APRIL 19, 2012

SIMPSON COLLEGE
UNDERGRADUATE SYMPOSIUM 2012
Honoring Excellence in Research, Scholarship and Creativity

SIMPSON COLLEGE
It is my pleasure to welcome you to Simpson’s third annual Undergraduate Symposium!

This year has been a great one for undergraduate research at Simpson College! Today you will have an opportunity to participate in what is becoming one of the highlights of our academic year. Many of the students you will meet today have already presented their work at professional conferences. Others will continue their work in graduate schools this fall. Some will spend the summer working at research labs across the country. The creativity and talent of Simpson students never ceases to impress me. Partner great students with dedicated faculty and the results are similarly impressive! Students applying what they have learned is an important marker for a Simpson College education.

Thank you for sharing your day with us.

Sincerely,

Steven J. Griffith
Senior Vice President and Academic Dean
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Morning Schedule:
8:00-9:00 AM
Campus-Wide Breakfast. Atrium, Carver Hall

9:00-9:45 AM
Keynote Address. Lekberg Hall, Amy Robertson Music Center

10:00-10:50 AM
Concurrent Oral Presentations and Performances I

11AM-12:30PM
Senior Art Exhibit & Reception. Farnham Gallery. Mary Berry Hall

Afternoon Schedule:
12:30-2:00 PM
Honors Convocation. Smith Chapel

2:15-3:05 PM
Concurrent Oral Presentations and Performances II

3:15-4:15 PM
Poster Session and Hors d’oeuvre Reception. Pote Theater Lobby, Blank Performing Arts Center (BPAC)

4:15-4:30 PM
Awards and Remarks. Pote Theater, BPAC

4:30-5:00 PM
Music Performance. Pote Theater, BPAC
as an undergraduate **BIAN LI** wasn’t interested in *Research, Scholarship* and *Creativity* she wouldn’t have …

… been an Undergraduate Writing Fellow of the University of Iowa’s Writer’s Workshop or a fellow in the John Hawkinson Honors Finance Program

… conducted award-winning undergraduate research on insect physiology and ecology in Kenya

… conducted undergraduate research on the impact of women’s microcredit cooperatives in fighting rural poverty in Kenya

… worked with community-based organizations and women’s agricultural cooperatives in Ghana

… volunteered as an English teacher to Congolese refugees, and taught Spanish and Mandarin

… worked as an investment banker overseeing US-China strategic partnerships and managing transactions for Asia-Pacific cross-border deals

… developed an expertise in food security issues

… become an advocate for the poor and hungry around the world as an Oxfam Sister on the Planet Ambassador

… been selected to serve as The World Food Prize Foundation Director of Planning, in which she coordinates many World Food Prize events, and conducts research, policy analysis, long-term planning, and strategic initiatives

… *and all before she was 28.*

*We invite you to hear her speak about where intellectual curiosity can take you!*
Morning Schedule:

8:00-9:00 AM - Breakfast
Campus-wide Breakfast. Carver Science Building Atrium, main level
All are invited. Presenters must check in to get programs, lanyards, and to confirm final schedules.

9:00-9:45 A.M.
Keynote Address. Amy Robertson Music Center, Lekberg Hall, main level
Today's keynote speaker is Bian Li, a graduate of the University of Iowa and currently Director of Planning at the World Food Prize Institute. She will be speaking about intellectual curiosity, and where it can lead you.

10:00-10:50 A.M. Concurrent Oral Presentations and Performances I
Performing the Arts. Amy Robertson Music Building, Madsen Hall, main level; Moderator: Michael Eckerty
- Molly Burkemper. She Talks to Angels
- Caitlin Dicus. First Year Frolicking

Issues in Community Life. McNeill Hall, Room 110; Moderator: Steve Duffy
- Erin Guzman. “Go and Make Disciples”: Evangelism and Conversion Focused on Community
- Vanessa Reed. The Cause and Effect of Social Movements in Politics and Society
- Kraig Thomas. War Disease: A Spatial-Temporal Analysis of Civil War

Interactive Panel Discussion. McNeill Hall, Pioneer Conference, Room 111; Moderator: Maevie Callan
- Nicolas Proctor, Bobby Dennis, JoAnna Freeland, Dustin McNulty, Emily Stover, Ryan Stumbo, Cody Zaring, Josh Zieman. Reacting to the Past: Chicago 1968

