fight again, and keep fighting, for only then could the prophecy be fulfilled.” Harry learns that Voldemort has likely destroyed the Horcruxes, as Ron proves.

While he is here, Harry works out the answers to the riddles of this place when he says, “This is, as they say, a trial.” He lay facedown, listening to the silence. He was perfectly alone. […] Nobody else was there. He was not perfectly sure that he was there himself.

A long time later, or maybe no time at all, it came to him where he was. He must be more than discouraged, though, because he was lying, definitely lying, on some surface. Therefore he had a sense of touch, and the thing against which he lay existed too.
Harry's final, decisive victory over Voldemort, toward her hand. The quest, according to Campbell, has already been completed because Harry's decision to die and his status as master of the Elder Wand make it so that Voldemort is no longer a threat to Harry or to his friends. Harry, the high-born, demigod hero, and in its place, the democratic era. Voldemort and his Death Eaters represent a monarchical and hierarchal society, while Harry is the representative of a new, democratic society, where all are equal and have the same psychological allure, but its deviances from typical myths make it a modern myth and thus even more relevant to—and reflective of—readers today.

Notes

4 Rowling, Deathly Hallows, 623.
5 Rowing, Deathly Hallows, 705.
6 Rowing, Deathly Hallows, 706.
7 Rowing, Deathly Hallows, 706-7.
8 Rowing, Deathly Hallows, 708.
9 Rowing, Deathly Hallows, 712.
10 Rowing, Deathly Hallows, 723.
12 Rowing, Deathly Hallows, 741.
13 Rowing, Deathly Hallows, 747.
14 Rowing, Deathly Hallows, 750.
15 Rowing, Deathly Hallows, 754.
16 Rowing, Deathly Hallows, 755.
A Canyon Apart: Immigration Politics and Hispanic Mobilization in Arizona

First, it is important to clarify terminology. In this paper, the term Hispanic will be used to refer to Americans and Arizonans of Latin American origin and extraction; it should be understood as functionally the same as Latino when used in the popular sense. One's assignment as Hispanic or Latino is primarily determined through self-identification and both identifiers are used by various scholarly sources and media outlets. In the context of Arizona, Hispanic will often, though not exclusively, refer to individuals of Mexican origin or ancestry, as the overwhelming majority of Hispanics in said state are in some way linked to Mexico. Moreover, there is a great deal of discussion of "Hispanic issues," an imprecise but necessary group of political issues historically linked to this group. These include, but are not limited to, immigration, bilingual education, and law enforcement practices. While it is naive and inaccurate to paint Hispanics, Arizonans, Mexican-Americans, or even two residents of the same block in Tucson with one broad stroke, for the purposes of this paper it will sometimes be necessary.

After its passage by the state legislature, the bill went to the desk of Republican Governor Jan Brewer, who ascended to the office following Democrat Janet Napolitano’s resignation to become President Obama’s Secretary of Homeland Security. While Napolitano had repeatedly vetoed enforcement-only immigration bills (Archibold, 2010a) and testified to the Senate that she would have vetoed this one (Gorman & Riccardi, 2010), Governor Brewer remained silent during the course of the bill's legislative debate. Local news sources suggested that she was split between chiefs and rank-and-file officers: while the Arizona Association of Chiefs of Police criticized the law as "problematic," the Phoenix Law Enforcement Association (the largest police union in the state) supported it (Johnson, 2010). Los Angeles Cardinal Roger Mahoney summed up the reaction of the U.S. Conference of Catholic Bishops when he blasted Arizona for "reverting to German Nazi and Russian Communist techniques whereby people are required to turn one another in to the authorities on any suspicion of documentation" (Watanabe, 2010). And, of course, the Phoenix Suns famously wore "Los Suns" jerseys in solidarity with Arizona’s immigrant community, broadening the court of public opinion ever more.

S.B. 1070’s fate, however, will likely be decided in a different sort of court. A number of advocacy organizations, ranging from the National Council of La Raza (NCLR) to the American Civil Liberties Union (ACLU), filed lawsuits against the law, but a suit filed by the Justice Department carried the most weight. In July, Judge Susan Bolton, a U.S. District Court Judge for the Federal District of Arizona, issued a preliminary injunction blocking a law they detested, and why non-Hispanic en masse according to one of her assistants, "running three-to-one in favor" (Phoenix News, 2010). Politics played a role in Brewer’s decision to veto the bill: she had challenged the August 24, 2008, Republican gubernatorial primary, and had damaged her bonafides among influential conservatives by advocating for a 1% increase in the state sales tax to avoid cuts in public services (Archibold, 2010a). With these considerations in mind, Governor Brewer signed S.B. 1070 into law on April 23, 2010.

