

# DEPAUW

## SCHOOL OF MUSIC

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### 2015 SENIOR SHOWCASE

FROM *L'ELISIR D'AMORE*

“UNA FURTIVE LAGRIMA”

GAETANO DONIZETTI

(1797-1848)

JOSEPH LEPPEK, TENOR  
AMANDA HOPSON, PIANO

*In Donizetti's opera L'elisir d'amore, the peasant Nemorino has pursued his true love, Adina, to no avail. A crowd of other women pursue Nemorino after discovering he has inherited a large fortune, but Nemorino believes it is due to a fake love potion he drank. Confident in the potion's ability to make Adina love him, he ignores her and she cries from jealousy. Nemorino takes the single, furtive tear of Adina as a sign of her true love for him and sings this famous aria.*

*Translation:*

*A single furtive tear  
from her eyes sprang:  
Of those festive, young girls  
envious it seemed to be.  
What more need I look for?  
What more need I look for?  
She loves me! Yes, she loves me, I see it. I see it.  
Just for an instant the beating of  
her beautiful heart I heard!  
And my sighs became as one  
fleetingly with her sighs!  
Her heart beating, her heart beating to hear,  
our sighs confounded as one...  
Heavens! Yes I could, I could die!  
More I can't ask, I can't ask.  
Oh, heavens! Yes I could! Yes I could die!  
More I can't ask, I can't ask.  
Yes I could die! If I could die of love.*

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130TH CONCERT SEASON  
MONDAY, APRIL 27, 2015 – 3 P.M.  
JUDSON AND JOYCE GREEN  
CENTER FOR THE PERFORMING ARTS  
THOMPSON RECITAL HALL

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FUZZY BIRD SONATA  
"RUN, BIRD"

TAKASHI YOSHIMATSU  
(B. 1953)

ELIZABETH KING, SAXOPHONE  
AMANDA HOPSON, PIANO

*Takashi Yoshimatsu is considered to be one of Japan's leading composers of Western-style music. Originally written for saxophonist Nobuya Sugawa, Yoshimatsu wrote Fuzzy Bird Sonata as a way of exploring different aspects of bird sounds through use of the saxophone's expressive tone and extended techniques. The piece's three movements, Run Bird, Sing Bird, and Fly Bird, incorporate Eastern, Western, and jazz styles. Movement 1 features a fast interplay between the saxophone and piano, including saxophone techniques like slap-tonguing, and a lyrical bird song.*

SONATA NO. 1 IN F MINOR, OP. 120  
I. ALLEGRO APPASSIONATO

JOHANNES BRAHMS  
(1833-1897)

DANIEL HICKEY, CLARINET  
TONY WEINSTEIN, PIANO

*Brahms' Clarinet Sonata no. 1, completed in 1894, is one of the last chamber works the composer wrote before his death. It is dedicated to the German clarinetist Richard Mühlfeld, whose musicianship and sound quality inspired Brahms to come out of retirement and write some of the great masterpieces of the clarinet repertoire.*

CONCERTO FOR ALTO SAXOPHONE  
ANDANTE ET ALLEGRO

HENRI TOMASI  
(1901-1971)

KEVIN SMITH, SAXOPHONE  
JOHN CLODFELTER, PIANO

*Classical music of the 1950's was often influenced by new highly dissonant almost mathematical compositional techniques made famous by Arnold Schoenberg at the beginning of the century. Henri Tomasi's music is a notable exception. While his music is chromatic in many ways, he makes use of pleasant sounding diatonic melodies and harmonies extensively throughout his music. Perhaps as a result of his career as an opera and orchestral conductor, his music is also highly melodic and full of subtle color changes. The influence of his French contemporaries is also present especially in the exotic sounds that were often emulated by French composers of the day. His Concerto for Alto Saxophone is no exception to these characteristics. His lyric, colorful, and slightly exotic writing plays to the saxophone's acoustic qualities making for a truly exciting concerto.*

RONDO CAPRICCIOSO IN E MAJOR, OP. 14

FELIX MENDELSSOHN  
(1809-1847)

RACHEL ROBIN, PIANO

*The Rondo capriccioso has two main sections, the first being an Andante in 4/4 meter in E Major, and the second a Presto in 6/8 meter and in E minor. It is a popular showpiece with flashy arpeggios and sparkling passagework.*

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"RUN, BIRD"

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**2015 SENIOR SHOWCASE**  
**Monday, April 27, 3:00-6:00 p.m.**  
**Green Center for the Performing Arts and Julian Science and Mathematics Center**