Joe K. Moody Research Symposium I. Carver Science Building, Jordan Lecture Hall, Room 215; Moderator: Lydia Sinapova
- Kathryn Burdock, Sarah Kennedy, Amy Doling. Optimizing the Ames Test: Measuring the Mutagenicity of Diet Coke
- Phillip Seiwert and Anna Statz. Regional Evaluation of Platte River Wetland Restoration
- Dana Lain. Oil in Our Oceans
**Issues in Learning & Policy.** Craven Room, Dunn Library, 2nd floor; Moderator: Lisa Carponelli
- Arron Bodine. *Immigration Reform in the United States*
- Steffanie Elkin. *Websites as Vocabulary Instruction Tools for ELL Students*

**Issues in Philosophy.** Wallace Hall, Room 204; Moderator: Emily Skow
- Kevin Rice. *The Practicality of Lived Philosophy*
- Allie Walker. *Rural Women’s Epistemologies*

11:00 A.M.-12:30 P.M.
**Honors Lunch for invited guests.** Great Hall

**Afternoon Schedule:**

12:30 P.M.- 2:00 P.M.
**Honors Convocation.** Smith Chapel

2:15-3:05 P.M. **Concurrent Oral Presentations and Performances II**
**Performing the Arts.** Amy Robertson Music Center, Lekberg Hall, main level
Moderator: Michael Eckerty
- Antonio Reyes, Jr. *Crawling to the Moon and a Suitcase of Poetry*
- Kathrin DePue. *Joy, Pain, and the Writer’s Craft*

**Issues in Religion and Law.** McNeill Hall, Room 110; Moderator: Steve Duffy
- Madie Fiedler. *Severus Snape: A Christ-like Model of Love and Sacrifice in the Harry Potter Series*
- Molly Burkemper. *Dangerously Religious*
- Tracy Sibbel. *Emerging Conflict between the Free Exercise Clause and Establishment Clause of the First Amendment*

**Issues in Community Life.** McNeill Hall, Pioneer Conference, Room 111; Moderator: Maeve Callan
- Allie Walker. *Holstein and the 1980s Farm Crisis*
- Ryan Edwardson. *Ethics Derived from Paul’s Use of Conscience in First Corinthians 8-10*
Joe K. Moody Research Symposium II. Carver Science Building, Jordan Lecture Hall, Room 215; Moderator: Lydia Sinapova
  • Zach Huebener and Kylie van Houten. Three Approaches to Solving the Motif-Finding Problem
  • Adam Smith, Joel Gawarecki, Jaris Van Maanen, Linsey Williams. A Genetic Algorithm for Tile Self-Assembly
  • Mike Henry, Heather Malbon, Max Nguyen. The Party Problem

Issues in Forecast Models. Dunn Library, Craven Room, 2nd floor; Moderator: Lisa Carponelli
  • Sam Hohneke. A Model for Predicting the Results of the German Federal Election and Its Application to the 2013 Contest
  • Blaise Mikels. A Data Mining Approach to Developing Stock Market Forecasting Models

Issues in European History and Politics. Wallace Hall, Room 204; Moderator: Emily Skow
  • Phillip Johnson. Will the European Union Survive?
  • Elsen Hoxhalli. Democratization in Post-Communist Europe: the Causes of Development Differences between the Balkan and Baltic Nations
  • Erin Broich. The “Bloody” Tyrant and the “Virgin Queen”: Mary and Elizabeth Tudor and the Struggle for the Hearts and Souls of England

3:15-4:15 P.M.
Poster Session and Hors d’oeuvre Reception. Pote Theater Lobby, Blank Performing Arts Center

4:15-4:30 P.M.
Awards and Remarks. Pote Theater, Blank Performing Arts Center

4:30-5:00 P.M.
Music Performance. Pote Theater, Blank Performing Arts Center
Simpson College Symphonic Band, Michael Eckerty, Director
Oral Presentation, Panel and Performance Abstracts

Arron Bodine. **Immigration Reform in the United States.** *Faculty Sponsor: Eduardo Magalhães III*

This is a comparison paper that looks at current U.S. immigration policies in relation to policies in other countries around the world including France, Britain, Italy, and other nations of the European Union. I will also look at what is being done to reform policies in these regions as a means of meeting the needs of a changing world. I compare the goals of immigration policies in these countries and the means by which these goals are met. For example, in the U.S., the major goal of immigration policies today is to address the need for family reunification, but now the goal is becoming more of one that stresses employment policies as the needs of our nation are changing. By comparing these changing needs in immigration policies in the U.S. To those around the world, I can better come to a conclusion about where the U.S. is headed in regards to its decision about how to reform immigration policies. I believe that because the U.S. is a young nation in comparison to those in the European Union, it is plausible that we would follow in the steps of nations that have been around longer and have more experience with the issue. I am also assuming that change is inevitable and that the change will be coming within the next 10-20 years as the immigration population in our country is increasing at a rate of about 500,000 a year.