Not surprisingly, the passage of S.B. 1070 caused a massive national uproar. Supporters claimed a victory for states’ rights and national security and a rebuke aimed at an inept and unconcerned federal government. President Obama dubbed the law "misguided" and worried that it would "undermine basic notions of fairness that we cherish as Americans, as well as the trust between police and our communities that is so crucial to keeping us safe" (Archibold, 2010a). Mexican President Felipe Calderon termed the law a "violation of human rights" which "opens the door to intolerance and hatred" (Booth, 2010). Law enforcement officers were split between chiefs and rank-and-file officers: while the Arizona Association of Chiefs of Police criticized the law as "problematic," the Phoenix Law Enforcement Association (the largest police union in the state) supported it (Johnson, 2010). Los Angeles Cardinal Roger Mahoney summed up the reaction of the U.S. Conference of Catholic Bishops when he blasted Arizona for "reverting to German Nazi and Russian Communist techniques whereby people are required to turn one another in to the authorities on any suspicion of documentation" (Watanabe, 2010). And, of course, the Phoenix Suns famously wore "Los Suns" jerseys in solidarity with Arizona’s immigrant community, broadening the court of public opinion ever more.
Judge Bolton based her opinion on the Constitution’s Supremacy Clause, under which immigration (along with other political issues) is delegated exclusively to federal authorities. She was also sympathetic to opponents of the state law, finding that “there is a substantial likelihood that officers will mistakenly arrest legal resident aliens,” and that Arizona was imposing a “distinct, unusual and extraordinary” burden on legal resident aliens that only the federal government has the authority to impose” (Archibold and N. Nakamura, 2010). Bolton ruled against the decision, and the case is working its way through the courts. The bills original sponsor, Senator Russell Pearce, expects it to be ultimately decided by the Supreme Court (Rau, 2010).

The next logical step in the analysis of S.B. 1070 is, unsurprisingly, where does the law come from? With anti-immigrant rhetoric a popular centerpiece of modern political, it would be expected that bills similar to S.B. 1070 would appear in state legislatures around the region. Surprisingly, however, this is not the case. While a few individual state legislators have voiced their support, Arizona’s law has not been replicated in the border region since its passage. The opinions of the other border-state politicians are significant, as theirs are the only states that can begin to approximate the state as a whole. Indeed, the nearly 700-mile border of Arizona contains 29.0% of Arizona’s population, some 1.7 million people out of a population of 6.1 million (US Census Bureau, 2008). Within this population, both of Hispanics and statewide, undocumented immigrants constitute a sizeable chunk of Arizonans: a Department of Homeland Security report from 2009 estimated that 460,000 undocumented immigrants (almost entirely of Latin American origin, and more than any other state have for California) reside in Arizona, meaning that undocumented immigrants constitute roughly 27% of Arizona Hispanics, and 7.5% of the state as a whole. Indeed, the nearly 700-mile long border between Arizona and Mexico has been the entry point for roughly 40% of all border-crossers from Mexico through much of this decade (Economist, 2006). Given these two figures, it is not surprising that illegal immigration is a highly publicized, visible issue in Arizona.

Further contributing to the significance and central status of immigration as a political issue in Arizona is the rapidly changing nature of the state. The massive growth that Arizona has experienced in the last thirty years has contributed to a constantly changing society as successive waves of newcomers (from north and south alike) have reinvented Arizona. It has grown faster than nearly every other state, quadrupling in population since 1970 (US Census Bureau, 2009). This growth has been attributable mainly to two sources. First and obviously, Hispanic immigration, particularly from Mexico, is an enormous contributor to Arizona’s population boom. But second, Arizona welcomed thousands of out-of-state, often out-of-region, non-Hispanic immigrants as well. This particular group is significant to examine the social strain Arizona underwent throughout the last decades as its population evolved. Arizona’s Hispanics find themselves in a unique sort of “demographic donut hole,” numerous enough that they are associated with immigration issues and highly present in the eyes of the rest of the state, yet not so numerous that they can meaningfully advocate policy changes or rebut aggressive legislation. Further contributing to this lack of influence is the poorly mobilized nature of this community and its relative lack of political engagement.

Another aspect of this growth in Arizona’s population is evident in the settlement patterns of newcomers: the state, for all intents and purposes, is remarkably segregated. Maricopa County, the state’s largest, is the most instructive example of this divide. Using the New York Times recently published “Mapping America” American Community Survey census tool, a cursory glance across the county underscores the extraordinary divide (2010). Most precincts in the city of Phoenix (the yet still within the county) are quite the opposite: most precincts are overwhelmingly Hispanic, with census tracts in densely populated eastern Phoenix approaching 90% Hispanic. However, the suburbs surrounding the city (yet still within the county) are quite the opposite: most precincts are overwhelmingly white. Outside of Maricopa County, this degree of racial stratification continues: Hispanics comprise huge majorities of several southern border counties, such as Santa Cruz County, which in 2008 was approximately 80% Hispanic. While in the northern part of the state, Hispanics are far more scarce; Cochise County is barely 12% Hispanic. Given this data, it is highly plausible that a white resident of Arizona is acutely aware of immigration as a political issue, and associates said immigration with Hispanic Arizonans. However, given the relative lack of social integration in the state, it is unlikely that that resident has many interpersonal relationships with Hispanics based solely on the perception of illegal immigration as a “problem.” Conversely, an Arizona Hispanic has relatively few natural outlets to develop social bonds with non-Hispanic Arizonans, as Hispanics are highly localized.