**3:00-4:00 p.m. Music Performances, Thompson Recital Hall; Program available in Thompson**

**4:00-5:00 p.m.**

**5:00-6:00 p.m.**

*Poster Session I ~ Julian Atrium*

- 1) **Chelsea Schumacher**, *Psychology*, Social Allergies in College Roommates
- 2) **Chloe Jacob and Lily Farnsworth**, *Psychology*, Hassles and Uplifts of Adult Children and Their Parents
- 3) **Madeline Perry**, *Chemistry and Biochemistry*, Glutamine Nutritional Supplementation in Malnourished Children: A Study of the Clinical Sample Analysis Protocol
- 4) **Casey Hooker**, *Chemistry and Biochemistry*, Go with the Flow: The Aldol/Epoxydation Reaction
- 5) **Elizabeth Dilbone**, *Environmental Fellows Program*, Riverine Sediment Loading and Retention in an Urban Harbor: A novel-assessment by iodine-131 and beryllium-7 radionuclide measurements
- 6) **Michael M. Britton, Leah M. Freestone, and Michael B. Tobin**, *Biology*, Why Pink? An Investigation of Floral Color Change in *Saponaria officinalis*

*Poster Session II ~ Julian Atrium*

- 7) **Hannah Lukemeyer**, *Kinesiology*, Modification of the Wingate Anaerobic Power Test based on leg strength and body composition
- 8) **Nicole Novaresi and Asha Boyd**, *Biology*, Investigating Compensation Networks of RNA Polymerase II in *Saccharomyces cerevisiae*
- 9) **Cory Meixner**, *Kinesiology*, The Effect of Palmar Heat Extraction on Intermittent Aerobic Exercise Performance
- 10) **Benjamin Harsha**, *Computer Science*, A Genetic Algorithm for Investigating Neural Network Architecture
- 11) **James Newman**, *Computer Science*, GlassClass: Exploring the Design, Implementation, and Acceptance of Google Glass in the Classroom
- 12) **Caitlin Handy**, *Science Research Fellows*, Inhibition of NADPH oxidase enhances doxorubicin-induced cell detachment

See reverse side for paper sessions

*Would you like to get involved with undergraduate research at DePauw? Visit: <http://www.depauw.edu/academics/student-research/>*

Location	4:00-5:00 p.m.	5:00-6:00 p.m.
Julian 151	<p><i>Paper Session I-B</i>  <b>Peter Kralovec-Kirchher</b>, <i>Philosophy</i>, An Analysis and Critique of Rousseau's View on Civil Religion</p> <p><b>Alicia Tutini</b>, <i>Philosophy</i>, Ought From Is</p> <p><b>Evan Miller</b>, <i>English (literature)</i>, Predicting the Weather: The Political Climate of Northanger Abbey and Sense and Sensibility</p> <p><b>Adrienne Westenfeld</b>, <i>English (writing)</i>, Til Human Voices Wake Us</p>	<p><i>Paper Session II-B</i>  <b>Stephen C. Dobbs</b>, <i>Geosciences</i>, Late Jurassic Tectonic Evolution of the Yanshan fold-thrust belt, NE China</p> <p><b>Tiara Heard</b>, <i>Physics and Astronomy</i>, Bridging the Gap</p> <p><b>Nick Williams</b>, <i>Geosciences</i>, Response of the North China Craton to Final Closure of the Paleo-Asian Ocean</p>
Julian 152	<p><i>Paper Session I-C</i>  <b>Rachel Hanebutt</b>, <i>Education Studies</i>, Metacognition Regulation Interventions in Undergraduate Science Instruction</p> <p><b>Emily Vincent</b>, <i>Biology</i>, The Feral Cat Conundrum: Assessing the Science and Ethics of Trap-Neuter-Return</p> <p><b>Stephanie Grauer</b>, <i>Political Science</i>, Terrorism and Theory: Promotion of Democratic Peace as a Guide to Post 9/11 Foreign Policy</p>	<p><i>Paper Session II-C</i>  <b>Yukun Zhang</b>, <i>Sociology</i>, Attitudes toward Internet Control in China: A Comparison between Chinese Students in the U.S. and in China</p> <p><b>Rachel Hanebutt</b>, <i>Political Science</i>, Higher Education Access as Soft Power: International Students as Political Change Agents</p> <p><b>Leif Anderson</b>, <i>Political Science</i>, Unintended Consequences: Chinese Trade and Investment to Africa</p>
Julian 157	<p><i>Paper Session I-D</i>  <b>Meagan Combs</b>, <i>Computer Science</i>, Betaflash: A Web Application for Locating Outdoor Recreation Sites</p> <p><b>Troy Holleman</b>, <i>Computer Science</i>, *Engram: A responsive, web-based application that is designed to augment your memory</p> <p><b>Chip Locke</b>, <i>Computer Science</i>, Physics Sandbox Visualized in OpenGL</p>	<p><i>Paper Session II-D</i>  <b>Caleb Haydock</b>, <i>Film Studies</i>, Short film: "Handlebars"</p> <p><b>Sarah Leander</b>, <i>English (writing)</i>, Human Companionship</p> <p><b>Katherine Tozer</b>, <i>English (writing)</i>, School Smart</p>
Julian 159	<p><i>Paper Session I-A</i>  <b>Nina Dugan</b>, <i>Music Education</i>, Finding My Place: My Student Teaching Experience</p> <p><b>Kyle Hahn</b>, <i>Physics and Astronomy</i>, The Composition of Sound Waves: An exploration of the Sound Waves Produced by Musical Instruments</p> <p><b>Megan Kessler</b>, <i>Music Education</i>, Student Teaching Experience: Clarks Creek Elementary School</p>	<p><i>Paper Session II-A</i>  <b>Hang La</b>, <i>History</i>, Self-Strength Literary Group and Vietnamese Modernization</p> <p><b>Brooke Addison</b>, <i>Musical Arts</i>, <i>Le Nozze di Figaro's</i> Cherubino: Developing a Historically Informed Performance Practice</p> <p><b>Melanie Studnicka</b>, <i>Women's, Gender, and Sexuality Studies</i>, "Do they care what it's like down there?" The bodywork of nude artist models</p> <p><b>Federico Mattia Papi</b>, <i>Musical Arts</i>, The Shaping of a New Societal Role of the Musician in the 21<sup>st</sup> Century</p>