Erin Broich. **The “Bloody” Tyrant and the “Virgin Queen”: Mary and Elizabeth Tudor and the Struggle for the Hearts and Souls of England.** *Faculty Sponsor: Maeve Callan*

This presentation discusses how Mary and Elizabeth Tudor used religion in each of their reigns to create unity among, and enforce control over, the English people. History has given Mary Tudor a poor reputation while extolling Elizabeth to an exaggerated degree. A secondary purpose of the paper is to present both Queens on an even level, based not on the success or failure of either reign, but solely at the effectiveness of their policies and ideals. It is the overall goal of the presentation to relate the complications that a society faced when politics and religion were so thoroughly intertwined.

Kathryn Burdock and Sarah Kennedy. **Optimizing the Ames Test: Measuring the Mutagenicity of Diet Coke.** *Faculty Sponsor: Amy Doling*

The Ames Test assays for substances with potential mutagenic effects. If a substance causes mutations it could potentially be a carcinogen, which is harmful to humans. Thus this test can be regarded as essential when checking for chemicals that might be considered hazardous for humans. The Ames Test was conducted on Diet Coke, using multiple strains of *S. Typhimurium* (TA98, TA1535, and TA1538 his- auxotrophs). Experiments were conducted to determine whether different dilutions of Diet Coke could cause mutations in the *S. Typhimurium* strains. These mutations would allow the originally Histidine dependent bacteria to grow in the absence of Histidine. The results of the experiment could indicate whether or not Diet Coke is a beverage safe for consumption.
Molly R. Burkemper. **Dangerously Religious.** *Faculty Sponsor: John Pauley*

Eighty-five percent of the entire world’s population identifies with some religious group. As a universal phenomenon, religion goes largely unquestioned, but it is exactly this ubiquity that demands the utmost attention. Despite the great diversity of specific beliefs, the different religions, by definition, must follow certain patterns. These patterns concern a religion’s behavioral and mental influence on its adherents, which—intended or not—is inherently detrimental. Religion may or may not be worthwhile in some aspects; its foundations and claims may be true or false. Regardless, religion’s message has certain effects on people, the consequences of which render religion irresponsible and arguably dangerous. This work explores the various ways in which religion fails to keep its promises, as well as the ways in which its message promotes negative characteristics within both individuals and society as a whole.

Molly R. Burkemper. **She Talks to Angels.** *Faculty Sponsor: David Wolf*

Helen is a recent college graduate who lives alone, working meaningless jobs and drinking herself into a stupor every night to avoid life. Suffering extreme depression after a bad breakup, she cannot bring herself to face the world and move on. Helen also continues to fight with old family issues that she has been repressing until lately, her recent emotional turmoil having brought them to light once again. Through second-person narrative, the reader follows Helen as she battles her past and present, struggling to redeem herself and discover a future. This story is currently in circulation as a submission manuscript for several graduate school writing programs. An oration of the piece and a question-answer session with the author will allow for the best reader experience.

Kathrin DePue. **Joy, Pain, and the Writer’s Craft.** *Faculty Sponsor: David Wolf*

What inspires me to write? What draws me to the blank page and forces me to fill it with words?

Through poetry, I have discovered that the answer to these questions is many times the very act of writing. Writing is a task, a job, a necessary part of life for writers, and as such is an endless vat of inspiration. Through words I, as a writer, can dig into how I react to certain situations and write from those reactions, write about those reactions, or write about writing about those reactions.

With these things in mind, I have written a collection of poetry that discusses these questions, reacts within these questions (describing memories or circumstances that led me to the question or to the page), and also acknowledges these reactions.

Caitlin Dicus. **First Year Frolicking.** *Faculty Sponsor: David Wolf*

The main part of my presentation includes reading aloud selections of poetry I have created this semester. I would also like to discuss after each poem a little bit about the creation process and the background for the piece. I plan on reading “On and Off,” which is a poem describing the first step into a hot shower during the winter. The audience may not understand what I am describing at first, which will be a little mystery, and I discuss how I enjoy making poems of this nature. Also, I discuss how the inspiration came from Pablo Neruda, a Chilean poet who enjoyed
describing small things in life at length. I use this as a transition into another poem called “Maker of Mountains,” which discusses small clods of dirt that have fallen from my Uncle’s work boots ever since I was a child. I may read additional poems from the revised collection of poems for English 203.

Steffanie Elkin. **Websites as Vocabulary Instruction Tools for ELL Students.**  
*Faculty Sponsor: Sharon Jensen*

For English Language Learners (ELL) in American schools, learning to read proficiently is one of the major keys to mastering content and achieving academic success. In order to become successful readers, it is essential that ELL students gain and master new English vocabulary. One way ELL students can increase their vocabularies is by using technology, particularly websites that offer a variety of vocabulary games, activities, and review exercises. This project focuses on analyzing the quality and benefits of using such websites as vocabulary instruction methods for ELL students in elementary school.