Though the entire border region grew quickly and reinvented itself dramatically in the past thirty years, its three states all have more well-established Hispanic populations and non-Hispanic populations with longer histories and stronger bonds with immigrants and with non-Hispanic Arizonans, among other things. These bonds prevent the sort of social stratification that enables socially-divisive laws like S.B. 1070 to pass with enormous support. In New Mexico in 2000, for example, fully 88% of adult Hispanics were native New Mexicans and therefore, American citizens by birth, demonstrating the longstanding influence and stability of that community (Garcia & Sierra, 2004). New Mexico’s Hispanic population is the second largest in the state, at 45% of the state’s total, and equal to that of whites. Though California and Texas do not have similarly high rates of native-born Hispanics (at 61% and 68%, respectively) each has a strong history of well-organized Hispanic advocacy (Pew Hispanic Center, 2004). In California, for example, “the post-World War II period spanned Unity Leagues that attacked discrimination and fought for greater political representation” (Navarro & Mejia, 2004), culminating in the return of Hispanic representation to the Los Angeles City Council in 1949 after seventy years absence. Similarly, in the 1960s Hispanic college students in Texas were remarkably organized, and simple to administrators to recruit more Mexican-American students, offer more ethnic-specific scholarships and grants, and establish courses and programs relating to the Mexican American experience (Navarro & Mejia, 2008). Advocacy for the needs of and challenges facing Hispanic communities in other border states was well established and remarkably organized for decades. A recent survey of most of the current residents of Arizona arrived in the region. Between 2000 and 2010, the population of Hispanics in Arizona increased by nearly 50% (more than any other border state), signaling the recentness of the arrival of many of today’s Hispanics. Thus, Arizonans lacked the same social and community bonds that make the other border states more socially cohesive and responsive to organized Hispanic advocacy.

In addition, however, to disadvantageous demographic and a less-than-cohesive history, another challenge facing Arizona Hispanics is a remarkably poor degree of political organization, resulting in greatly diminished political advocacy potential. At both the mass and elite levels, Arizona’s Hispanic population is not capable of leveraging its sizable numbers toward the advancement of political goals. The first, most basic issue is the enormous size of the Hispanic vote. Despite representing 29% of the state’s population, Hispanics made up only 16% of Arizona voters in the 2008 Presidential election (Lopez, 2008). Even taking into account the proportion of Arizona Hispanics who are ineligible to vote, Arizona Hispanics still failed to represent themselves strongly at the polls. Looking back on the 2000 election, Hispanic voter’s apathy is brought into even starker relief. Arizona’s ballot fea-
tured a proposition (Proposition 203) that would have ended bilingual education in public schools. Despite overwhelming opposition among Latino advocacy groups, Proposition 203’s presence “did not substan-
tially increase concern among the Latino elec-
torate” (Garcia & Sierra, 2004). Given these data, it is clear that Arizona Hispanics endemically fail to assert themselves at the polls.

The implications of Arizona Hispanics’ absence is felt in the dearth of Hispanic officeholders. The National Association of Latino Elected and Appointed Officials reported that, as of 2010, only 16% of the Arizona legis-
lature was Hispanic. In contrast, New Mexico’s legis-
lature is 44% Hispanic, California’s is 23%, and Texas’s is 20% (Spagat, 2010). While Hispanics’ representation in both Texas and California’s legislatures falls below their numbers statewide, they are appreciably closer than Arizona’s. These statistics illustrate why S.B. 1070 was able to pass the Arizona legislature with relatively little fanfare. Certainly, a higher proportion of visible Hispanic public officials would have helped drive pub-
lic opposition.

The implications of the lack of political mobilization of Hispanic voters are clear. Given their degree of under-
representation, both political parties in Arizona lack an incentive to aggressively seek out Hispanic prefer-
ces and craft appealing policy positions: Arizona Re-
publicans can win elections without appreciable His-
pianic support, while Democrats take Hispanic support as a foregone conclusion. New Mexico Republicans specifically recruited an Hispanic gubernatorial candi-
date, while California Democrats were able to survive the 2010 wave because of successful Hispanic-outreach efforts (Sharry, 2010). In Texas, of course, the most famous conservative Republican of the past century, George W. Bush, aggressively supported comprehen-
sive immigration reform in both Austin and in Wash-
ington, recognizing Hispanics as the future of his party in his home state. S.B. 1070, thus, is partially the result of a lack of Hispanic political engagement.