## DePauw University Senior Showcase 2015: Abstracts

**Brooke Addison**, *Musical Arts*, *Le Nozze di Figaro's* Cherubino: Developing a Historically Informed Performance Practice. This paper focuses on sexuality and society in Mozart's time; the history of pants roles; the history of performance art in society; arousal, and cognitive change; audience history with Mozartean opera; and moralism. Mozart, though a moralist, employs sexuality in *Le Nozze di Figaro* through the play drive, which was popularized by Schiller. By placing a female in the role of a man, the element of play was strongly established and thus cleanses any grotesqueness from the sexual situation, turning the scene into a new moment of artistic beauty in the minds of philosophers such as Kant and Schiller.

**Leif Anderson**, *Political Science*, Unintended Consequences: Chinese Trade and Investment to Africa. This paper examines the impact of China's economic involvement on the security threat posed by Boko Haram to Nigeria. China's foreign policy focuses on economic growth, and it is increasing ties with Africa to develop new export markets and meet its growing domestic energy demands. To accomplish these goals, it offers "no strings attached"-aid and investment for infrastructure projects. As more money flows from China to Nigeria's oil-rich regions, economic inequalities grow, which is a major reason for Boko Haram's recent intensification. Hence, the effects of China's economic involvement in Nigeria may be twofold: it produces some wealth and modernization, but at the risk of contributing to Boko Haram's intensification and Nigeria's subsequent destabilization. The purpose of this paper is to explore that relationship between China's foreign policy and the intensification of Boko Haram. In conclusion, I find that China's economic ties may be contributing to this threat by analyzing the economic and security trends of this relationship. This shows the unintended consequences resulting from China's involvement in Africa.

**Michael M. Britton, Leah M. Freestone, Michael B. Tobin**, *Biology*, Why Pink? An Investigation of Floral Color Change in *Saponaria officinalis*. In *Saponaria officinalis*, also known as Bouncing Bet or Common Soapwort, a color change from pink to white coincides with the transition from male to female-phase flowers. We investigated whether or not there is a genetic component of color change, whether or not pollinators have a color preference, and if the color change affects the plant's reproductive fitness. In our experiment, we

used clones of eight different genotypes and randomly assigned them within full sun and 60% shade plots in an experimental garden. We then collected five flowers from each plant to compare floral color, shape and size, and seed set in the sun and shade treatments. To test pollinator preference for floral color and shape, we observed contrasting arrays of flowers for 20-minute intervals and recorded the number and identity of insect visitors to each array. Concentration of pink pigment (anthocyanins) varied significantly among genotypes and between treatments in male and female-phase flowers, and some genotypes exhibited greater plasticity than others, suggesting a genetic component to floral color change. Diurnal pollinators displayed a clear preference for male flowers over female flowers, but when controlling for color, pollinators lacked a preference for the shape of the male flowers. Overall, pollinators discriminated against the color pink.

**Meagan Combs**, *Computer Science*, Betaflash: A Web Application for Locating Outdoor Recreation Sites. Have you ever wanted to find a new running trail in your hometown, but aren't sure where to look? Or find a bike trail while on vacation in a new city? Then you need Betaflash. Betaflash is a web application for finding new outdoor recreation sites, and keeping track of ones you've already visited. Users of this site can find nearby hiking, running, biking, climbing, and camping locations, as well as view comments and photos other users have posted about the location. We hope that by reading other users' comments, you can find a recreation site specific to your goals and physical ability. This application uses the Google Maps API so that all map functionality is fairly familiar to users. Users can filter pins based off the specific activity type they are looking for, as well as mark pins as "visited" in order to keep track of sites you've already visited.