Several websites named in scholarly journals were selected to evaluate the perceived effectiveness of the websites for vocabulary instruction. The quality of the websites was evaluated using criteria established by education scholars and includes, but is not limited to, clear picture representations, display of the written word, presentation of the spoken word, and user-friendliness. After analyzing the evaluations, the top websites were selected to determine how the websites could be implemented in a classroom setting. This study presents the perceived effectiveness and possible implementation of websites designed as vocabulary instruction for ELL students, and further research will be needed to determine the actual benefits of the websites.

Ryan Edwardson. **Ethics Derived from Paul’s Use of Conscience in First Corinthians 8-10.**  
*Faculty Sponsor: Maeve Callan*

In 1 Corinthians 8-10, Paul discusses the consumption of meat previously offered to an idol (eidolothuton), which was an ethical dilemma that divided the Corinthian congregation. Paul warns those who can in clear conscience consume eidolothuton not to lead the weak into sinning against their conscience (sunedeisis). The most important part about Paul’s use of conscience is not what it means, but the undergirding force of selfless love behind it. This love, best demonstrated by Christ, can serve as a descriptive ethic upon which Christians can build to work towards resolving ethical disputes. In this ethic selfless love becomes the driving force behind any potential solution to difficult ethical questions.

Madie Fiedler. **Severus Snape: A Christ-like Model of Love and Sacrifice in the Harry Potter Series.**  
*Faculty Sponsor: Maeve Callan*

In the Harry Potter series, sacrifice is a common theme in the life of Severus Snape. Snape serves as a Christ figure in the series because of the altruistic and self-sacrificial love he shows for Lily Potter, and he shows the reader how to be an attainable Christian model of sacrifice. God and Christ show their love for humanity through sacrifice, as Severus Snape does for Lily Potter – and for the ultimate good of the community. Snape also shows the reader how to be a Christ figure in his or her own life without having to be the perfect sacrifice of Jesus.
Erin Guzman. **“Go and Make Disciples”: Evangelism and Conversion** *Focused on Community. Faculty Sponsor: Mark Gammon*

In this paper, I address the problem of defining evangelism and conversion as the terms relate to one another, and their purpose for contemporary Christian ministries. Based on definitions of evangelism as proclamation, and conversion as both process and event, the relationship between these two is significant because it brings into focus the fundamental call to witness for the sake of building Christian communities. This argument is supported with interpretations of scripture as narrative, individual narrative accounts of Christian conversion, and Greek word studies that give a new perspective on the traditional notion of Christian mission.

Mike Henry, Heather Malbon, and Max Nguyen. **The Party Problem. Faculty Sponsor: Deb Czarneski**

How many people do you need to invite to a party to guarantee that five people at the party will all know each other, or that five people at the party will all not know each other? The solution to the question is the unknown Ramsey number, $R(K_5, K_5)$. This talk will introduce the history of the Ramsey number $R(K_5, K_5)$ and will describe a genetic algorithm that we used to try to show that $R(K_5, K_5)$ is not 43.

Sam Hohneke. **A model for predicting the results of the German Federal Election and its application for the 2013 contest. Faculty Sponsor: Eduardo Magalhães III**

This paper attempts to look at possible results of the federal election in Germany in 2013 by creating a model for prediction based on the results of mid-term elections and their implications on the federal elections that follow. Analysis of increased party factionalization, the possibility of different political parties coming together to form a coalition, and voter turnout trends bolsters the model based on mid-term election results. This model is then applied to different scenarios created by looking at the current issues in German politics such as the scandals surrounding Angela Merkel’s administration and the consequences of the Eurozone crisis. The historical context will be explored to try to see exactly how these factors could also impact the election of 2013.

Elsen Hoxhalli. **Democratization in post-communist Europe- the causes of development differences between the Balkan and Baltic nations. Faculty Sponsor: Eduardo Magalhães III**

The Baltic republics of Estonia, Latvia, and Lithuania seem to be very similar to the Balkan republics of Albania, Kosovo, and Macedonia as far as population size and composition, as well as in their shared communist past. During the past twenty years however they have taken paths of economic and political development very different from the Baltic republics – becoming European Union members, while the three Balkan republics are still struggling to carry out economic and political reforms.

The reason for these differences has often been attributed to the pre-communist situation of the individual countries, and this research intends to go further than that. The purpose of this research is to focus on six key years for all of these countries: 1918, 1938, 1945, 1991, 2005 and 2011, and to interpret the economic and political situation of each nation during these years in order provide an explanation as to why their respective development took the path that it did.
Finally, the research will also focus on the impact of the economic and political relationships of each country with, and their dependencies on, the USSR, and how those relationships have impacted the development of each one of these countries during the past 20 years.