Two possible explanations for this failure of Hispanic voter mobilization are germane to Arizona and deserve brief treatment. First, Arizona’s S.B. 1070 provides a fascinating (if convo-
tentious) cross-section of society, politics, and culture in the state-federal divide, but also because it sheds light on the political forces that exist uniquely in Arizona. It is a striking combination of history, demographics, and social politics, which make such a law not only plausible but perhaps unavoidable. Furthermore, the failure of Arizona’s Hispanic population and its ad-
vocates to rally public opinion against it is indicative of the challenges of Hispanic political organization in Arizona. S.B. 1070 provides a fascinating (if convo-
tentious) cross-section of society, politics, and culture in America’s fastest growing region and among America’s fastest growing demographic. Its example will be in-
structive in identity battles for years to come.

Some have suggested that Proposition 203 in Arizona is an example of the “bogeyman” phenomenon (Wright, 2007). The lack of evidence that the proposition was harmful to Hispanics is suggestive of a sense that immigration is not a problem worth fighting over.

References


(Finnegan, 2009).  Generally speaking, Arizona today possesses many of the same political forces as Califor-
ia in the mid-1990s: a politically dormant but fast-
growing Hispanic population, public officials easily harnessing anti-immigrant furor, and near-total His-
an opposition to a controversial piece of immigra-
tion-related legislation. While there is no guarantee that S.B. 1070 will have the same galvanizing effect as Proposition 187, the parallels seem hopeful for Ari-
izona Hispanics.

Arizona’s S.B. 1070 is an important piece of legisla-
tion not only for scholars of immigration politics and the state-federal divide, but also because it sheds light upon the political forces that exist uniquely in Arizona. It is a striking combination of history, demographics, and social politics, which make such a law not only plausible but perhaps unavoidable. Furthermore, the failure of Arizona’s Hispanic population and its ad-
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Communications are short reports of original research that focus on highlighting an important finding that will likely be of considerable interest to others in the discipline.
Energy of Electrons in a Nanowire Subject to Spin-orbit Interaction

Ryan Brennan, FCRH ’11; Sheehan Ahmed, FCRH ’11; Dr. Antonios Balassiss; Dr. Vassilios Fessatidis

The Physics

The Hamiltonian for a particle subject to spin-orbit interaction is more complicated than that of a free particle, containing terms corresponding to the electric dipole and Thomas precession processes. For a thin quantum wire in the x-y plane, a non-zero electric field perpendicular to the plane gives rise to yet another process of spin-orbit interaction called the Rashba spin-orbit interaction. The contribution of this Rashba mechanism is dictated by a parameter $\alpha$ which is proportional to the perpendicular electric field. Additionally, a strong potential well within the x-y plane may be associated with an electric field, which is not negligible compared to the field that causes the spin-orbit interaction. In this case of planar, as well as perpendicular confinement, there is one more contribution to the Hamiltonian and the spin-orbit interaction, this time corresponding to the parameter $\beta$, which is dictated by the width and potential depth of the nanowire. Typical values of $\beta$ are about one tenth of $\alpha$. Our goal was to write a program that would compute the eigenenergies of an electron in the nanowire.

The Problem

Electrons are confined to a long, thin nanowire in the x-y plane. They are subject to the Rashba $\alpha$-coupling due to an electric field in the z-direction. In addition, the particles are confined along the z-direction by the sides of the wire, only able to move between x=0 and x=W, which gives rise to the $\beta$ spin-orbit coupling. The total wave function of an electron within the nanowire has the form:

$$\psi(x) = e^{i\beta x/W}\psi_1(x) + e^{-i\alpha x/W}\psi_2(x)$$

where $\psi_1(x)$ and $\psi_2(x)$ are two different spin states of the particle. Applying the Hamiltonian containing all of the SOI (spin-orbit interaction) terms to the above wave function gives two coupled differential equations. The Hamiltonian and the two differential equations are as follows:

$$\frac{\partial^2}{\partial x^2} \psi_1(x) + \frac{\partial^2}{\partial x^2} \psi_2(x) = \frac{\hbar^2}{2m^*} \left(\frac{\partial^2}{\partial x^2} \psi_1(x) - \frac{\partial^2}{\partial x^2} \psi_2(x)\right) + \alpha \frac{\partial}{\partial x} \psi_1(x) - \beta \frac{\partial}{\partial x} \psi_2(x)$$