**Elizabeth Dilbone**, *Environmental Fellows Program*, Riverine Sediment Loading and Retention in an Urban Harbor: A novel-assessment by iodine-131 and beryllium-7 radionuclide measurements. Soil pollution in lakes is a problem with many costs, including introduction of pesticides, eutrophication, hypoxic conditions, degradation of fish spawning habitat, and demand for dredging of channels and harbors. The Milwaukee, Menominee and Kinnickinnic Rivers drain a large area in SE Wisconsin into Lake Michigan. Sediment loading from these rivers is thought to pass directly through the

Milwaukee Harbor into the lake. However, little research has focused on the transport and fate of sediment here. This study tested the potential of using two particle-reactive radionuclides, iodine-131 and beryllium-7, to study particulate transport in this and other urban harbors.

**Stephen C. Dobbs**, *Geosciences*, Late Jurassic Tectonic Evolution of the Yanshan fold-thrust belt, NE China. Over the past 3 years, Professor Tim Cope and I having been conducting geologic research in northeastern China's Yan Mountains. These mountains host some of the most geologically complex structures in the world. Thus, their tectonic origin is a matter of debate amongst the scientific community. My research over the past three years has aimed at looking at certain geologic features known as basins in order to ascertain the geologic past of the Yan Mountains during its most dynamic time period: the Jurassic.

**Nina Dugan**, *Music Education*, Finding My Place: My Student Teaching Experience. Although my student teaching experience began with a crisis, it turned out to be the most enjoyable and rewarding experience of my life. At the start of my student teaching I needed an emergency relocation to Zionsville West Middle School. After adjusting to the sudden change, I realized that I had found where I truly belong. Seeing and working with the six orchestras at ZWMS has shaped my classroom management styles, student teacher rapport, and my own personal philosophy of music education. My experience working with these amazing students has helped me to grow as both an educator and as a person.

**Stephanie Grauer**, *Political Science*, Terrorism and Theory: Promotion of Democratic Peace as a Guide to Post 9/11 Foreign Policy. The United States' foreign policy initiative shifted dramatically following the events of 9/11 to include identifying and eliminating the growing threat of terrorism. This paper assesses the role of the Democratic Peace Theory, first formally proposed by Immanuel Kant in 1795, in post-9/11 U.S. foreign policy. By tracing the historical precedents of the Democratic Peace Theory, analyzing moments in which the Theory has been employed in the Bush and Obama Doctrines, and assessing the role of the United Nations, this paper argues that the Democratic Peace Theory has and will remain a normative and prescriptive component of American foreign policy.

## DePauw University Senior Showcase 2015: Abstracts

**Kyle Hahn**, *Physics and Astronomy*, The Composition of Sound Waves: An exploration of the Sound Waves. Produced by Musical Instruments, A single note produced by any instrument can be very complex. My research examines the specific waveform produced by individual instruments through a visual representation. The waveforms are then compared to similar and dissimilar instruments to note their similarities and differences, i.e. how similar is the waveform produced by a violin to the waveform produced by a viola?

**Caitlin Handy**, *Science Research Fellows*, Inhibition of NADPH oxidase enhances doxorubicin-induced cell detachment. The use of doxorubicin, a highly effective chemotherapeutic drug, is limited by the severe adverse side effects it has on heart cells. This has been attributed to an excess of reactive oxygen species, or ROS, that destabilizes the cell's skeletal framework. The protein ROCK1 is involved in the breakdown of this skeleton and when removed, protection against the toxicity of doxorubicin has been shown. This study investigated the role of NADPH oxidase, a known producer of ROS in healthy cells, in this pathological mechanism. When the activities of both proteins were removed significant protection against doxorubicin toxicity was observed, suggesting pharmacological potential.

**Rachel Hanebutt**, *Political Science*, Higher Education Access as Soft Power: International Students as Political Change Agents. Access to higher education (HE) has begun to shape the future of public diplomacy, America's international reputation, and even national security. Analyzing international student access through the lens of Joseph Nye's coined "soft power" enables realization of the political, social, and economic roles of international student access in this equation. Prevalence of international students in the U.S., as well as American students abroad, has re-conceptualized public diplomacy by establishing the inseparable link between HE and national relations, especially in regards to India, China, and developing nations. Ultimately, American soft power has the potential to superintend future generations of world leaders, starting with their education.

**Rachel Hanebutt**, *Education Studies*, Metacognition Regulation Interventions in Undergraduate Science Instruction. Of increasing interest to DePauw University, its science faculty, current and potential students, metacognitive regulation, by definition, refers to adjustments individuals

make in their processes to control their own learning. The ability to make such adjustments, realize the utility of metacognitive strategies, and ultimately apply knowledge of metacognition to their academic lives, is often trivialized and neglected by both faculty and students. This is especially common for undergraduates in the sciences, complicating requirements (i.e. SM credit), which mandates course exposure to science thinking, comprehension and application. This project seeks to analyze DePauw students' current understanding and usage of metacognition and includes three different metacognitive regulation interventions to assess strategies of instruction for the general science course currently being constructed. Increased knowledge and awareness of metacognitive strategies in course instruction will ultimately enhance and improve future DePauw science course effectiveness, accessibility and retention.