Zach Huebener and Kylie Van Houten. **Three Approaches to Solving the Motif-Finding Problem.** *Faculty Sponsor: Lydia Sinapova*

The purpose of this paper is to analyze three methods for solving the Motif-Finding problem. The Motif-Finding problem is the problem of finding patterns in sequences of DNA. The methods we analyze compare many DNA strands of equal length and find the most closely-matching sequences of a certain length in each strand. These patterns are of great scientific interest to those doing research in genetics because they correspond to sequences of DNA that control the activation of specific genes.

In this paper we compare the brute force method, the branch and bound method, and the greedy method as ways of solving the problem. We discuss difficulties we encountered when implementing the methods, and we analyze the complexity and running time of the methods. Our experimental results show that the greedy algorithm can find an approximate solution to large files in a reasonable amount of time. The branch and bound method is more efficient than the brute force method, but neither method is able to find solutions for files with more than 10 strands of DNA in a reasonable amount of time.

Phillip Johnson. **Will the European Union Survive?** *Faculty Sponsor: Eduardo Magalhães III*

My paper looks into whether or not the European Union will survive its current economic crisis. I will show which paths can lead to its survival and which might take it down the road to disbanding. The road to survival involves programs that stronger countries, such as Germany, participate in with countries that are struggling; more discrimination in allowing countries entry into the Union; and possibly cutting countries from the EU. Nationalistic distrust will be one of the most important causes taking the EU down a road toward disbanding.

Dana Lain. **Oil in Our Oceans** *Faculty Sponsor: Brian Steffen*

This original short film will look at the BP Deepwater Horizon oil spill that occurred in the Gulf of Mexico on April 20th, 2010. A brief background on how the spill occurred and what might have been done to avoid the tragic event will be presented. The film’s focus, however, will be on the current status of the Gulf. After two years researchers have had two nesting or reproductive seasons to see the trend of marine populations since the spill. The video will provide interviews with sports and industry fishermen on the Gulf and will also look at current studies addressing embryo toxicity, the oxidation potential of deep-sea hydrocarbons, and the effect of dispersants used to get rid of the oil on the Gulf ecosystem. The short film will show how much of a role oil plays in world culture and how the devastating impacts of spills are often not worth the risk of refinement. The video will encourage viewers to take an interest in alternative energy, oil conservation, and regulations that need to be updated and enforced. The short film “Oil in Our Oceans” will be available upon completion at www.oilinouroceans.com.
Blaise Mikels. **A Data Mining Approach to Developing Stock Market Forecasting Models.** *Faculty Sponsor: William Schellhorn*

In disciplines where data sets are overwhelmingly large and complex, data analysis is a vital component to successfully interpreting and utilizing data. The stock market represents one of those areas, and with thousands of different stocks and numerous ways to measure and perform statistical analyses of trends within the market, it has become increasingly complicated to assimilate information to determine successful investment strategies. This research investigates an automated approach through common data mining techniques to develop predictive models that accurately forecast daily price fluctuations of individual stocks. Emphasis is placed on building and utilizing decision trees as predictive models, while assessing their predictive performance through cross validation techniques. Results from this research provide a positive outlook for using a data mining approach, evident through substantial improvements in predicting a change in the next day’s closing price of an individual stock.

Nicolas Proctor, Bobby Dennis, JoAnna Freeland, Dustin McNulty, Emily Stover, Ryan Stumbo, Cody Zaring, Josh Zieman. **Reacting to the Past: Chicago 1968.** *Faculty Sponsor: Nicolas Proctor*

Teams of students in Nicolas Proctor’s Historical Game Design class have been researching, writing, and play-testing their own games. 16 concepts have been narrowed down to two game prototypes. This session allows the audience to participate in a “play-test” of part of one of these games.

The game concept is introduced. The student team leader will introduce whichever game the class agrees is the best. The student development team will brief audience members on their roles, and handouts will be distributed. Panelists and audience members will play through a few rounds of the game, and any remaining time will be available for questions and answers. Participants in previous versions at academic conferences have found these sessions informative, engaging, and great fun.