Solving the Problem

Our first task was to cast the equations in dimensionless form. We made our unit of length dimensionless by changing x to $X = \frac{x}{W}$, by changing $1/W$ to $t$, and adjusting the derivatives and the function $F(x)$ accordingly. We introduced:

$$l_0 = \frac{h^2}{2m^*}, \quad E = \frac{2m^*\hbar^2}{h^2}$$

Finally, we made the $l_x, l_y$ and $l_z$ parameters dimensionless by setting $l_x = \frac{W}{l_0}, \quad l_y = \frac{l_0}{W}$ and $l_z = \frac{l_0}{l_0}$. Equations 1 and 2 became:

$$\left\{ \begin{array}{l}
\frac{d^2}{dx^2} \psi_1(x) + \frac{d^2}{dx^2} \psi_2(x) = \frac{\hbar^2}{2m^*} \left(\frac{d^2}{dx^2} \psi_1(x) - \frac{d^2}{dx^2} \psi_2(x)\right) + \alpha \frac{d}{dx} \psi_1(x) - \beta \frac{d}{dx} \psi_2(x) \\
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\end{array} \right.$$

where $\alpha$ is the asymmetry of the quantum well (Rashba mechanism), and $\beta$ the spin-orbit contribution that arises from the potential well. $\psi_1(x)$ is a function of the function $F(x)$ which is related to the lateral confinement in the x-y plane, where $l_x$ is a measure of the steepness of the potential at the edges of the nanowire. A small value of $l_x$ means that the particle hits a very steep potential at the edge of the wire. We needed to find $\epsilon$, the energies that satisfy these two equations simultaneously.

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and 3 are graphs of the first ten energy bands with \( \delta \)
values of 0.1, 0.001 and 0.0005, respectively.

Figure 1: The first ten energy bands of \( \frac{2m^*e^2}{h^2} \) vs. \( k_xW \)
with an \( X \) step size of 0.1. This step size was not small enough
to take into account the edges of the potential. \( \tau_\delta = 5, \tau_\beta = 1 \) and \( \tau_\theta = 1000 \). These values remained consistent for Figures 2 and 3 as well. (Plotting \( E \) vs. \( K_x \))

Figure 2: The first ten energy bands with an \( X \) step size of 0.001. The bands are much different as our calculation became more accurate. (Plotting \( E \) vs. \( K_x \))

Figure 3: The first ten energy bands with an \( X \) step size of 0.0005. This graph and the last graph were very similar as they both take into account change in potential at the edges of the nanowire. (Plotting \( E \) vs. \( K_x \))

Possibilities for Further Research

As our step size for \( X \) got smaller and smaller, we began to push the boundaries of what our computers could do. Now that we have access to more powerful computers, we would like to get even more accurate approximations by creating larger matrices. We can also now take our eigenvalues and plug them back into our equations and solve for the wave functions of the electrons in the nanowire. This project may aid us in doing similar work on the carbon allotrope graphene. Graphene is a one-atom-thick plane of carbon atoms in a honeycomb-shaped lattice which has become a popular research topic because of its unique conduction properties. We hope to do a similar project on this interesting substance in the near future.

Introduction

Most biologically active compounds, including pharmaceuticals, have chiral molecular structures. With increased recognition that enantiomers of chiral drugs are metabolized differently, there has been enormous interest in the development of enantioselective methodologies for the synthesis of chiral compounds.

NMR spectroscopy has emerged as a powerful method for discrimination of enantiomers of chiral compounds. One strategy by which the NMR method is exploited is based on converting the enantiomers of a chiral compound to diastereomers using a chiral derivatizing agent. These diastereomers often display anisochronous NMR signals, which can be identified and integrated affording quantitative measurements of the optical purity of a sample.

The hydroxyl group is a highly prevalent functionality found in naturally occurring compounds and pharmaceuticals. The chiral auxiliaries used in common practice to identify enantiomeric alcohols are usually chiral carboxylic acids, or their chlorides, which readily form diastereomeric esters as compared to carboxylic acid chlorides, makes this reagent more easily stored without decomposition by hydrolysis.

We have recently expanded the protocol for the hydrolysis of 1-hexene, which affords 2- and 3-hexanols, by converting the enantiomers of a chiral compound to diastereomers using a chiral derivatizing agent. These diastereomers often display anisochronous NMR signals, which can be identified and integrated affording quantitative measurements of the optical purity of a sample.

The hydroxyl group is a highly prevalent functionality found in naturally occurring compounds and pharmaceuticals. The chiral auxiliaries used in common practice to identify enantiomeric alcohols are usually chiral carboxylic acids, or their chlorides, which readily form diastereomeric esters and show appreciable diastereomeric differences at certain positions in the molecule. The most widely used carboxylic acid for such studies is that developed by Mosher, namely a-methoxy-a-trifluoromethylphenylacetic acid. However, while commercially available, this compound is 173 times more expensive than (S)-camphorsulfonyl chloride [(S)-CSCl] (Figure 1).