**Benjamin Harsha**, *Computer Science*, A Genetic Algorithm for Investigating Neural Network Architecture. One challenge in using artificial neural networks is how to determine appropriate parameters for network structure and learning. The goal of this project is to use a genetic algorithm to tune a population of neural networks to determine the best structure and parameters. This paper considers a genetic algorithm to tune the number of hidden units, learning rate, momentum, and number of examples viewed per weight update. Experiments and results are discussed for two domains with distinct properties, demonstrating the importance of careful tuning of network parameters and structure for best performance.

**Caleb Haydock**, *Film Studies*, Handlebars, A short film written, directed, and produced by Caleb Haydock. A young man, Brodie, continues to wait for his family in jail as he comes to terms with his impending incarceration. His mother finally comes for a visit and the two try to reconnect despite the dire circumstances. As the two go deeper in conversation, however, the mother's motives become questioned, the same motives that seem to bring another man, Dr. Jeffery Cain, into the visitor's room to observe. Brodie must face his mother for the first time since he has committed the heinous murder, and must come to terms with the fact that his family might not be able to support him as much as he would have hoped.

**Tiara Heard**, *Physics and Astronomy*, Bridging the Gap. A droplet of water in a very thin gap between two elastic bodies can cause both bodies to deflect toward each other. Elasto-capillarity can be defined as the deformations of bulk elastic solids induced by surface forces. In this project we focused on the effects a sessile droplet has in between two pieces of soft elastic materials. Sessile drops on a solid rigid surface produce a small maximum deflection of the surface underneath it due to the surface tension of the fluid and the elasticity of the solid. With intentions of increasing the total adhesion force, we thought it would be interesting to see the effects of deformation if the drop were sandwiched between two soft elastic materials. By creating a closed system for the sessile drop we change the geometries of the system by decreasing the radius and causing an increase in pressure difference within the droplet. The new applications to the system help to magnify the capillary forces, which in turn increases the total adhesion force.

**Daniel Hickey**, *Music Performance*, Sonata no. 1 in F minor, Op. 120, I. Allegro Appassionato by Johannes Brahms (1833-1897). Brahms' Clarinet Sonata no. 1, completed in 1894, is one of the last chamber works the composer wrote before his death. It is dedicated to the German clarinetist Richard Mühlfeld, whose musicianship and sound quality inspired Brahms to come out of retirement and write some of the great masterpieces of the clarinet repertoire. Tony Weinstein, piano

**Troy Holleman**, *Computer Science*, \*Engram: A responsive, web-based application that is designed to augment memory. \*Engram is a responsive, web-based application that is designed to augment your memory. In other words, its functionality is meant to extend deeper than that of a linear "to-do" list. The title is derived from engrams, structures in the brain that are the means by which memory traces are stored. My Senior Project offers a way to store things that need to be remembered, and then creates a visual representation of these things that organizes them spatially according to importance. It's like an Infographic for your mind.

## DePauw University Senior Showcase 2015: Abstracts

**Casey Hooker**, *Chemistry and Biochemistry*, Go with the Flow: The Aldol/Epoxydation Reaction. Epoxides have a variety of chemical purposes as they are frequently involved in organic synthesis. The optimization of epoxide synthesis through a tandem sulfur-ylide promoted aldol/epoxydation reaction has been where a majority of my research lies. This reaction is carried out by combining an aldol equilibrium solution with a ylide. The mixing of these two solutions must occur at a specific ratio in order to obtain the highest yields. Optimizing not only the ratios at which these solutions mix, but the amount of time that they mix is one way in which we have studied this reaction. In addition to this we have also investigated different ways in which to isolate our product from the rest of the species that are present after the reaction has finished. Finally we are investigating the chemistry of this aldol/epoxydation product by first oxidizing, then reacting it with various primary or secondary amines in an effort to better understand the nature of the interactions between these compounds.

**Chloe Jacob and Lily Farnsworth**, *Psychology*, Hassles and Uplifts of Adult Children and Their Parents. While the literature on hassles and uplifts is abundant, little is known about the specific hassles and uplifts experienced by adult children and their parents. Adult children, specifically those who are in college, face a major life transition that brings both positive and negative daily occurrences. Similarly, parents of these adult children are facing a new phase of life as well. Due to the unique transitions these populations face, the present study examines daily hassles and uplifts that adult children and their parents experience, especially hassles and uplifts associated with the parent-child relationship.

**Megan Kessler**, *Music Education*, Student Teaching Experience: Clarks Creek Elementary School. This semester student teaching was one of the most enjoyable and rewarding experiences I've had at DePauw. I worked with over 800 students, grades K through 5, teaching elementary general music. Even though I was technically their teacher, my students taught me valuable lessons about my teaching style, my philosophy of music education, and reminded me how much I love teaching.