Vanessa Reed. **The Cause and Effect of Social Movements in Politics and Society.** *Faculty Sponsor: Eduardo Magalhães III*

Today, if you want change you have to bring it yourself via social movements. I investigate what mitigating factors allow social movements to start and flourish, as well as their overall impact on politics. I study several social movements from the past, such as the abolition movement, women’s rights movement, the Civil Rights movement, as well as the current movements of Occupy Wall Street and Gay Rights. I look for commonalities within society around the time the movements arose to see what aided them in becoming such a viable movement, attempting to find one commonality that allows social movements as such to flourish. Different variables I look into are the state of the economy, policies enacted, and overall impact on society – whether they failed or succeeded. To understand the movements’ impact on politics I look at the nature of policies passed during their existence, to see if shifts are gradual or sharp towards the aim of the movement. Another critical way to further understanding is examining coverage in the media and how much support they have among the populace which aided to their success or failure.
Ideally by the end I will have a predictor model of what factors need to be present to allow social movements to begin and to flourish in society, as well as to judge their impact on politics.

Antonio Reyes Jr. **Crawling to the Moon and a Suitcase of Poetry.** Faculty Sponsor: David Wolf
The work I present is a group of poetry pieces that were created this past and early spring semester in my writing workshop classes, overseen by Professor Wolf. These works consist of three or four poems that tend to be prose poems. Some are categorized as surrealist poems. Some address Latino culture and are filled with a vast array of imagery and rhythm. My goal is to present these poems with enough time to explain their significance to me as well as take questions from those attending. The poems that I plan to present are titled, “History of Life,” “Urban Cockiness,” “The Adventures of Moon Man,” and “Betrayal at Tlatelolco.”

Kevin Rice. **The Practicality of Lived Philosophy.** Faculty Sponsor: John Pauley
The goal of this presentation is to trace the fundamental premises of philosophy (the terms of human engagement dwelling within an environment and sharing that experience within a human community), and how these premises become lived and pertinent to every form of human occupation. In articulating the phenomenology of consciousness’s understanding of “self” I hope to display the unifying ontological paradox that liberates human experience and reveals an empathic engagement that is pervasive within all human experience. Over the course of this presentation I will highlight the specific modern philosophers relevant to each progression, and I will discuss a value theory that is accessible and pertinent to any academic field or human occupation, whether that be math, science, law, art, economics, etc. I will then explain this progression in terms of an end point in an over-arching human culture that has been led up to through the foundational ontological questions of philosophy. In short, I aim to extrapolate and arrange from the many focused and detailed areas of philosophy a “big-picture collage” of philosophy, and why it is important and practical beyond ivory tower debates.

Phillip Seiwert and Anna Statz. **Regional Evaluation of Platte River Wetland Restoration.** Faculty Sponsor: Clinton Meyer
Recent appreciation of wetland benefits has driven an increase in restoration efforts to improve recovery in agriculturally degraded systems in the Platte River Valley of central Nebraska. Although restoration efforts are time and money intensive, evaluation of recovery has been limited. We measured several indicators of recovery (organic matter, soil bulk density, plant wetland indicator status, plant diversity, plant productivity, and invertebrate communities) in a chronosequence of 17 restored wetlands ranging from one to 19 years old and compared estimates in five natural wetlands to assess regional patterns in recovery. We tested for significant changes in these indicators over time using regression techniques.

Bulk density showed significant recovery in the wettest habitats (sloughs; \( p=0.019 \)), and soil organic matter showed significant recovery in both sloughs \( p=0.002 \) and higher elevation transects (margins; \( p=0.034 \)) in surface soils (0-10cm) across the chronosequence. However, there is
little evidence of recovery in deeper soils (10-20cm). Results of this study suggest that although recovery is occurring at a regional level, rates are highly dependent on wetland hydrology (e.g., sloughs vs. margins) and may lag significantly in deeper soil profiles. We hope these indicators will provide a comprehensive assessment of restoration success to date in the Platte region and will be used to help improve outcomes in future restoration efforts by identifying factors related to recovery rates.

Tracy Sibbel. Emerging Conflict between the Free Exercise Clause and Establishment Clause of the First Amendment. Faculty Sponsor: Eduardo Magalhães III

I looked at four Supreme Court cases from the past fifteen years that directly involve the Free Exercise Clause or Establishment Clause of the First Amendment and allowed for a potential conflict between the two clauses. The Court has produced mixed messages by upholding some laws and acts which allow for illegal drug use in religious groups, for example, but also striking down other laws as violating the Establishment Clause, such as in a case where college religion majors were excluded from receiving a specific state-sponsored scholarship. With the three newest justices not participating in any of the four cases, it is difficult to gauge their status on the issue. Two other justices generally sided with the religious cause, another two were split, and the Chief Justice heard only one case but sided with the religious group.

The future of the clauses can take multiple paths. The history and various applications of the two clauses are looked at to see how the definitions have expanded to produce this conflict. “Play in the joints,” as it is commonly called, means that one clause permits an action but the action is not required by the other, a situation that raises questions which are difficult to answer. The Court does not always provide conclusive answers. Potential ways the Court may deal with the clauses include narrowing both clauses to specific areas, refusing to make broad claims and answering questions on a case by case basis, or allowing the Free Exercise Clause to prevail over the Establishment Clause when posed one against another.