A much older chiral auxiliary is camphorsulfonic acid, which has been used extensively to derivatize chiral amines, but not to make derivatives of chiral alcohols. It has not been extensively used to make derivatives of chiral alcohols. This is because sulfonate esters are more difficult to prepare than carboxylate esters. On the other hand, the poor reactivity of sulfonyl chlorides, as compared to carboxylic acid chlorides, makes this reagent more easily stored without decomposition by hydrolysis.

We have now extended our studies to other chiral alcohols and herein report on the synthesis and \( ^1H \) and \( ^13C \) NMR spectra of camphorsulfonate esters of (+/-)-ethyl-3-hydroxybutyrate, (+/-)-2-butanol, (+/-)-3-hydroxymethylxilirane, and (+/-)-1-phenyl-2-propyn-1-ol.

![Figure 1](image1)

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Reference


SB would like to thank the Fordham College at Rose Hill Dean’s Office and Dr. Moses K. Kaloustian for their financial support during the summers of 2009 and 2010. Direct all correspondence to Steven Bondi at sbondi@fordham.edu.
Experimental Procedure

A 50 mL Erlenmeyer flask was charged with an alcohol (5 mmol). To this, a solution of triethylamine (7.5 mmol) and methylene chloride (25 mL) was added. The mixture was swirled and cooled in an ice H \textsubscript{2}O bath for 15 minutes. 15\% HCl (8 mL), a saturated NaHCO \textsubscript{3} solution (10 mL), and finally with H \textsubscript{2}O (10 mL) was added over a period of 15 minutes. The flask was then ice cooled for an additional 45 minutes. The product was then purified by sequential extractions of the reaction mixture with ice-cold H \textsubscript{2}O (10 mL), 10\% HCl (8 mL), a saturated NaHCO \textsubscript{3} solution (10 mL), and finally with H \textsubscript{2}O (10 mL). The organic layer was then dried over anhydrous sodium sulfate, followed by rotary evaporation of the solvent affording the sulfonate esters in 75-86 percent yield.

Results and Discussion

The \textsuperscript{1}H NMR spectrum of the camphorsulfonate (CS) ester derived from (+/-)-ethyl-3-hydroxybutyrate shows two doublets centered at 3.0 and 3.7 ppm, representing the diastereotopic hydrogens of the SCH\textsubscript{2} moiety. The diastereomeric CS esters derived from (+/-)-ethyl-3-hydroxybutyrate display four well-resolved doublets representing the same hydrogens in the two separate diastereomers (Figure 2). Addition of a small sample of the CS ester derived from authentic (+/-)-ethyl-3-hydroxybutyrate to that obtained from the racemic mixture lowers the intensity of the doublets centered at 3.1 and 3.6 ppm allowing complete assignment of the doubllets to the individual diastereomers. The \textsuperscript{1}H NMR spectrum of the CS ester derived from (+/-)-2-butanol similarly shows two separate doublets centered at 3.0 and 3.6 ppm for the SCH\textsubscript{2} moiety. For the CS diastereomers obtained from racemic 2-butanol, four doublets representing the same hydrogens are observed. Assignment of the signals was made by adding a small sample of CS ester of (+/-)-2-butanol. The \textsuperscript{1}H NMR spectrum of (+/-)-1-phenylethanol shows baseline resolved AB type doublets centered at 3.1 and 3.6 ppm for the SCH\textsubscript{2} moiety (Figure 3). The \textsuperscript{13}C NMR spectrum of CS diastereomers obtained from racemic 2-butanol, shows partially resolved signals for the carbon attached to the oxygen in the 2-butyl moiety. Assignment of the signals was made by adding a small sample of CS ester of (+/-)-2-butanol.

The \textsuperscript{1}H NMR spectrum of the CS ester derived from authentic (+/-)-1-phenylethanol shows baseline resolved AB type doublets at 5.2 and 5.6 ppm for the OCH\textsubscript{2} moiety (Figure 4). Assignment of these signals to the individual diastereomers has not yet been made.

The \textsuperscript{1}H NMR spectrum of the CS ester derived from authentic (+/-)-2-hydroxymethyloxirane shows baseline resolved signals centered at 3.1 and 3.6 ppm for the SCH\textsubscript{2} moiety (Figure 5). Assignment of these signals to the individual diastereomers has not yet been made.

Conclusion

NMR spectroscopy has become a powerful method for discriminating enantiomers of chiral compounds. One such methodology is accomplished by converting the enantiomers of a chiral compound into diastereomers using a chiral derivatizing agent. \textsuperscript{1}H and \textsuperscript{13}C NMR spectroscopy is then used to determine the enantiomeric ratio of the desired compound. In our experiment, (S)-Camphorsulfonyl chloride proved to be a useful chiral derivatizing agent for chiral alcohols such as (+/-)-ethyl-3-hydroxybutyrate, (+/-)-2-butanol, (+/-)-1-phenylethanol, (+/-)-2-hydroxymethyloxirane, and (+/-)-1-phenyl-2-propyn-1-ol. Future work will focus on expanding the range of alcohols used for derivatization, and on assigning peaks to the camphorsulfonate esters obtained.