**Elizabeth King**, *Music Performance*, Fuzzy Bird Sonata, "Run, Bird" by Takashi Yoshimatsu (b. 1953). Takashi Yoshimatsu is considered to be one of Japan's leading composers of

Western-style music. Originally written for saxophonist Nobuya Sugawa, Yoshimatsu wrote Fuzzy Bird Sonata as a way of exploring different aspects of bird sounds through use of the saxophone's expressive tone and extended techniques. The piece's three movements, Run Bird, Sing Bird, and Fly Bird, incorporate Eastern, Western, and jazz styles. Movement 1 features a fast interplay between the saxophone and piano, including saxophone techniques like slap-tonguing, and a lyrical bird song. Amanda Hopson, piano

**Peter Kralovec-Kirchher**, *Philosophy*, An Analysis and Critique of Rousseau's View on Civil Religion. Jean-Jacques Rousseau is of the sentiment that the dogmas of a religion of the state ought to be adhered to by all citizens of said state in order to form more social unity, whereas the personal religious beliefs of man should stay intact so long as they do not interfere with those of the state. I argue the most influential form of religious belief cannot be organized by a governmental system, but that true religious belief must be internally decided and unregulated by sociological institutions.

**Hang La**, *History*, Self-Strength Literary Group and Vietnamese Modernization. My paper explores the role of Self-Strength literary group, a Vietnamese literary society in the 1930s, a time of French Colonial rule on the eve of World War II. French-educated, these Vietnamese intellectuals defined modernization as westernization. Through their novels and essays, they sought to eliminate Confucianism's social and cultural norms, and reimagined a new order based on Western Enlightenment ideals of individualism. In particular, the Vietnamese woman and peasant, as the group argued, should no longer be subjects within a collectivist, patriarchal society but individuals with equal rights in a democratic nation. Self-Strength turned the very Western discourse against French colonialism, as a subtle tool of national self-determination.

**Sarah Leander**, *English (writing)*, Human Companionship. This is a love story between two individuals through their love of falconry. Eleanor, who is a young woman in her thirties, is under the tutelage of birdmaster R.J. Mallory. The interactions and behavior of the two individuals mirror the relationship between a falconer and his bird. In this story, Eleanor is confronted with her humanness, the trap of anthropomorphizing, but finds comfort and reassurance in R.J, who she sees as more than just a mentor. The theme of

the story: "Humanity is stupidly overrated...but animals can't give humans what only humans can give to each other." That is, human companionship.

**Joseph Leppek**, *Music Performance*, "Una Furtiva Lagrima" from "L'elisir d'amore" by Gaetano Donizetti (1797-1848). In Donizetti's opera L'elisir d'amore, the peasant Nemorino has pursued his true love, Adina, to no avail. A crowd of other women pursue Nemorino after discovering he has inherited a large fortune, but Nemorino believes it is due to a fake love potion he drank. Confident in the potion's ability to make Adina love him, he ignores her and she cries from jealousy. Nemorino takes the single, furtive tear of Adina as a sign of her true love for him and sings this famous aria. Amanda Hopson, piano

**Chip Locke**, *Computer Science*, Physics Sandbox Visualized in OpenGL. I have created a sandbox environment for positioning objects in a world, and a physics engine to govern collisions between these objects. Each object has attributes that determine outcomes for collisions with other objects (rebounding, breaking etc.). The project consists of two modes to showcase this environment. Gameplay mode is a series of designed levels where the player bounces a ball so that it navigates obstacles to hit a target. Sandbox mode allows placement of objects in the world, as well as manipulations to various values in the physics engine, such as gravity and friction.

**Hannah Lukemeyer**, *Kinesiology*, Modification of the Wingate Anaerobic Power Test based on leg strength and body composition. The Wingate Anaerobic Power Test (WAnT) is a widely used test of short-term power production requiring the subject to pedal with maximum velocity for 30 seconds against a constant resistance. This research project focused on determining which method used to calculate flywheel resistance for the WAnT would produce maximal power outputs. The traditional method used to determine the resistance is based on body weight, however basing the resistance on a subject's one repetition maximum on the leg press or fat free body mass, may more accurately reflect a subject's ability to produce power.

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**Cory Meixner**, *Kinesiology*, The Effect of Palmar Heat Extraction on Intermittent Aerobic Exercise Performance. Intense intermittent work bouts of exercise typically result in decrements in performance. Cooling of the palm of the hand has been used to improve performance over multiple work bouts of resistance exercise. The aim of the present study was to test the effectiveness of using palmar cooling to improve performance during high intensity bouts of running. Subjects were tested during an incremental treadmill run to exhaustion either wearing a cooling glove or without. Additionally, subjects performed repeated treadmill sprints separated by rest periods with the cooling glove or without.