Adam Smith, Joel Gawarecki, Jaris Van Maanen, and Linsey Williams. A Genetic Algorithm for Tile Self-Assembly. Faculty Sponsor: Lydia Sinapova

With this paper we want to share our experience in the design and development of a genetic algorithm for tile self-assembly. Tile self-assembly systems serve as models of DNA molecules designed to act as four-sided building units that can self-assemble to various shapes. Research on the design of such nanoscale constructs has shown their high potential usefulness in the area of nanotechnology. Given a target shape of tiles, the goal is to find the tile set that will self-assemble in the target shape. The input to our genetic algorithm is a collection of randomly constructed tile sets. The output of the genetic algorithm is a set of tiles that most closely assembles to the target shape. In the paper we discuss the chosen representation of the tile sets and the experiments we made with several selection, cross-over, and mutation methods. We also discuss the various design choices that we had to make while developing the genetic algorithm. Finally we present a distributed computational architecture used to speed up the process of obtaining subsequent generations of tile sets.
Kraig Thomas. **War Disease: A Spatial-Temporal Analysis of Civil War.**
*Faculty Sponsor: Rick Spellerberg*

Studies of civil war commonly evaluate socioeconomic conditions. This paper discusses studies of civil war, spatial processes, and econometric analysis utilizing a case study of the Maoist insurgency in Nepal. We consider civil war much as a disease, spreading by a contagion effect, and we identify the onset and escalation of conflict much as we do the onset and escalation of an epidemic. Socioeconomic considerations of gross domestic product, education, growth, indicators of opportunity cost, and other conditions, are included. We find that spatial and temporal conditions, however, are more significant in explaining both the onset and escalation of civil war. Special thanks to Shikha Basnet for her time and her support of this project.

Allie Walker. **Holstein and the 1980s Farm Crisis.** *Faculty Sponsor: Nicolas Proctor*

The 1980s was a difficult decade for Iowa farmers. Debt, a down economy, and the possibility of foreclosure were the reality for many whose incomes were dependent on crops. Holstein, Iowa, was one such agricultural town affected by the crisis. By looking at primary source documents such as census records and newspapers, and by interviewing members of the community who lived through the crisis, we can begin to understand different perceptions of the causes of the crisis and the effects on farmers and farm communities. Technological advances, interest rates, and depleted land and crop prices threatened farmers across the nation. However, community cohesiveness and the stability of local businesses had a strong impact on the continued development and strength of Holstein throughout the crisis.

Allie Walker. **Rural Women’s Epistemologies.** *Faculty Sponsor: John Pauley*

Using the experience of women in rural settings as its point of departure, this project argues that traditional epistemological approaches marginalize women’s experiences. Through an analysis of the experience of “farm women,” we find that these traditional theories, by virtue of their emphasis on propositional knowledge, exclude and disqualify certain types of experiences from counting as knowledge. We conclude that traditional epistemology is problematic insofar as it fails to account for the experiences and forms of knowledge of certain groups, including those of women. Thus, using sociological data in conjunction with feminist theory, this project examines women’s oppression under traditional epistemology, as well as reactions and possible forms of resistance to these traditional approaches. These findings are important because they bring to light the process through which certain forms of valuable knowledge are, under dominant systems, marginalized and destroyed. By focusing on these questions, we hope to open up the possibility for change.
• Paul Adams, Amelia Borgomainerio, Tyler Fuller, Kasey McCreary, Anna Ronnebaum. **Physiological Response to Auditory Stimuli Measured by Galvanic Skin Response, Heart Rate, and Respiration Rate.** Faculty Sponsor: Jackie Brittingham

• Anna Aldridge, Haley Roecker, Keisha Smith, Bailey Terpstra, Jordyn Weinard. **Investigation of Biofeedback Mechanisms that Decrease the Stress Response.** Faculty Sponsor: Jackie Brittingham

• Patrick Alt, Ted Heying, Zachary Lancaster, and Jade Osborne. **The Effects of Sexually Suggestive Images on Heart Rate and Galvanic Skin Response.** Faculty Sponsor: Jackie Brittingham

• Bryan Bruening. **Growth Rates of Microalgae in Varying Substrate Volumes.** Faculty Sponsor: Ryan Rehmeier

• Kathryn Burdock, James Chounramany, Sarah Kennedy, Mike Herring. **Effect of Fear Stimulus on Grip Strength.** Faculty Sponsor: Jackie Brittingham