References

Mobile Sensor Data Mining
by Jeff Lockhart, FCRH ’13

Introduction

At an ever increasing rate, the smartphones and other devices people carry with them in their everyday lives are packed with sensors and processing power. This provides an unprecedented opportunity to apply data mining techniques to people’s activities as they go about their daily lives, without changing their routine. The goal of the Wireless Sensor Data Mining (WISDM) Project is to explore the possibilities of data mining on these powerful mobile platforms. Data mining involves extracting knowledge from data using computer algorithms. A major sensor in these devices is the tri-axial accelerometer originally included for screen rotation and advanced gaming. Our work, so far, has focused on using data mining methods on the accelerometer data to identify the activities users are performing (activity recognition) while carrying the phone. Many useful applications can be built if accelerometers can be used to recognize a person’s activity. We have also demonstrated that accelerometer data can be used to uniquely identify and authenticate users. While some previous work has examined sensor-based gait recognition,12,13 our work in this communication differs in that we identify users based on the way they move during multiple activities (i.e., not just walking) using only commercially available smartphones, which are carried in the user’s pocket. In this communication, as is commonly the case, data mining is done offline by researchers who manually retrieve and prepare the data. The WISDM team is actively working to automate the process of retrieving, aggregating, preprocessing, classifying, and reporting so that useful applications can be deployed to cell phone users. This automated architecture will also support future research efforts by providing a platform for data mining on mobile devices. The WISDM project is moving ahead rapidly with over a dozen undergraduates, two graduate students, and our faculty team leader, Dr. Gary Weiss. We are continuing to submit new work to major industry conferences and broaden the project’s scope. More information about the WISDM project can be found at http://www.fordham.edu/wisdm.

Experimental

A. Materials and Data

Android-based cell phones (as opposed to the iPhone) were chosen for our platform because the Android operating system is free, open-source, easy to program and already becoming a dominant entry in the cell phone marketplace. Further, Android and our data mining tools (Weka13) use the same programming language, Java. The WISDM project employs eight types of Android phones from several manufacturers, including Google, HTC, Motorola, and Samsung. Our devices use a range of Android OS versions from 1.5 to 2.2, a representative sample of current device-dependant diversity.

Data was collected from 53 subjects while they performed a set of pre-defined activities under the supervision of a researcher. The data collection protocol was approved by Fordham’s Institutional Review Board. Users were asked to place one of our Android cell phones, running our data collection application, in their right front pants pocket and then to perform a set of activities for pre-defined periods of time, generally totaling 10 minutes each. Some users did not perform all activities due to physical limitations, and some activities (such as sitting and standing) were limited to only a few minutes because we expected that the data would remain fairly constant over time, which it, in fact, did. As users performed the activities, our application recorded the accelerometer values every 50 ms (any faster and the data begins to repeat due to hardware limitations). When they had completed the set (walking, jogging, sitting, standing, ascending and descending stairs, and lying down), researchers copied the data from the application into our computers for future examination. In this communication, as is commonly the case, data mining is done offline (activity recognition) while carrying the phone. This provides an unprecedented opportunity to apply data mining techniques to people’s activities as they go about their daily lives, without changing their routine. The goal of the Wireless Sensor Data Mining (WISDM) Project is to explore the possibilities of data mining on these powerful mobile platforms. Data mining involves extracting knowledge from data using computer algorithms. A major sensor in these devices is the tri-axial accelerometer originally included for screen rotation and advanced gaming. Our work, so far, has focused on using data mining methods on the accelerometer data to identify the activities users are performing (activity recognition) while carrying the phone. Many useful applications can be built if accelerometers can be used to recognize a person’s activity. We have also demonstrated that accelerometer data can be used to uniquely identify and authenticate users. While some previous work has examined sensor-based gait recognition,12,13 our work in this communication differs in that we identify users based on the way they move during multiple activities (i.e., not just walking) using only commercially available smartphones, which are carried in the user’s pocket.

References


Thx to Dr. Gary M. Weiss, my faculty mentor, for guiding the work and reviewing the results. Thanks also to Jennifer Koenig, FCHH 10, and Sam Moore, FCHH 10, who laid the groundwork for this effort. A very special thank you is due to FCRH, who financially supported the Fordham Faculty Research Grant and a Google Faculty Research Award, and to a FCHH Summer Science Research Internship. Direct all correspondence to Jeff Lockhart at jlockhart@fordham.edu.

Contributing Author Bios

Stacey Barnaby, FCRH 2011, is from Monroe, Connecticut. She is a chemistry major. Stacey is currently working on the development of new biomaterials at the nanoscale for targeted applications in tissue engineering and bioimaging under the direction of Dr. Ipsita Banerjee in the department of chemistry. After graduation, Stacey will be attending graduate school to pursue a Ph.D., where she would like to continue her research in the area of bioanatotechnology.