**Evan Miller**, *English (literature)*, Predicting the Weather: The Political Climate of Northanger Abbey and Sense and Sensibility. As a consequence of the Age of Enlightenment, the weather in 18th century British society became a form of cultural exchange. Employing the works of Stephen Greenblatt and Jan Golinski, this paper argues that in both Northanger Abbey and Sense and Sensibility, Jane Austen uses the rain to either parody the Gothic and Sentimental or punish the character of sensibility. Weather behaves as a signal to Austen's disciplinary technique, where the occurrence of rain indicates a character's failure to conform to expectations in British culture. By applying this structural approach to Austen's writing, irregular weather patterns signify scenes of political scrutiny.

**James Newman**, *Computer Science*, GlassClass: Exploring the Design, Implementation, and Acceptance of Google Glass in the Classroom. Wearable computing, a subfield of Human Computer Interaction, studies the integration of technology with clothing, watches, or other accessories to enhance interaction between humans and computers. Perhaps the most controversial wearable computer is the Google Glass. Glass has raised privacy concerns due to the ability for the user to surreptitiously take photos and videos of their surroundings. We hypothesized that Glass would be better accepted if it was applied to a specific domain instead of being worn constantly by users. To test this hypothesis, we designed and implemented three Glass applications to be worn by the teacher, with the goal of enhancing their communication with students.

**Nicole Novaresi and Asha Boyd**, *Biology*, Investigating Compensation Networks of RNA Polymerase II in

*Saccharomyces cerevisiae*. In all eukaryotes, RNA polymerase II transcribes the majority of protein coding genes. Consisting of 12 subunits, this complex associates with over 60 different elongation factors throughout the transcriptional process. Interestingly, many of these elongation factors have been found to be nonessential in yeast, suggesting that cells are able to compensate for loss of an elongation factor. We hypothesize that loss of a single elongation factor results in a redistribution of remaining factors associated with Pol II. We want to determine the elongation factor compensation network through the use of quantitative mass spectrometry. Wild Type, cd73D, and caf130D strains were generated and investigated via protein purification, silver staining, and mass spectrometry. All strains were tagged with a TAP tag to purify RNA Pol II. Mass spectrometry of the Wild Type strain provided an incredible amount of data, however, very few spectra identified the elongation cofactors, suggesting that mass spectrometry could be performed using a Pol II exclusion list to focus in on the elongation proteins.

**Federico Mattia Papi**, *Musical Arts*, The Shaping of a New Societal Role of the Musician in the 21st Century. The role of the musician in society has constantly evolved throughout history. Current technological innovations in the distribution of music and the deep funding cuts to the arts call for a new paradigm of the societal function of the musician, one that can adapt to the new marketplace and to the demands of audiences. The musician does not merely exist for aesthetic and entertainment purposes, but rather is a necessary element for societal progress and cohesion. The paper presents a new model of the musician as a bringer of community cohesion and as a cultural ambassador.

**Madeline Perry**, *Chemistry and Biochemistry*, Glutamine Nutritional Supplementation in Malnourished Children: A Study of the Clinical Sample Analysis Protocol. Under-nutrition is an underlying factor in almost 50% of the deaths in children ages 0-5 years old. Furthermore, it is a leading cause of childhood morbidity and mortality. Malnutrition-associated enteropathy is a subclinical disorder of increased intestinal malabsorption and permeability. It is highly prevalent among children in the developing world and postulated to result from the combined effects of marginal diets, unsanitary environments, and repeated and persistent enteric infections. Currently, glutamine, an amino acid, is being tested in through a clinical trial in Northeastern Brazil

as a means to repair gut health in children with malnutrition-associated enteropathy. In order to analyze the results of this study, fecal samples were sent to the partner hospital of this clinical trial, Cincinnati Children's Hospital and Medical Center. The purpose of my research was to determine a more efficient mechanism of preparing stool samples to be analyzed. Through alterations in an existing protocol including changes in materials and a greater focus on planning when to start sample processing, the rate of stool sample processing was increased two-fold. Overall, this research provided an experience to think critically about methods and I will return to this work summer 2015 in order to analyze they data that has been collected.

**Rachel Robin**, *Music Performance*, Rondo capriccioso in E Major, Op. 14 by Felix Mendelssohn (1809-1847). The Rondo capriccioso has two main sections, the first being an Andante in 4/4 meter in E Major, and the second a Presto in 6/8 meter and in E minor. It is a popular showpiece with flashy arpeggios and sparkling passagework.

**Chelsea Schumacher**, *Psychology*, Social Allergies in College Roommates. With so many interpersonal interactions every day, it is not unexpected that some aspects of these interactions are perceived negatively. Some of the behaviors that are perceived negatively because of repeated exposure are referred to as social allergies (Cunningham, Barbee, & Druen, 1997). This project investigates some of the aspects of these behaviors and the situations that contribute to the averseness of a behavior transforming it into a social allergy in college students and their roommates.