• Andres Calvopina. **Military Influence in 21st Century Latin America.** Faculty Sponsor: Eduardo Magalhães III

• Laura Collins. **Stay Glassy: An Analysis of Borate Glasses.** Faculty Sponsor: Heidi Berger

• MaKenna Dopheide. **Testing Tort Reform: Which Punitive Damage Reforms are Most Effective on Tort Filings?** Faculty Sponsor: Eduardo Magalhães III

• Jennifer Draiss. **Symbolic Gestures in Bonobo Communication.** Faculty Sponsor: Sal Meyers

• Amber Elder. **Your Vote Counts…..?** Faculty Sponsor: Eduardo Magalhães III

• Conor Fair, Patrick Thompson. **Allelopathy in Warren County.** Faculty Sponsor: Clinton Meyer

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• Jeremy Hemer, D.J. Henry and Brooke Johnson. **Postabsorptive Blood Glucose Levels Impair Cognitive Function.** Faculty Sponsor: Jackie Brittingham

• Stephen Henrich, Jesse Smiles. **Drug delivery and DNA Origami: Rational Design for Targeted, Intracellular Delivery of Molecular Payloads** Faculty Sponsor: Ron Warnet and Pat Singer

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• Ashley Klocke. Electric Vehicles: A Deeper Look. Faculty Sponsor: William Schellhorn
• Janine Kobylinski. Civil Liberties and Social Media. Faculty Sponsor: Eduardo Magalhães III
• Nhu Le. Physical Fitness Improves Academic Performance. Faculty Sponsor: Nicolle Whalen
• Abigail Loudon, Katie Saxton and Anna Statz. Prey Diversity and Volume in the Diet of Great Plains Toad (Bufo cognatus) and the Plains Spadefoot Toad (Spea bombifrons) in Western Iowa. Faculty Sponsor: Clinton Meyer
• Erika Lyon. What’s in Your Water? Concentrations of Nitrates, Phosphates, and E. coli in Central Iowa’s Private Wells. Faculty Sponsor: Clinton Meyer
• Audrie Menghini. The United States JLWOP Sentence. Faculty Sponsor: Eduardo Magalhães III
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• Elisabeth Ryan. From the Soviet Union to Russia: Changes in Citizen Satisfaction with Government. Faculty Sponsor: Eduardo Magalhães III
• Phillip Seiwert, Anna Statz. Preliminary Data for the Raccoon River Watershed Master Plan. Faculty Sponsor: Clinton Meyer
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• Brock Struecker. Habitat Disturbance Effects on Amphibian Populations. Faculty Sponsor: Clinton Meyer
• Jaimie Summers, Taylor Hillery. The Effect of Ostracism. Faculty Sponsor: Sal Meyers
• Kraig Thomas. Oscar Gold: Predicting the Academy Award for Best Picture. Faculty Sponsor: Jim Palmieri
• Anna Vollmer. Learning from the Past: What is the Economic Future of the United States? Faculty Sponsor: Eduardo Magalhães III
• Leo Wright. Science and the Conservative Brain. Faculty Sponsor: Eduardo Magalhães III

THANK YOU

The Planning Committee for the 2012 Simpson College Undergraduate Symposium included Rachel Bandy, Clinton Meyer, Maeve Callan, Lisa Carponelli, Steve Duffy, Mike Eckerty, Gabrielle Rose-Curti, Bill Schellhorn, Lydia Sinapova, and Emily Skow.

We wish to extend our sincerest thanks to our guest judges: Dr. Roger Betsworth, Professor Emeritus of Religion, Ms. Allison Fleming, Simpson College Board of Trustees, Dr. Bruce Haddox, Professor Emeritus of Religion, Dr. Carl Halgren, Professor Emeritus of Psychology, and Dr. Everett Laning, Professor Emeritus of Sociology. We would also like to thank all Simpson College faculty who served as abstract reviewers, judges and sponsors. We are grateful to the Simpson College Office of Marketing and Public Relations and the Simpson College Office of Advancement. Thanks also to Ms. Kathy Witzenburg, Ms. Sheila Allbee and Ms. Becky Beaman.
In an effort to improve future symposiums, please provide us with feedback.

**Are you:**
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**Overall opinion of the symposium:**

1. **Time of symposium convenient**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

2. **Day of symposium (Honors Convocation) was appropriate**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

3. **Length of symposium was sufficient**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

4. **Works demonstrated high quality college-level scholarship**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

5. **Length of individual presentations was sufficient**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

6. **Quality of rooms (sound, space, seating, etc) was acceptable**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

7. **Session locations were convenient**
   - Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

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Thanks!

Please drop this completed form in the boxes provided in the Carver Atrium and at the Poster Reception in Pote Lobby (3:15-5 P.M.).
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