Steven P. Bondi, FCRH 2011, is from New Hyde Park, New York. He is a mathematics major and a chemistry minor. Steven is currently conducting organic chemistry research in Dr. Shahrokh Saba’s lab on amine synthesis and alcohol enantiomeric ratio determination. After graduation, Steven will be attending medical school and pursuing a career in medicine.

Ryan Brennan, FCRH 2011, is from Long Island, New York. He is a graduating physics major. Ryan conducted research on energy bands in quantum nanowires and is currently studying the properties of graphene. After graduation, Ryan plans to attend graduate school in the hopes of attaining a Ph.D. in physics.

Jeff Lockhart, FCRH 2013, is from Phoenix, Arizona. He is a computer science and women's studies major. Jeff is currently conducting research in sensor data mining in the Fordham University computer and information science department, working with professor Gary Weiss. After graduation, Jeff plans to attend graduate school for either computer science or rhetoric.

Sarah Sullivan, FCRH 2012, is from the Bronx, New York. She is a history and Medieval studies major with an Irish studies minor. She is the winner of Fordham University’s Institute of Irish Studies Language Scholarship and the Research Assistant of Dr. Rigogne in the University’s Institute of Irish Studies Language Scholarship.

Colleen Taylor, FCRH 2012, is from Sherman, Connecticut. She is an English major, Irish studies minor, and American Catholic studies concentrator. She is currently abroad in Galway, Ireland, studying Irish literature, language, and music. Colleen plans to further her studies of Irish writers and the Irish language in graduate school.

### Selected Research Accomplishments of FCRH Students in 2010-2011

FURJ would like to congratulate the following students on their research accomplishments.

- **Courtney Anders**: '13 published "Labeled" in the fall 2010 issue of Contexts, the quarterly magazine published by the American Sociological Association.
- **Gaelle Voltaire**: '12 was a co-author on "Rice Weevils and Maize Weevils (Coleoptera: Curculionidae) Respond Differently to Disturbance of Stored Grain," published in a 2011 issue of Annals of the Entomological Society of America.
- **Anne Neuendorf**: '12 was co-author on "Error-Reduction in Matching-To-Sample Procedure" at the 22nd Greater New York Conference on Behavioral Research in New York, NY in November 2010.
- **Peter Sanneman**: '12 and **Tara Kennedy**: 2012 were selected as DAAD RISE scholarship recipients to conduct research in Germany in summer 2011.

### Presentations

- **Sheehan Ahmed**: '11 and **Ryan Breman**: '11 are co-authors on "Effect of Spin-orbit Interaction on the Ballistic Transport Properties of Nanowires," presented at the American Physical Society meeting in Dallas, TX in March 2011.
- **Stacey Barnaby**: '11 presented "Phytohormone-Based Nanoassemblies for Tissue Engineering, Drug Delivery, and Bioimaging" at the 241st American Chemical Society meeting in Anaheim, CA in March 2011.
- **Stephen Fox**: '11, **Ilya Naoumov**: '11, **Emir Ogel**: '14, and **Margaret Wolf**: '14 will participate in the IGVC Team Showcase at National Robotics Week in Washington, DC in April 2011.
- **Caitlin Meyer**: '12 is co-author on "Gender Role Identity and Political Involvement: Femininity, Masculinity, and Gender Differences in Political Interest and Knowledge," presented at the Midwest Political Association meeting in Chicago, IL in April 2011.
- **Anne Neuendorf**: '12 presented "Emotion Learning with 5r Prompt in Matching-to-Sample Procedure" at the 22nd Greater New York Conference on Behavioral Research in New York, NY in November 2010.
- **Peter Sanneman**: '12 and **Tara Kennedy**: '12 were co-authors on "Error-Reduction in Matching-to-Sample Procedure: Gradually Delayed Removal of the S-Minus," presented at the 18th International Conference on Comparative Cognition in Melbourne, FL in March 2011.
The Fordham Undergraduate Research Journal (FURJ) aims to promote scholarly investigation and critical thinking through undergraduate research. As an outlet for undergraduate research, we hope to provide opportunities for student researchers to widely disseminate the results of their efforts. Additionally, by engaging student authors in the review process, we endeavor to encourage more scholarly conversation between students and faculty. Likewise, through our feature articles, we seek to highlight undergraduate research efforts at Fordham and make student research accessible to the larger Fordham community and beyond. As a student-run enterprise, we strive to inspire other undergraduates to become interested in pursuing research opportunities. FURJ is committed to publishing undergraduate research of the highest quality and as such, we hope to demonstrate the remarkable talent and accomplishments of Fordham students.

Photo Credit:
Stephen Moccia, FCRH ’12