**Kevin Smith**, *Music Performance*, Concerto for Alto Saxophone, Andante et Allegro by Henri Tomasi (1901-1971). Classical music of the 1950's was often influenced by new highly dissonant almost mathematical compositional techniques made famous by Arnold Schoenberg at the beginning of the century. Henri Tomasi's music is a notable exception. While his music is chromatic in many ways, he makes use of pleasant sounding diatonic melodies and harmonies extensively throughout his music. Perhaps as a result of his career as an opera and orchestral conductor, his music is also highly melodic and full of subtle color changes. The influence of his French contemporaries is also present especially in the exotic sounds that were often emulated by French composers of the day. His Concerto for Alto

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Saxophone is no exception to these characteristics. His lyric, colorful, and slightly exotic writing plays to the saxophone's acoustic qualities making for a truly exciting concerto. John Clodfelter, piano

**Melanie Studnicka**, *Women's, Gender, and Sexuality Studies*, "Do they care what it's like down there?" The bodywork of nude artist models, The art world often overlooks the perspectives and experiences of the nude artist model. To remedy this absence, my thesis examines how nude models view the process of creating art, as well as the ways modeling informs their body image. Analyzing self-published blogs by models, my thesis provides insight into the significant bodywork that nude models perform.

**Katherine Tozer**, *English (writing)*, School Smart. In School Smart, I cap off my career as a student asking questions many do when childhood grows distant: What happened to us and how did we get here? Fed up with a society that gives individuals all the credit (or blame) for their education outcomes, the following essays crack open the stiff binding on "education stories" with hindsight, history, and a whole bunch of data. School Smart gives six examples of different women at different schools who put faces to murky concepts like "the achievement gap," "the accountability movement," and "special needs education." To reform education, we need to understand our schools.

**Alicia Tutini**, *Philosophy*, Ought From Is. How are morals formed? How do we decide what we ought to do? Can we advise prescriptive claims given descriptive facts? David Hume's A Treatise of Human Nature answers no, while John Searle's rebuttal "How to Derive 'Ought' From 'Is'" answers yes. Examining these conflicting opinions and supporting evidence, I determine Searle's response to Hume to be insufficient, failing to convince that a set of facts can provide a moral ought. Defending Hume, there is something other than facts shaping our conduct: understanding the complexity of human motivations and behavior to form a concept of morality involves more than descriptions.

**Emily Vincent**, *Biology*, The Feral Cat Conundrum: Assessing the Science and Ethics of Trap-Neuter-Return. There may be more than fifty million feral cats in the United States, and as cats tend to reproduce quickly, this population will continue to grow without human intervention. Free-roaming cats are

predators that may pose a risk to vulnerable species and are potential vectors of disease, so their growing populations must be taken seriously. A fierce debate rages about whether populations of feral cats should be systematically culled or reduced slowly through Trap-Neuter-Return (TNR). My interdisciplinary thesis uses science and ethics to assess feral cat population control methods and work toward a humane, effective solution.

**Adrienne Westenfeld**, *English (writing)*, Til Human Voices Wake Us. 'Til Human Voices Wake Us is the claustrophobic narrative of Cecile, a war nurse based on the New England home front, her PTSD-shattered husband, and the dead soldier with whom they've both fallen in love. To recapture the idyllic pre-war domesticity she was promised, the fanciful Cecile is pushed to increasingly subversive and dishonest lengths in competing against a ghost for the heart of her husband, and as she too falls for that ghost, her narrative carries us through a harrowing psychological kaleidoscope of grief, performativity, obsession, and distances we cannot bridge.

**Nick Williams**, *Geosciences*, Response of the North China Craton to Final Closure of the Paleo-Asian Ocean. Late Carboniferous through late Triassic strata of Liaoning and Hebei Province record the response of the North China Block (NCB) to final closure of the Paleo-Asian Ocean. Strata were likely deposited in an east-west trending foreland basin to the south of uplift along the northern margin of the block. Sedimentation coarsened upward, transitioning from a meandering stream system to a braided stream system followed by alluvial fan deposits. Geochronological analysis of detrital zircon grains indicates that these strata were deposited from latest Carboniferous to the earliest Triassic. The source of the basin transitioned from a recycled orogen source to a transitional arc source with the initiation of subduction. The source returned to a recycled orogen provenance, indicating closure of the Paleo-Asian Ocean.

**Yunkun Zhang**, *Sociology*, Attitudes toward Internet Control in China: A Comparison between Chinese Students in the U.S. and in China. This thesis explores Chinese college students' attitudes toward Internet control in China, and compares the attitudes of Chinese students studying in the U.S. and in China. Drawing on interviews with eight Chinese students at DePauw and eight students from different universities in

China, I found that there was no fundamental difference between the attitudes of the two groups. Both groups agreed that Internet filtering and censorship was necessary, because the general public lacked the ability to discern foreign propaganda from truth, although the DePauw group voiced slightly more discontent with the restrictions the control system imposed on Internet users.